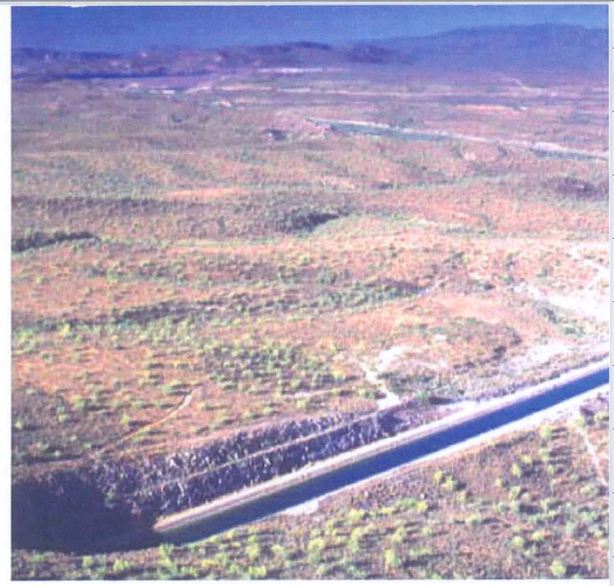

AGUA FRIA
WATERCOURSE MASTER PLAN

Sediment Trend Analysis Final Report

Prepared for

Flood Control District of Maricopa County

November 2001

Kimley-Horn and Associates, Inc.

SEDIMENT TREND ANALYSIS FINAL REPORT

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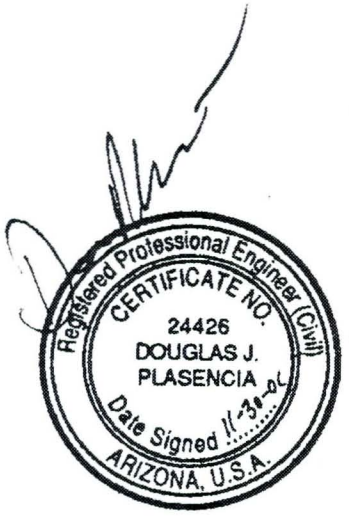

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NOVEMBER 2001

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AGUA FRIA WATERCOURSE MASTER PLAN
SEDIMENT TREND ANALYSIS REPORT

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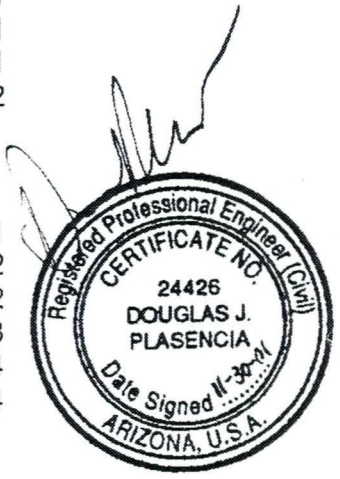

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AGUA FRIA WATERCOURSE MASTER PLAN
FLOOD CONTOL DISTRICT OF MARICOPA COUNTY
FCD 99-24

SEDIMENT TREND ANALYSIS

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- Project Engineer/Sediment Transport– Robert Eichinger, P.E.
- Hydraulics Engineer– Mr. Jon Ahern, P.E.
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AGUA FRIA WATERCOURSE MASTER PLAN
FLOOD CONTOL DISTRICT OF MARICOPA COUNTY
FCD 99-24

SEDIMENT TREND ANALYSIS

EXECUTIVE SUMMARY

1. Introduction

The purpose of the Sediment Trend Analysis was to study and evaluate the long-term and flood response of the streambed profile of the Agua Fria River based on existing, proposed, and alternative development conditions along and within the river. The sediment trend analysis is used as an analytical tool to evaluate the impact of future plans, including sand and gravel mining operations, on the response of the streambed profile. The sediment trend analysis, as a planning instrument, was developed to support the formation of planning level recommendations for the Agua Fria Watercourse Master Plan. The sediment trend analysis was not developed to provide site specific design details. Future designers are cautioned that it will be necessary to incorporate site specific data in order to refine estimates of channel bed change in or around the project/study site. Acceptance of these models for site design or modification of these models for site design should only be undertaken by a Professional Engineer with demonstrated competence in river mechanics and sediment transport, and the use remains the responsibility of the Professional Engineer.

The Sediment Trend Analysis is a complementary analysis to a broader investigation of the Agua Fria River as part of the **Agua Fria Watercourse Master Plan**. Other technical and engineering studies conducted on behalf of the Master Plan include hydrology, river hydraulics, and geomorphology studies. All of these studies, together with their results and interpretations, provide an understanding of the behavior of the ephemeral Agua Fria River in an arid, urbanizing environment.

The Sediment Trend Analysis developed several sediment trend models to evaluate the streambed profile response to various conditions. The sediment trend models included an existing river conditions model, full sand and gravel model, full encroachment model, and a grade control structure model. From the results and interpretation of these model conditions KHA recommended river stabilization measures and policy/procedures for the District to implement regarding sediment management in the Agua Fria River.

The sediment trend analysis begins at the confluence of the Agua Fria River with the Gila River. The upstream limit of the sediment trend analysis is approximately at the diversion outlet downstream of New Waddell Dam. The total length of the study reach of the river is approximately 33.8 river miles.

2. Agua Fria Watercourse Master Plan Sediment Trend Analysis

The Agua Fria River is characterized as an ephemeral alluvial desert stream due to the impact of the water storage capabilities of the New Waddell Dam and local climatology. The presence of a significant amount of water is only apparent in the river during storm events on the upstream watershed. When flooding does occur in the river, the duration of the flooding is relatively short in duration. The duration of the 100-year flood event in

the Agua Fria River is predicted to be less than several days according to flood studies conducted by the U.S Army Corps of Engineers.

The Agua Fria River is also characterized as a sand and gravel stream. The moveable bed materials in the river are comprised primarily of sands and gravels with finer and coarser materials interspersed throughout the study reach. The bed material of the upper reach of the river is coarser than the lower reaches of the river. This characteristic is primarily due to the sediment trapping capability of the New Waddell Dam and the local geology of the upper reach (narrow canyon/channel and presence of bedrock). The lower reach of the Agua Fria River is predominately sand with some gravel lenses.

The overall general behavior of the Agua Fria River stream profile in response to long-term channel forming flows or short-term floods, such as the 100-year flood, is to degrade and move sediment from the upper reaches to the lower reaches. It is anticipated that flood flows in the upper reach of the river are relatively devoid of sediment load compared to the lower reach of the river. This relatively sediment hungry floodwater in the upper reaches of the river tends to obtain sediment from the bed and banks of the river. The acquisition of sediment from the bed and banks of the river tends to lower the streambed channel profile and widen the river through lateral erosion. Some of the sediment accumulated in the upper reaches of the river tends to settle out or deposit in the lower reaches of the river or be transported out of the Agua Fria River into the Gila River. This change in bed material from coarse to finer materials in the upper reaches to the lower reaches is readily observable on the Agua Fria River today.

The sediment trend analysis for the Agua Fria River will attempt to predict anticipated river channel response to long-term channel forming discharges and to short-term flood events such as the 100-year flood. The sediment trend analysis uses a sediment transport computer model developed by the U.S Army Corps of Engineers. The computer model is known as HEC-6 "Scour and Deposition of Rivers and Reservoirs". The HEC-6 model was developed to predict anticipated riverbed channel responses to changes in river hydrology, sediment characteristics, and channel morphology. These responses take the form of changes in riverbed channel elevations through aggradation or degradation of sediment in river subreaches and through changes in channel cross section geometry.

Several tributaries exist along the study reach of the Agua Fria River. The most notable tributary is the New River, which joins the Agua Fria River south of the Glendale Airport. New River is incorporated into the sediment trend analysis of the Agua Fria River. Previous hydrologic and hydraulic studies of the Agua Fria River/New River system indicate that the New River has more of a influence on the Agua Fria River south of the New River confluence than does the Agua Fria River itself.

Hydrology: The short-term flood flow selected to evaluate the river response is the 100-year flood event as developed by the Corps of Engineers. The long-term channel forming discharge selection was based on the potential discharge from the New Waddell Dam under the 100-year flood event. The Corps of Engineers have estimated that the New Waddell Dam may discharge a flood flow of approximately 9,000 cubic feet per second into the Agua Fria River. The duration of this flood flow to simulate long-term behavior was selected by KHA in concurrence with the District (see Section 3 – Study Approach and Methodology).

Existing Condition HEC-6 Model: The first HEC-6 model is based on existing river conditions as depicted by the sum of the Corps of Engineers 1995 hydrology study of the river, the 1996 Flood Insurance Study (FIS) of the Agua Fria River, and the sediment gradation data developed for the sediment trend analysis. The flood event simulated in the existing condition model started with a long-term flow of 9,000-cfs for 30-days followed immediately by the 100-year flood. The peak discharge in the lower Agua Fria River during the 100-year flood is 54,400-cfs.

The results of the existing condition HEC-6 model indicates that there is a general trend toward degradation for the reach of the Agua Fria River north of Jomax Road. The maximum ending degradation was exhibited at river mile 30.82 at 6.1 feet which is downstream of State Route 74 bridge location. The HEC-6 model predicted no change in bed elevation at the bridge location. This is primarily due to the shallow presence of bedrock in the river channel.

The reach from Jomax Road to Bell Road indicates a slight aggradation condition with some degradation at a few river cross sections. The maximum ending aggradation occurs at river mile 24.543 with a deposition of 3.54 feet, which is upstream of Happy Valley Road.

The reach from Bell to Grand Avenue appears to be degrading. The channel bed is degrading at the Grand Avenue bridge with a small aggradation along the El Mirage landfill.

The channel is degrading just downstream of the confluence with the New River and aggrading at the beginning of the Corps' levees at river mile 8.198. The contributing flow from New River may be causing the Agua Fria channel to degrade at the confluence.

Within the levee reach of the lower Agua Fria, the grade control structures appear to be causing aggradation in the channel. The maximum ending condition degradation in the levee reach (river station 8.198 to river station 3.729) is 3.61 feet. The maximum degradation occurring during the flood event is 3.65 feet at river mile 5.15. The maximum event deposition is 3.97 feet at river mile 4.754.

The reach of the Agua Fria downstream of the levees to the Gila River indicates a slightly degrading condition. The maximum degradation occurs at river mile 1.33 with a depth of 3.56 feet.

Sand and Gravel Condition HEC-6 Model: The second sediment trend HEC-6 model developed in this analysis is the full sand and gravel condition. The term "full sand and gravel" is used to depict the condition that all existing, permitted, and permit pending sand and gravel mine operations along and within the Agua Fria River are operating to their full mining extents and limits. In other words, all sand and gravel mines are built to their full mining plan limits in regards to pit depths, lengths and widths of pits. The full build-out limits of the sand and gravel mines were incorporated into the existing condition model to develop the sand and gravel model. The sand and gravel model results were then compared to the existing condition HEC-6 model results.

The sand and gravel model includes the same hydrology event, sediment inflow curve, transport function, and bed sediment gradations as used in the base sand and gravel existing condition model. The modifications incorporated in the sand and gravel model

include establishing the limits of the mining pits through the use of the dredge routine of the HEC-6 model, establishing conveyance limits, and review of the moveable bed limits.

The results of the sand and gravel HEC-6 model indicate the potential for the development of headcuts in the river channel through the initiation of invert degradation upstream of sand and gravel mines. The river bed channel upstream of the sand and gravel mines appear to degrade during the simulation of the passing of the flood event. The degradation exhibited upstream of the sand and gravel mines could potentially initiate local headcuts. Those headcuts located near bridged crossings may impact the performance of scour countermeasures located at the bridges (e.g. Olive Avenue).

The cross sections not mined upstream of the sand and gravel mines indicate a general degradation of the channel invert. This is particularly evident at cross section 18.962, which indicates a channel degradation of -6.38 ft at the Bell Road bridge. Other bridge and at-grade crossings potentially exposed to channel degradation include Indian School Road bridge (cross section 8.105, -1.78 ft), Camelback Road bridge (cross-section 8.992, -0.55 feet), and Northern Avenue at-grade crossing (cross section 12.42, -9.20 feet).

A review of the results for the sand and gravel model from cross sections 8.105 through 10.846 indicates minor degradation and deposition occurring in the river. This reach of the river incorporates sand and gravel mines downstream of Indian School Road to upstream to the Glendale airport area (Bethany Home Road and New River confluence). For the purposes of this study and the limitations of the HEC-6 model, an average pit depth was assumed for each mining cross section within this reach of the river. The average pit depth is not necessarily the maximum pit depth. Average pit depths were used across the cross section as the HEC-6 model is not capable of individually distinguishing separate mines across a cross section using the dredging option in HEC-6. Future sediment studies of this reach of the river should include a sensitivity analysis on maximum pit depth to evaluate the impact of the mines located in this reach of the river.

The bed channel profile in the downstream reach of the Agua Fria River (between Indian School Road to Buckeye Road), which includes the Corps of Engineers levees, appears to be relatively stable during the passage of the 100-year hydrograph. This is anticipated since this reach contains five grade control structures, has no active sand and gravel mines, and the banks of the river are stabilized with soil cement levee bank protection.

From the Gila River confluence upstream to the beginning of the Corps levees, the Agua Fria River indicates scour during the passage of the 100-year flood flows. There is a minor (permit pending) sand and gravel mine located between river stations 1.10 to 1.25 near the west bank. The impacts of this mine at full extraction is to lower the invert of the river locally by a much as 10.3 feet during the 100-year flood.

The results of the full sand and gravel model of the Agua Fria River indicate the need for management of potential headcutting. Although HEC-6 cannot directly predict the degree and amount of headcutting, HEC-6 can predict precursors for headcutting. The headcutting may be attributable to the extensive sand and gravel mining extraction activities in the river. The management of potential headcuts may take the form of grade stabilization structures, set-back limits on sand and gravel mines, limitations on the

depths of extraction within the floodway/floodplain, and scour countermeasures at existing and proposed river crossings. Grade control structures may be located downstream/upstream of sand and gravel mines and/or at or near bridge crossings. At-grade crossings should be reviewed for scour countermeasures.

Full Encroachment Condition HEC-6 Model: The third HEC-6 model prepared for the Agua Fria River was the full encroachment model. This model evaluates the impacts of on the streambed profile and river response of encroachment to the floodway limits. The purpose of developing a HEC-6 model of the Agua Fria River that encroached to the regulatory floodway limits was to examine the effects on the bed profile of a potential alternative future policy for encroachment on the river. The encroachment may take several forms including the filling of the floodplain fringe for development or the construction of low level levees located along the floodway limits that are placed to provide a measure of flood protection to sand and gravel operations within the floodway fringe areas. The policy would potentially allow utilization of the floodplain and floodway fringe and exclude extraction of sand and gravel within the regulatory floodway.

The full encroachment model includes the same hydrology event, sediment inflow curve, transport function, and bed sediment gradations as used in the base sand and gravel existing condition model and in the full sand and gravel model.

Examination of the results of the HEC-6 encroachment model indicate that the average bed change during the flood event ranges between zero to plus or minus 3 feet from the Gila River confluence upstream to river station 31+00 (Cloud Road). Upstream of river station 31+00 the bed elevation decreases by as much as 6 feet (at station 31.90) at the end of the hydrology simulation.

The encroachment model indicates that the 30-days of 9,000 flow in the Agua Fria River has more of a channel forming impact on the river bed profile than the subsequent 100-year hydrology event. The maximum range of deposition and scour are nearly attained with the 30-days of 9,000 cfs flow in the river with little to minor additional contribution of deposition or scour attributable to the 100-year event. The maximum degradation occurs within the river reach from station 31+00 to station 32.40 (just downstream of State Route 74). This may or may not occur to this extent at all locations within this reach of the Agua Fria due to the shallow presence of bedrock. The degradation seen within this reach may also reflect the "narrower" floodway limits compared to the floodway limits of other downstream reaches of the river. The relative flow velocity within this reach is greater than the downstream reaches therefore allowing higher sediment transport capacity.

The river bed profile of the encroached floodway model generally mirrors the behavior of, with minor exceptions, the existing conditions river bed profile at the peak of the 100-year event and at the end of the 100-year flood. This could be attributable to the river floodplain hydraulics and the floodway hydraulics being nearly the same at many cross sections in the river.

The HEC-6 encroachment model indicates that the Agua Fria may be encroached to the FIS floodway limits without significant impacts on sediment transport above those demonstrated under existing conditions. Encroachment, however, should be examined in more detail on a reach by reach basis of the river. Encroachment is not advisable to the limits of the FIS floodway in the upper reach (upstream of river station 31+00) of the

river due to the predicted depths of degradation and the close proximity of important existing or proposed infrastructure.

The findings of the Sediment Trend Analysis indicate that there may still be a need, on a case by case basis, for stabilization of the riverbed profile and/or bank stabilization. Riverbed stabilization may take the form of grade control structures. These may be located downstream/upstream of sand and gravel mines and/or at or near bridge crossings.

Grade Control Structure HEC-6 Model: The fourth HEC-6 model prepared for the sediment trend analysis is the grade control structure model. The purpose of this HEC-6 model was to evaluate the impact of proposed grade control structures on the river bed response and to assist in the selection and recommendation of the locations of proposed grade control structures.

The grade control structure HEC-6 model includes the same hydrology event, sediment inflow curve, transport function, and bed sediment gradations as used in the base sand and gravel existing condition model, in the full sand and gravel model, and in the full encroachment model.

Four proposed grade control structures were recommended for evaluation as a result of preliminary sediment trend results. These are located at river station 13.395 (downstream of Olive Avenue), river station 18.962 (Bell Road), river station 21.893 (upstream of Rose Garden lane and a large in-stream sand and gravel operation), and at river station 24.543 (downstream of the proposed New Estrella Parkway). These grade control structure locations were selected for investigation after joint discussions and concurrence with JE Fuller Hydrology and Geomorphology, the consulting firm responsible for the geomorphic and lateral migration analysis and investigation of the river. The reasons for these locations are presented below.

The grade control structure located at river station 13.395 is downstream of Olive Avenue Bridge and upstream of a major sand and gravel operation. The purpose of the grade control is to help stabilize the invert of the channel upstream of the grade control and to arrest potential headcuts from the sand and gravel mine that may develop over time or during a major flood event. The encroachment model indicates a significant degradation at this location.

The grade control structure located at river station 18.962 is downstream of Bell Road Bridge and upstream of several identified headcuts in the Agua Fria River. There is an existing sand and gravel mine located in the left overbank area (floodplain fringe) between Bell Road and Greenway Road. The purpose of the grade control is to help stabilize the invert of the channel upstream of the grade control and to arrest the existing headcuts and potential headcuts from the sand and gravel mine that may develop over time or during a major flood event.

The grade control located at river station 21.893 is located upstream of Rose Garden Lane, about ½ mile downstream of Deer Valley Road. The grade control is located upstream of an existing large in-stream sand and gravel operation. The purpose of the grade control is to arrest potential headcuts from the mine and to stabilize the invert of the river channel. Three headcuts have been located in the river channel at Deer Valley Road alignment.

The fourth grade control structure is located just downstream of the proposed New Estrella Parkway, which is approximately at Happy Valley Road. The new roadway will cross the river at this location. The purpose of the grade control is to stabilize the river invert upstream of the grade control, which in turn could benefit the Parkway Bridge foundation. An existing headcut is located approximately ¼ mile upstream of the Pinnacle Peak Road alignment that could potentially promulgate over time towards the proposed bridge location. There is also a large sand and gravel mine approximately ½ mile downstream of the proposed grade control structure location on the east side of the river channel. The mine is within the floodplain limits of the Agua Fria River

KHA updated the original encroachment model as part of the grade control investigation. The results of the updated enroachment model indicates that the average range of aggradation and deposition for the Agua Fria River under encroachment conditions is from zero feet to plus or minus three feet. This is the same result that was observed in the original encroachment model. There is a notable exception, however, at river station 13.396 where the degradation was estimated at 9.3 feet. This depth is mainly attained during the 9,000 cfs flow (at hydrology day 15) with a maximum of 9.7-feet and a recovery back to 9.3 feet at the end of the 100-year hydrograph. This river station is located downstream of the Olive Avenue Bridge. It is one of the river stations that was added to the updated encroachment model.

A notable area of degradation is the river reach upstream of river station 31+00. The bed degradation in this reach has attained a maximum degradation of over 6-feet. The majority of the degradation is attributable to the 30-days of 9,000 cfs flow rather that the 100-year flood event (for the project hydrology simulation). The aggradation/degradation pattern exhibited as a result of the grade control model is of a similar pattern exhibited in the enroachment model.

Observation of the tabular results indicates that the grade control structures have aggraded locally at the structures. The largest difference is exhibited at the proposed grade control at Olive Avenue. There is an aggradation of approximately 5.8-feet at this location. At the other three grade control structure locations, the grade controls have aggraded the river channel locally.

At the Olive Avenue Bridge (Station 13.395), the HEC-6 updated encroachment model indicated a degradation of 9.3-feet. The HEC-6 grade control model indicated that at this location the river channel would aggrade to 2.8 feet above existing conditions. It should be noted that the grade control structures in the HEC-6 grade control model are allowed to have local aggradation but not degradation. The grade control at Olive Avenue appears to be warranted due to the change from minus 9.3 feet to plus 2.8 feet, considering the close proximity of the bridge, the downstream sand and gravel mine, the relatively narrower river channel in this reach of the river, and the existing headcut just downstream of the bridge.

The grade control structure at Bell Road (river station 18+962) appears not to be warranted at this time from interpretation of the HEC-6 results. Examination of the encroachment model indicates local aggradation at the Bell Road grade control location. The grade control model also indicates local aggradation at the proposed grade control location at Bell Road. However, due to the extensive in-channel mining downstream, a potential headcut could occur which could propagate upstream in a flood event. It is

recommended at this time that the District monitor and inspect the river at this location after flood events and observe for propagation of headcuts.

The updated encroachment model results indicated that the river will degrade at river station 21.893 (Rose Garden Lane grade control structure location) approximately 1.0 to 1.2 feet locally under project hydrology simulation. The grade control model results indicate slight aggradation at this location. The grade control structure location (Station 21.893) at Rose Garden appears to be feasible based on strict interpretation of the HEC-6 results. However, providing a grade control structure for a local river degradation of 1.2 feet under the hydrology simulation (30-days of 9,000-cfs followed by the 100-year flood) conditions appears unwarranted at this time. But, due to the extensive in-channel mining downstream, a potential headcut could occur which could propagate upstream during a flood event. Field evidence upstream of the proposed grade control indicates the existence of several headcuts. It is recommended at this time that the District monitor and inspect the river at this location after flood events and observe for propagation of headcuts.

Both the encroachment model and the grade control model indicate that aggradation would occur at the grade control structure at Station 24.543 (Happy Valley Road or the New Estrella Parkway location). The aggradation would occur to a deposition depth of approximately 2.0 feet. Based on the results of the HEC-6 models, a grade control at this location may not be warranted at this time. However, due to the close proximity of an existing headcut and a large downstream sand and gravel mine, stabilization or scour countermeasures should be considered for the proposed new bridge.

As a result of the HEC-6 analysis, only one grade control structure is warranted (Olive Avenue grade control structure). Stabilization or scour countermeasures are recommended at the proposed New Estrella Parkway. Monitoring and inspection are recommended for the river channel in the vicinity of Bell Road and Rose Garden Lane after flood events. These monitoring activities should take the form of estimating the rate of headcut propagation and dimensions of headcuts that form. Monitoring should include surveys and time sequence aerial photographs of the river channel and ground inspections. Distance measurements of the upstream end of the headcut to infrastructure should be recorded on an annual basis.

Note that this grade control analyses was based on the policy of encroachment to the floodway limits. If this policy in not promulgated by future District actions, the recommendations for grade control structures under this section may need to be expanded considerably. In other words, the potential for more grade control structures may be required. More local detailed analyses are recommended for design purposes of proposed river channel and bank stabilization measures.

3. Comparison with Arizona State University Agua Fria River Sediment Transport Study

A comparison was conducted of the results of the Agua Fria Watercourse Master Plan Sediment Trend Analysis with the Arizona State University (ASU) Agua Fria River Sediment Transport Study. The ASU study was conducted by the Civil Engineering Department on behalf of the Flood Control District of Maricopa County. The ASU study was completed in February 1994. The ASU study is a previous system sediment transport study of the river that covers the same limits as the Watercourse Master Plan.

The Agua Fria Watercourse Master Plan Sediment Trend Analysis (Kimley-Horn and Associates, Inc.) and the ASU Sediment Transport Study of the Agua Fria River have similar purposes and scopes. Both studies were initiated to investigate the response or behavior of the riverbed to input hydrology and to develop sediment transport models that may subsequently be used for the District's floodplain and erosion management activities for the river. Both studies used the U.S. Army Corps of Engineers HEC-6 computer program "Sedimentation and Deposition in Rivers and Reservoirs". The limits of each study were the same: from the Gila River confluence upstream to the New Waddell Dam for a river distance of approximately 33.8 miles.

Table 1 provides a summary of the major study elements. Tables 2 and 3 provide a summary of the river bed response at the major bridge crossings for the existing conditions and sand and gravel model condition.

Table 1. Summary of Study Major Elements.

Study Element	Agua Fria Watercourse Master Plan (KHA)	Agua Fria River Sediment Transport Study (ASU)
Limits of Study	Gila River to New Waddell Dam	Gila River to New Waddell Dam
Sediment Transport Model Corp's HEC-6	HEC-6 FixedS95	HEC-6 1991
Sediment Transport Function	Yang's Streampower	Toffaleti-Schoklitsch
Derivation of Project Hydrology	Agua Fria River Study New Waddell Dam to Gila River Confluence, Arizona Hydrologic Evaluation of Impacts of New Waddell Dam on Downstream Peak Discharges in the Agua Fria River (U.S. Army Corps of Engineers – July 1995).	Hydrology for the Evaluation of Flood Reduction by New Waddell Dam, Agua Fria River Below New Waddell Dam to the New River Confluence (U.S. Army Corps of Engineers – September 1988).
Project Hydrographs	30-days of 9,000 cfs followed by 100-year flood event (time base of 100-year flood is 1.1 days). 100-year hydrograph developed using Corps peak discharges and SPF hydrograph shape.	Four hydrologic data under post-New Waddell conditions were used for the 50-, 100-, 200-, and 500-year floods. The duration of the hydrographs was equivalent to the duration of the 1980 flood event of approximately 8.79 days. Triangular-shaped hydrograph.
Base Hydraulics Models	1996 Coe and Van Loo Flood Insurance Study of the Agua Fria River (HEC-2)	1989 Jerry Jones & Associates Flood Insurance Study of the Agua Fria River (HEC-2)
HEC-6 Sediment Transport Models Developed	Model 1 – Fixed Bed Model 2 - Existing Conditions Model 3 – Sand and Gravel Model 4 – Full Encroachment Model 5 – Grade Control Model	Model 1 – Existing Conditions Model 2 – Sand and Gravel Model 3 – Low Flow
Sand and Gravel Model Approach	Utilize HEC-6 Dredging Routine prior to 100-year hydrograph. Build-out conditions.	Hardcoded sand and gravel cross mining limits. Build-out conditions.
Peak Flow from New Waddell Dam	9,000 cfs	32,000 cfs

Table 2. Existing Condition Model – Net Response of River at Bridge Locations.

Bridge	Watercourse Master Plan Bed Response	ASU Study Bed Response
Buckeye Road	Degradation	Aggradation
Southern Pacific Railroad	Degradation	Neither
Van Buren	Aggradation	Aggradation
Interstate 10	Degradation	Degradation
McDowell Road	Aggradation	Degradation
Indian School Road	Aggradation	Degradation
Camelback Road	Slight Aggradation	Degradation
Glendale Avenue	Aggradation	Aggradation
Olive Road	Aggradation	Degradation
Grand Avenue	Degradation	Aggradation
Santa Fe Railroad	Degradation	Degradation
Bell Road	Aggradation	Degradation
Beardsley Flume	Degradation	Degradation
Highway 74	No Change	Degradation

Table 3. Sand and Gravel Model – Net Bed Response of River at Bridge Locations.

Bridge	Watercourse Master Plan Bed Response	ASU Study Bed Response
Buckeye Road	Degradation	Aggradation
Southern Pacific Railroad	Degradation	Neither
Van Buren	Aggradation	Aggradation
Interstate 10	Degradation	Degradation
McDowell Road	Aggradation	Degradation
Indian School Road	Aggradation	Aggradation
Camelback Road	Degradation	Degradation
Glendale Avenue	Aggradation	Aggradation
Olive Road	Aggradation	Degradation
Grand Avenue	Degradation	Aggradation
Santa Fe Railroad	Degradation	Degradation
Bell Road	Degradation	Degradation
Beardsley Flume	Degradation	Degradation
Highway 74	No Change	Degradation

In the river reach from station 15+00 upstream to approximately station 23+00 the two studies are similar in respect under existing conditions in that the range of aggradation and degradation is approximately from zero to plus or minus two feet. The ASU study however indicates a greater depth of degradation near the Grand Avenue bridge (river station 16+40) than the Master Plan. The Master Plan study indicates a greater depth of degradation in the upstream reach of the river defined from station 25+00 upstream to 33+80. Note that the Master Plan study used a reduced sediment inflow (50%) to the Agua Fria River which is reflected in the degradation exhibited in this reach of the river compared to the ASU study.

A review of comparison of the sand and gravel model results of the two studies indicates a similar trend in river bed response in the reach of the Agua Fria River that includes the Corps of Engineers levees and existing grade control structures. From river station 14+00 downstream to the Gila River both sediment transport studies show similar trends in locations of aggradation and degradation of the river. The average bed change response is approximately plus or minus two feet in both studies.

There are two reaches of the river where major differences are exhibited in riverbed response between the two studies in the sand and gravel results. These reaches are between river stations 14+00 upstream to 17+00 and between river station 20+00 upstream to 25+50. The ASU study shows a greater depth of aggradation in these two reaches of the river than the Master Plan study. A review of the ASU modeling approach for the sand and gravel mining sites indicates that the pits are filling with sediment. The filling of the sand and gravel mining site pits is the reason for the relatively greater depths of aggradation in these two river reaches. Note that the ASU study hydrology has a 100-year flood flow duration of 8.8 days whereas the Master Plan 100-year flood event has a flow duration of just over one day. The difference in flood flow duration of the 100-year flood event may account for the difference in aggradation exhibited between the two studies.

4. Recommended Actions for Agua Fria Watercourse Master Plan

Table 4 provides recommendations for District actions for floodplain and erosion management of the Agua Fria River. The recommendations are limited to the scope of the sediment trend analysis of the Agua Fria River and the findings, results, and interpretations of the HEC-6 computer models, and the conclusions drawn from the analysis.

Finally, the **Agua Fria Watercourse Master Plan** considered the possibility of incorporating a constructed channel in the middle and upper reaches of the river. Due to the high implementation cost and concerns as to whether the channel would meet the objectives of the Watercourse Master Plan, other alternatives were viewed more favorably and included as part of this analysis. As such no specific analysis of a constructed channel was included in the sediment trend analysis. However, if a constructed channel option were to be considered in the future, we would encourage an evaluation of the channel's impact on sediment trend. Dependent on the hydraulic properties of the channel and assuming a stable channel design, we would expect minor variation in trend, especially within reaches transitioning from the channel.

Table 4. Recommendations for Sediment Transport, Floodplain Management, and Erosion Management for the Agua Fria River.

Recommendation Number	Description	Planning Horizon
1.	**Inspection and Monitoring.** Inspection of flood control infrastructure and bridged river crossings should be conducted on an annual, periodic, and flood event basis. Of particular concern is the monitoring of existing headcuts in the river channel and the migration and expansion of the headcuts over time. These headcuts have been identified in the "Lateral Migration Report" prepared by JEFuller Hydrology and Geomorphology. Scour stabilization measures should be inspected and monitored at bridge river crossings for performance and stability. Impacts from sand and gravel mine activities (encroachment on floodway, bridges, and critical hydraulic controls) should be monitored.	Immediate
2.	**Grade control structures.** The sediment trend analysis indicates the requirement for one grade control structure to be located downstream of Olive Avenue. This grade control structure is recommended for stability of the invert of the river bed channel and to potentially mitigate the effects from downstream sand and gravel operations.	1 – 5 yrs
3.	**Floodway Encroachment.** The sediment trend analysis indicated that the floodplain and floodplain fringe may be encroached upon for potential sand and gravel development. The FIS floodway should not be encroached upon further by existing operations or by future sand and gravel mining activities. No future mining applications in the floodway should be granted.	District decision – pending approval of encroachment policy
4.	**Sand and Gravel Mining Operations.** Future sand and gravel mining applications for floodplain use permits should demonstrate no adverse impact on the sediment transport behavior of the Agua Fria River as characterized in this Master Plan Sediment Trend Analysis. Based on Recommendation No. 4, sand and gravel operations located outside the floodway which incorporate low-flow levees should be permitted for floodplain use providing these mines meet District and watercourse master plan criteria. In-stream mining of the floodway should be discontinued and discouraged. Sand and gravel mining permit applications should include headcut analysis based on long-term flood flow duration and the 100-year flood event. Mining set-backs and pit slopes should be established to minimize the potential upstream migration of headcuts.	District decision - pending approval of sand and gravel policy
5.	**Sediment Transport Models.** The Agua Fria Watercourse Master Plan Sediment Trend Analysis HEC-6 models for the existing, sand and gravel, encroachment, and grade control structure conditions could be used for further detailed analysis of proposed flood control improvements, bridge analyses, channelization, sand and gravel mine permits and mine expansions. These models are sufficient as base sediment transport models from which to develop site specific conditions. Additional engineering and geomorphic analyses will be required in support of the detailed site-specific analyses.	Immediate

SECTION 1 INTRODUCTION

1. INTRODUCTION

Authorization

The Flood Control District of Maricopa County (District) authorized this Sediment Trend Analysis under contract FCD 99-24 for the Agua Fria River Watercourse Master Plan. Kimley-Horn and Associates, Inc. (KHA) conducted the sediment trend analysis for a 33.8-mile portion of the Agua Fria River from New Waddell Dam downstream to the Gila River, in Maricopa County, Arizona.

Purpose

The purpose of the Sediment Trend Analysis was to study and evaluate the long-term and flood response of the streambed profile based on existing, proposed, and alternative development conditions along and within the river. The sediment trend analysis is used as an analytical tool to evaluate the impact of future plans, including sand and gravel mining operations, on the response of the streambed profile. The sediment trend analysis, as a planning instrument, is sufficient to project trends and impacts of the river response on local infrastructure, but is not intended to be a site specific management tool for regulation of activity or the analysis and design of infrastructure.

Scope

The Sediment Trend Analysis is a complementary analysis to a broader investigation of the Agua Fria River as part of the Agua Fria River Watercourse Master Plan. Other technical and engineering studies conducted on behalf of the Master Plan include hydrology, river hydraulics, and geomorphology studies. All of these studies, together with their results and interpretations, provide an understanding of the behavior of the ephemeral Agua Fria River in an arid, urbanizing environment.

The Sediment Trend Analysis developed several sediment trend models to evaluate the streambed profile response to various conditions. The sediment trend models included developing an existing river conditions model, full sand and gravel model, and a full encroachment model. From the results and interpretation of these model conditions, with input from the other technical and engineering studies for the Master Plan, KHA developed recommended river stabilization measures and policy/procedures for the District to implement regarding sediment management in the Agua Fria River.

The limits of the sediment trend analysis begin at the downstream end of the Master Plan, which is the confluence of the Agua Fria River with the Gila River. The upstream limit of the sediment trend analysis is approximately at the diversion outlet downstream of New Waddell Dam. The total length of the study reach of the river is approximately 33.8 river miles.

The Sediment Trend Analysis was initiated by the collection of previous hydrologic, hydraulic, geomorphic, and sediment transport studies for the Agua Fria River. The reports and studies included, but were not limited to, existing bridge design reports, sand and gravel mining plans, levee and bank protection plans, geometric data for the river, flood insurance studies, collection of previous sediment gradation data, and aerial topographic mapping of the river.

KHA as part of the sediment trend analysis conducted a field reconnaissance of the Agua Fria River for the full study reach. The purpose of the field reconnaissance was to observe the existing conditions of the river including existing infrastructure, river stabilization measures, and sand and gravel operations. Locations for sediment sample collection sites were staked in the field during the field reconnaissance.

KHA conducted an evaluation of four sediment transport functions available in the Corps of Engineers HEC-6 "Scour and Deposition of Rivers and Reservoirs". The purpose of the evaluation was assist in the selection of a sediment transport function for the study reach of the Agua Fria River.

A sediment trend analysis requires data on the sediment bed material reservoir of the river available for sediment transport. Samples of riverbed sediment were collected from the river at approximately one sample per each half-mile of the river. A total of forty-two bed sediment samples were obtained. Geotechnical laboratory gradation analyses were conducted for each of the samples obtained from the field. The gradation curves resulting from the laboratory analysis are used as input sediment data in the development of the sediment transport models.

Report Organization

The Sediment Trend Analysis Report provides the documentation and summary of the sediment trend analysis purpose, approach and methodology, results and conclusions, and recommendations. The Report is divided into thirteen sections and six appendices. The appendices contains backup exhibits, figures, summary tables of results, and printouts of HEC-6 input data files.

The Report is formatted after the series of Sediment Trend Analysis Technical Memorandums prepared and submitted to the District during the course of the sediment trend analysis. This Report has updated several HEC-6 models reflected in the Technical Memorandums.

SECTION 2 PROJECT DESCRIPTION AND BACKGROUND

2. PROJECT DESCRIPTION AND BACKGROUND

Agua Fria River Watercourse Master Plan

The mission of the Flood Control District of Maricopa County is to provide flood protection to the citizens of Maricopa County. During the District's 40-year history, numerous flood control dams and detention basins have been constructed, miles of channels and levees have been built, significant flood hazard areas have been identified and mitigated, thousands of floodplain permits have been reviewed, and significant investment in future plans have been made.

In the past several years, citizens and community leaders have expressed a modified set of expectations for the District. The message is that the District should not waiver from its mission of flood protection, but that the District should provide flood protection in a manner that minimizes near-term and long-term public expenditures for flood control, while promoting solutions that are consistent with multi-objective visions for river corridors.

In order to meet these expectations, it was necessary for the Flood Control District to embark on an aggressive program of planning for the watersheds and watercourses in Maricopa County. These planning programs are focused on resolving existing problems while developing strategies that reduce the likelihood of creating future problems. To be successful, it is necessary for the District to develop and implement these plans before development occurs.

In the West Valley, many have held a vision of utilizing the Agua Fria and New River corridors as areas where open space could be conserved, and recreation opportunities created. This vision includes the use of trail systems that would link park sites with commerce and neighborhoods. Mr. John F. Long has been a promoter and spokesman for this vision, and has focused individuals, communities, agencies, and civic organizations on an ambitious plan called the West Valley Recreational Corridor.

With increased development pressures in the West Valley, it was necessary to place a high priority on a master plan for the Agua Fria River. The **Agua Fria River Watercourse Master Plan** was envisioned as an opportunity to develop a flood protection strategy before flooding problems became worse. Due to ongoing activities associated with the West Valley Recreation Corridor, it made sense for the District to evaluate how a recreation plan for the river would work in the context of flood protection objectives.

The Agua Fria River Watercourse Master Plan takes a comprehensive look at existing and anticipated flooding problems within the watercourse, and develops solutions that meet the long-term flood protection objectives called for by the citizens of Maricopa County.

Project Background

Like most of Maricopa County's major rivers, the Agua Fria River is an ephemeral river that has been dramatically changed in character by the construction of a major dam and the mining of groundwater. For years, the river has been a divide within the West Valley where occasional floodwaters flow and industrial uses are prevalent. As the West Valley

continues to grow and the Agua Fria River Floodplain continues to be encroached, questions have arisen on the sustainability of its flood control function and on its recreational and recharge opportunities.

The Watercourse Master Planning Statutes of the State of Arizona provide the District and communities with a specific authority to develop a master plan that will allow for the long-term management of the hydraulic and sediment system. In addition, the statute authorizes the District to consider groundwater recharge opportunities and allow for the adoption of a specific structural and/or nonstructural management strategy that defines the look and feel of the watercourse for the future. As a result, the District has retained Kimley-Horn and Associates, Inc., to develop a flood control plan that includes evaluation of recreation, riparian restoration, transportation, and recharge opportunities, and analyze their impacts on the flood control function of the Agua Fria River.

The primary purpose of the Agua Fria River Watercourse Master Plan (Watercourse Master Plan) is to establish a long-term plan for the management of the river. The specific goals of the master plan are flood control and public safety; conservation of habitat; and incorporation of multi-use recreational facilities. The Watercourse Master Plan will identify existing and potential flooding and erosion problems along the Agua Fria River and propose management strategies for reducing the threat to public safety.

At the same time, the Watercourse Master Plan will identify opportunities for multiple uses of the river corridor, such as recreation and habitat for wildlife. While not able to directly fund recreational facilities or habitat improvements, the District is interested in identifying and understanding multiple uses of the watercourse that are compatible with the fundamental principles of flood control.

This Sediment Trend Analysis Report is one of many components that make up the Watercourse Master Plan. The Watercourse Master Plan is a series of technical and planning documents that identify the existing conditions within the Agua Fria River watershed downstream from New Waddell Dam. The Watercourse Master Plan is being prepared for the Flood Control District of Maricopa County (District). The mandate of the District is to protect the public from flooding and flooding related erosion hazards. To that end, the District is limited to funding flood and erosion control projects.

Figure 2.1 and 2.2 provide a vicinity map and a project location map, respectively.

Description of Existing River Conditions

For planning purposes, the river is divided into three general reaches. These reaches are further divided into subreaches based on uniformity of land use and uniformity of visual characteristics. Most subreaches are one to two miles long.

Upper Reach - New Waddell Dam to Bell Road

At this time, the upper reach is generally undeveloped desert from the New Waddell Dam to Jomax Road. The area from Jomax Road to Bell Road has several large sand and gravel mines within the floodway and flood fringe. Residential development has occurred in the lower portion of this reach, primarily on the east overbank area. Some of the residential development had encroached the historic floodplain. Several other residential developments on both sides of the river are in the planning stages.

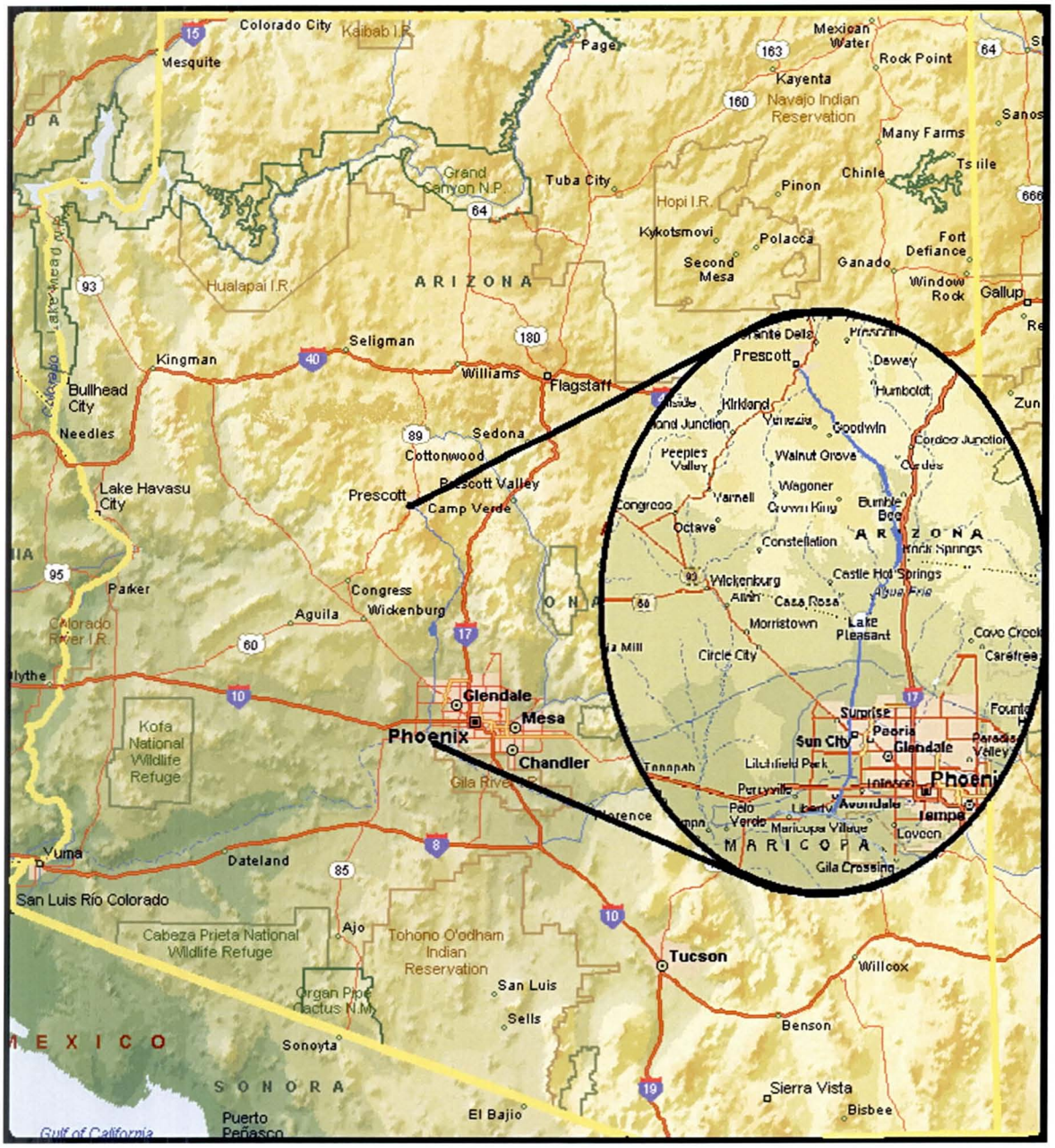

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Figure 2.1
Vicinity Map

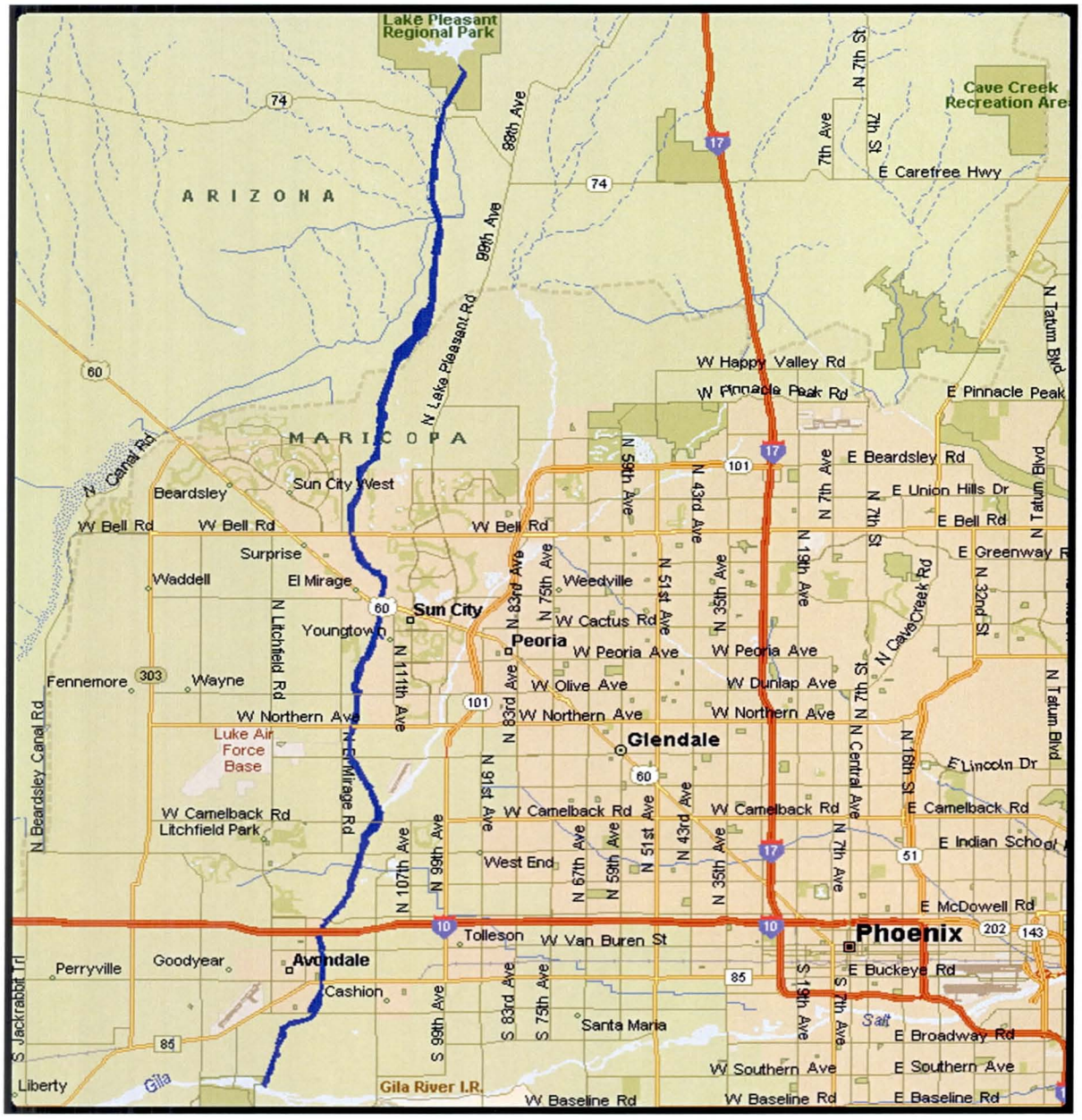

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Figure 2.2
Location Map

WEST VALLEY RECREATION CORRIDOR
AGUA FRIA WATERCOURSE MASTER PLAN

Kimley-Horn and Associates, Inc.

Middle Reach - Bell Road to the Confluence of the New River

Numerous sand and gravel mines within the floodplain and floodway characterize this reach. Residential development is common up to the boundary of the floodplain. New residential subdivisions are planned or under construction within the flood fringe. This reach is constricted and well incised.

Lower Reach - The Confluence of New River to the Confluence of the Gila River

From the New River confluence to Lower Buckeye Road, the Agua Fria River has been extensively channelized. The river is contained by levees from approximately Indian School Road to below MC 85. The levees were designed and constructed by the Corps to contain the standard project flood (SPF). This reach contains several grade control structures. With the exception of some utility crossings, bridges, and power pole bases, there is no development within the levees. Numerous agricultural fields are located within the floodplain downstream of MC 85.

Description of Subreaches by Major Reach Category

Lower Reach - Confluence of Gila River to Broadway Road

Land Use
Portions of this subreach are located within the City of Goodyear, the City of Avondale, and unincorporated Maricopa County. Land use along the Agua Fria River is entirely agricultural.

Visual Characteristics
The confluence of the Agua Fria River and Gila River represents one of the most scenic areas along the Agua Fria River. A portion of the channel is reserved as a retention area. Lush hydric riparian wetlands with reeds, willows, and cattails transition into mesic riparian areas with mesquite bosques and cottonwoods. A large amount of tamarisk is also noted. Vast areas within the floodplain are agricultural areas. The Estrella Mountains form a spectacular background.

Flooding
Both the Agua Fria and the Gila Rivers affect the confluence region. The limits of the Gila River floodplain extend north to the vicinity of Broadway Road. Therefore, the floodplain in this subreach may be inundated by flows from either river.

Vegetation and Habitat
The confluence area includes significant vegetation, primarily resulting from irrigation tailwater and a generally elevated groundwater table. The vegetation provides habitat for birds and other small mammals. The adjoining land use is predominantly agricultural; most of which is within the Agua Fria or Gila floodplain. Citizens in this reach are concerned about backwater flooding resulting from the Agua Fria draining into the Gila. Additionally, there are two new flood control channels being proposed that will bring drainage from the east into the Agua Fria River.

Sand and Gravel
There is one sand and gravel operation within this reach of the Agua Fria River. This active operation at Broadway Road on the westside of the river is within the regulatory floodway and flood fringe.

Lower Reach - Broadway Road to MC 85

Land Use
This subreach is located within the City of Avondale and unincorporated Maricopa County. Land use between Broadway and Lower Buckeye Roads is mostly vacant except for some nearby agricultural fields. North of Broadway Road, the riverbank is stabilized by a soil cement levee on the westside. Outside the west levee there are residential developments. On the eastside, land use is a mixture of vacant, agricultural, residential, industrial, and commercial.

Flooding
The westside of the river is protected from flooding by the levee. On the eastside, development is outside the 100-year floodplain. Lower Buckeye Road is an at-grade crossing and has experienced flooding during heavy storms.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Lower Reach – Buckeye Road (MC 85) to Interstate 10

Land Use
This subreach is almost entirely within the City of Avondale. A small portion of the southern end is in unincorporated Maricopa County. Levees extend along the entire subreach on both sides. Land use outside the levees between Buckeye Road (Maricopa County 85 or MC 85) and I-10 is primarily agricultural or vacant. The Southern Pacific Railroad (SPRR) is adjacent to the north side of MC 85/Buckeye Road. Coldwater Park is located north of MC 85 outside the west levee.

Visual Characteristics
Wide floodplain area with structured levees along both banks. Large electric pylons on wide concrete bases run along the corridor as a dominant feature. Also dominant is the railroad bridge. The floodplain is sparsely vegetated with ephemeral type species. Areas along the riverbed with localized surface run off are more vegetated. Coldwater Park abuts the river corridor.

Flooding
The Litchfield detention basins drain from the west to the Agua Fria River in the vicinity of Van Buren Street. However, these basins are oversized and are not expected to impact flooding in the Agua Fria River. The I-10 outfall channel drains to the Agua Fria River on the eastside. No historic flooding problems have been recorded at these locations, although this area could be subject to flooding from large inflows during heavy storms. Flooding would be limited to within the levees and backwater effects within the I-10 Channel area.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Lower Reach - I-10 to Indian School Road

Land Use
This subreach is located within the City of Avondale and unincorporated Maricopa County. The subreach has levees on both sides of the river. Outside the levees, land use between I-10 and Thomas Road has heavy residential development on the westside and a mix of vacant, agricultural, and residential/commercial on the eastside. Between Thomas and Indian School Roads, there is heavy industrial use (sand and gravel operations) adjacent to the levees. Further east are fully developed residential areas and open space.

Visual Characteristics
This portion of the river is channelized with structural levees on either side. The floodplain is flat and nondescript. Ephemeral channel vegetation is sparse and scattered. An outflow channel leads into the Agua Fria, south of the I-10 freeway. Portions of the channel subject to this flow are well vegetated and show a riparian character. New construction is seen on the west bank of the river.

Flooding
Both sides of the river are protected from flooding in the Agua Fria River by the levees.

Groundwater Recharge
The City of Avondale recharge facility is located north of McDowell Road, just outside the east levee. The facility is permitted to recharge up to 10,000 acre-feet per year for 20 years. This facility is recharging Avondale's CAP and SRP waters using infiltration basins. The water is delivered though SRP's Grand Canal and purified in the constructed wetlands at the Crystal Gardens subdivision.

Sand and Gravel
There are no active sand and gravel operations within the southern portion of this reach; however, the northern portion is heavily mined. There are two large sand and gravel operations extending from Thomas Road to Indian School Road. These active operations, one on each side of the river, are protected by levees and are outside the 100-year floodplain.

Lower Reach - Indian School Road to Confluence of New River

Land Use
This subreach is located within the City of Avondale, City of Phoenix, and unincorporated Maricopa County. The west levee terminates north of Indian School Road. Sand and gravel operations are located on the westside of the river outside the 100-year floodplain. On the eastside, the levee extends further north and connects to the Camelback Ranch levee. Outside the east levee, land use includes vacant land, agricultural, open space, and residential development, including the planned Camelback Ranch and the Villa de Paz developments. Additionally, there are sand and gravel operations and agricultural uses on the eastside.

Visual Characteristics
The confluence of Agua Fria River and the New River at Camelback Road exhibits a vast floodplain with scant vegetation. There is indication of heavy ATV use in this area.

Flooding
This subreach is subject to flooding from the New River. In addition, runoff enters the Agua Fria River from Colter Channel just north of Camelback Road. The eastside is protected along the entire subreach by the levees; the westside has no levee north of Indian School Road.

Sand and Gravel
This reach of the Agua Fria River is heavily mined by sand and gravel operations. The active sand and gravel operation, which extends from Indian School Road to Camelback Road on the westside of the river, is outside the 100-year floodplain. There are, however, mining pits extending from Indian School Road to Camelback Road within the regulatory floodway. These pits appear to be inactive, but may now be a part of the operation to the west. Additionally, there is a mining pit on the eastside of the river just north of Indian School Road that is outside the 100-year floodplain. There are three active sand and gravel operations at the New River confluence. These operations extend from Camelback Road to Bethany Home Road on the westside of the river and are within the flood fringe.

Middle Reach - Confluence of New River to Glendale Avenue

Land Use
This subreach is located within the City of Glendale, a portion of Luke Air Force Base, and unincorporated Maricopa County. Land uses in this subreach consist of vacant land and sand and gravel operations.

Flooding
Because of lack of development, current flooding concerns in this subreach are limited to localized problems within the sand and gravel operations.

Sand and Gravel
There is one sand and gravel operation just north of Bethany Home Road on the eastside of the river. This active operation is within the flood fringe.

Middle Reach - Glendale Avenue to Olive Avenue

Land Use
This subreach is located within the City of Glendale, the City of El Mirage, and unincorporated Maricopa County. Land use in this subreach is industrial. There are active sand and gravel operations along the entire subreach. Additionally, the City of Glendale's municipal airport, landfill, recycling facility, and wastewater treatment plant are in the vicinity.

Visual Characteristics
A lush riparian area is created along the western edge of the river channel where water flows in from the Airline Canal and Dysart Drain further north. A high occurrence of desert broom and tamarisk is noted along the drainage area. Sand and gravel operations exist on the east floodplain. Apart from the drainage ways, the river channel

is vegetated with scattered ephemeral channel type vegetation. Indications of heavy ATV use and equestrian use are observed.

Flooding
Northern Avenue is an at-grade crossing and is subject to flooding during heavy storms. Because of lack of development, flooding in the remainder of this subreach is limited to localized problems within the sand and gravel operations.

Groundwater Recharge
The City of Glendale West Artificial Recharge Facility is located just north of the confluence with New River, on the east bank. This pilot project was recently constructed and will recharge up to 10,000 acre-feet over a two-year period. This facility will utilize basins, trenches, vadose zone wells, and injection wells to recharge treated effluent. (Vadose zone wells deliver water to the unsaturated interval between the land surface and the water table. Injection wells deliver water directly to an aquifer, below the water table.)

Sand and Gravel
This reach of the Agua Fria River is heavily mined by sand and gravel operations. There is a large active operation extending from Glendale Avenue to Northern Avenue that is within the regulatory floodway and flood fringe. There are two active operations midway between Northern Avenue and Olive Avenue, one on each side of the river. The operation on the westside is outside the 100-year floodplain, while the operation on the eastside is within the flood fringe.

Middle Reach - Olive Avenue to Cactus Road

Land Use
This subreach is located within the City of El Mirage, the Town of Youngtown, and unincorporated Maricopa County. Land use in this subreach is mostly residential and vacant. The Pueblo El Mirage Country Club and golf course is located between Peoria Avenue and Cactus Road, as well as the El Mirage Wastewater Treatment Plant.

Visual Characteristics
A residential community adjoins the river very closely, protected by a steep embankment. The community has been designed in such a way that its recreation areas adjoin the river. However certain design elements like roads, fences, and non-native planting materials deviate from the natural landscape character. The river corridor has been used as a continuous uninterrupted space for unattractive electric pylons that dominate the landscape.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Middle Reach - Cactus Road to Grand Avenue

Land Use
This subreach is located within the City of El Mirage on the westside and the Town of Youngtown on the eastside. Land use in this subreach is vacant, residential, and industrial. Residential developments, existing and planned, line both sides of the river. The El Mirage Landfill is located on the westside, south of Grand Avenue.

Visual Characteristics
A residential community (Youngtown) adjoins the river very closely, atop a high embankment on the eastside of the river. The community has been designed in such a way that its recreation areas adjoin the river. However, certain design elements like roads, fences, and non-native planting materials deviate from the natural landscape character. The river corridor has been used as a continuous uninterrupted space for unattractive electric pylons that dominate the landscape.

Flooding
As noted below, the El Mirage Landfill has experienced flooding problems from the Agua Fria River in the past, including losing a portion of the landfill during heavy flooding.

El Mirage Landfill
This is easily the most problematic subreach within the study area. The parallel bridges at Grand Avenue and the railroad provide a relatively narrow opening. Flow is constricted through the opening, causing velocity to increase. This leads to increased potential for erosion of the channel bed and the riverbanks downstream from the bridges. The west bank is formed by a closed (not currently in operation) landfill. The landfill embankment rises approximately 30 feet above the channel bed at a steep slope. The landfill embankment is protected to a certain extent from stream erosion by dumped concrete riprap.

Little factual information is known about the landfill. Portions of the landfill washed away during a 1980 storm event. The existing riprap was added after the storm. It is not possible to determine at this time if the riprap is adequate to protect the landfill in a 100-year storm. The adequacy of the riprap will ultimately be dependent on the depth to which the riprap is buried below the channel bed. Definitive records of the riprap construction were not located during a record search. The true footprint of the landfill is also indeterminate. It is possible that portions of the landfill are buried within the main channel. It may be necessary to perform field investigations, such as drilling, to determine the extent of the landfill and the adequacy of the erosion protection.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Middle Reach - Grand Avenue to Bell Road

Land Use
This subreach is located within the City of El Mirage, the Town of Youngtown, the City of Surprise, and unincorporated Maricopa County. Sand and gravel mining predominates land use in this subreach, with heavy residential development, including Sun City flanking the mining operations.

Visual Characteristics
Youngtown is perched atop a high embankment on the eastside of the river. The community has been designed in such a way that its recreation areas adjoin the river. However certain design elements like roads, fences, and non-native planting materials deviate from the natural landscape character. The west bank is dominated by the El Mirage landfill. The landfill embankment rises approximately 30 feet above the riverbed. It is armored with a riprap surface. The riprap consists of broken pieces of structural

concrete rubble. The rubble is easily identified as pieces of pipe, concrete slabs, sections of curbing, and small structures. The river corridor has been used as a continuous uninterrupted space for unattractive electric pylons that dominate the landscape.

Flooding
The focus of flooding concerns in this subreach is the contraction of the river at the Grand Avenue and parallel Santa Fe Railroad (SFRR). It is believed that breakout of flow occurs on the westside during the 100-year flood. On the eastside, the Sun City Drain conveys runoff from Sun City west of Del Webb Boulevard to the Agua Fria River along the north side of Grand Avenue. On the westside, Lizard Acres Wash drains to the Agua Fria River north of Greenway Road.

Groundwater Recharge
The City of Surprise South WWTP lies two miles west of the Agua Fria River between the alignments of Greenway Road and Thunderbird Road. This facility is permitted to recharge up to 3,584 acre-feet per year, for 20 years of treated effluent through constructed basins.

Sand and Gravel
This reach of the Agua Fria River is very heavily and extensively mined. There is a very large sand and gravel operation extending from Grand Avenue to Bell Road. This active operation, which spans both sides of the river, is within the regulatory floodway and flood fringe.

Upper Reach - Bell Road to Beardsley Road

Land Use
This subreach is located within unincorporated Maricopa County, but is flanked on the westside by Sun City West and on the eastside by the City of Surprise. Land use in this subreach is residential and includes the Coyote Lakes residential golf course community along the entire eastside.

Visual Characteristics
This is an urbanized area. Residential communities are located adjacent to the river. Flood protection embankments are fairly high along the west bank, south of the Bell Road Bridge. The Coyote Lakes subdivision is protected by a levee on the east bank, north of the bridge. The floodplain is very wide and indistinctive with typical xeric/ephemeral type vegetation scattered throughout.

Flooding
On the eastside of the river, Coyote Lakes has encroached within the floodplain. It is protected from flooding by a levee, and there is vacant land within the remainder of the flood fringe. On the westside, the McMicken Dam outlet wash drains to the river south of Beardsley Road.

Sand and Gravel
There are no sand and gravel operations within this reach of the Agua Fria River with the exception of one pit located just below Beardsley Road on the eastside of the river. This pit, which belongs to the operation located just north of Beardsley Road, is outside the 100-year floodplain.

Upper Reach - Beardsley Road to Pinnacle Peak Road

Land Use
This subreach is located within unincorporated Maricopa County. The City of Peoria boundary is about one-half mile to the east. Land use is nearly fully developed residential within the Peoria city limits on the eastside. The Citizens Utilities Wastewater Treatment Plant is located near Beardsley Road. On the westside, there are isolated residential developments in the southern portion and vacant land in the northern portion. Within the river, there are large sand and gravel mining operations.

Visual Characteristics
The floodplain is flat and broad with heavy sand and gravel mining activity on the north and south sides. Residential areas adjoin the corridor at a distance. Suburban areas lie towards the east and more rural areas to the west of the river. Typical ephemeral channel vegetation that includes snakeweed and creosote is seen.

Flooding
There is an at-grade crossing of the river at Rose Garden Lane. This road is flooded during heavy storms and isolates residents on the westside of the river.

Groundwater Recharge
Two recharge facilities are located on the eastside of the river, just north of Beardsley Road: the Del Webb Sun City West and City of Peoria Beardsley recharge facilities. Both facilities are outside the Agua Fria River Floodplain. These projects have been permitted for 20 years and recharge effluent through basins (constructed facilities). Sun City West and the City of Peoria recharge facilities are permitted to recharge up to 3,042 and 2,470 acre-feet per year, respectively.

Sand and Gravel
The southern portion of this reach is heavily and extensively mined. There is a sand and gravel operation between Beardsley Road and Rose Garden Lane spanning both sides of the river. This active operation is within the regulatory floodway and flood fringe. There is an operation on the westside of the river extending from Rose Garden Lane to north of Deer Valley Road. This active operation is outside the 100-year floodway. To the west of this operation, there is an active mining operation across the Deer Valley Road alignment on the westside of the river. This operation is within the regulatory floodway and flood fringe.

Upper Reach - Pinnacle Peak Road to Jomax Road

Land Use
This subreach is located within unincorporated Maricopa County. The City of Peoria boundary is more than a mile to the east. There is a large sand and gravel mine north of Pinnacle Peak Road on the eastside. The area is predominantly undeveloped except for isolated residential areas south of Jomax Road.

Visual Characteristics
The river channel is incised, evident from the eroded banks seen on either side. The riverbed is rocky and is well vegetated by riparian species. Scattered clumps of palo verde and mesquite trees grow with creosote, snakeweed, and desert broom. Saguaros

are seen to grow in the higher areas. A wide variety of wildlife is observed. A sand and gravel mine is located south of Jomax Road. Visual variety created by the river alignment, the vegetation and textures make this a very interesting stretch of the river.

Flooding
Twin Buttes Wash drains to the Agua Fria River on the westside, just south of Happy Valley Road. Immediately south of the Twin Buttes Wash confluence, Hatfield Road crosses the river at grade. This road crossing could be impacted by flooding of the Agua Fria or Twin Buttes Wash. Caterpillar Tanks Wash drains to the Agua Fria River south of Jomax Road.

Sand and Gravel
There is one sand and gravel operation in the southern portion of this reach. This active operation is north of Pinnacle Peak Road on the eastside of the river and is within the flood fringe.

Upper Reach - Jomax Road to Dixileta Drive Alignment

Land Use
This subreach is located within unincorporated Maricopa County and the City of Peoria. The area is generally undeveloped, with isolated residential housing near Jomax Road and agricultural uses on the eastside south of the Dixileta Drive alignment. There are two sand and gravel mining operations in this subreach. The Marionette Heading Canal is located on the eastside at Jomax Road. Additionally, Calderwood Butte, a highly disturbed rock outcropping with Native American ruins is located north of Jomax Road on the eastside of the river.

Visual Characteristics
Wide sandy expanses of the floodplain adjacent to rock outcroppings dominate the immediate vicinity of Calderwood Butte. The rock outcropping is fairly unique in terms of its color and the manner in which it borders the floodplain. Such outcroppings are rare along the river. However, the current usage of the area includes ATV users and an unofficial target range. The target range creates a menace in terms of safety and trash accumulation. Remains of the historic Marionette Heading Canal can be seen at the base of the butte. Dumped concrete rubble was used to reinforce the outer bank of the canal.

Flooding
Jomax Road is an at-grade crossing and would be inundated during a major storm. Several washes drain to the river on the eastside within this subreach.

Groundwater Recharge
The Central Arizona Project (CAP) has begun construction of a groundwater recharge facility in the upper reach of the Agua Fria. It is a permitted facility, with managed and constructed components known as the Agua Fria Recharge Project (AFRP). The AFRP will be capable of recharging up to 100,000 acre-feet per year of CAP water for 20 years. CAP delivers water to the facility through the blow-off structure in the CAP siphon under the Agua Fria River. The water from the siphon flows through the managed portion of this facility for four miles to Jomax Road. The volume of water discharged from the siphon is metered and monitored as it flows downstream and infiltrates into the riverbed. At the southern termination of this managed reach, basins are being built to capture and

recharge the water that has not infiltrated or been lost to evapotranspiration through the managed reach. These basins are to be developed within the Agua Fria floodplain, but outside the main flow channel. The facility is anticipated to store excess CAP water for future recovery and use.

Sand and Gravel
There are two sand and gravel operations near the Pinnacle Vista Drive alignment on the westside of the river. The operation to the south is outside the 100-year floodplain. The active operation to the north is encroaching upon the flood fringe. There is an active operation at the Dixileta Drive alignment on the westside of the river that is outside the 100-year floodplain.

Upper Reach - Dixileta Drive Alignment to the CAP Canal

Land Use
This subreach is located within unincorporated Maricopa County and the City of Peoria. The area is undeveloped with some agricultural on the eastside north of the Dixileta Drive alignment. The Beardsley Canal crosses the river just south of the CAP Canal crossing.

Visual Characteristics
The most dominant feature in the vicinity of Jomax Road is a Citrus grove. The continuous rows of bright green foliage create an interesting foreground for the mountains in the backdrop. The transition to the upland areas is evident from the higher occurrence of rock outcroppings and Saguaros. Beardsley Canal is visible in the foreground as a bench. Metal Irrigation pipes greatly contrast with the surrounding landscape. The river profile is fairly indistinct near the CAP canal, more constricted on the north side than on the south. An interesting feature that dominates the area is the Beardsley Canal Bridge crossing over the river via a unique arched metal bridge. Vegetation is typically xeric/mesic. Natural landforms in the vicinity of the bridge are altered by concrete construction related to the bridge crossing. Typical floodplains and flats dominate the field of vision.

Flooding
Flooding concerns are minimal in this subreach due to current undeveloped conditions. Several washes drain to the river on the eastside.

Groundwater Recharge
The managed reach of the CAP's recharge facility crosses this subreach. Being a managed reach, it will appear as a natural stream course. At the present time, CAP intends to maintain the reach intensively. Brush and trees are being removed to reduce water loss to evapotranspiration. Removing vegetation from the channel also permits the water to move through the channel more rapidly, reducing infiltration. The objective in any permitted groundwater recharge facility is to maximize the recharge credits. Water recharged or "lost" in the managed reach is eligible for only half the recharge credits of a constructed facility. The more water transported to the constructed portion of the facility, the higher the recharge credits.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Upper Reach - CAP Canal to Cloud Road

Land Use
This subreach is located within the City of Peoria except for a small portion at the CAP Canal that is in unincorporated Maricopa County. The area is primarily undeveloped. A gravel road extension of the Carefree Highway alignment crosses the river and ends on the west bank. Canyon Raceway is south of the Carefree Highway extension about one-half mile to the east. Additionally, the Pleasant Valley Airport is located two miles east of the river along the Carefree Highway extension. Finally, an explosives company has leased land along the river within this subreach.

Visual Characteristics
A typical stretch of the river with wide floodplains defined by fairly prominent benched banks. Xeric riparian vegetation dominates the floodplains and flats. Occasional interesting rock outcrops occur in the midground. Cowtown and Canyon Raceway are adjacent to the river. Waddell Dam appears to the north.

Flooding
Flooding concerns are minimal in this subreach due to current undeveloped conditions. Several washes drain to the river in this subreach.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Upper Reach - Cloud Road to New Waddell Dam

Land Use
This subreach is located within the City of Peoria. The area is primarily undeveloped. SR 74 crosses the river a mile south of the New Waddell Dam. North of the dam are Lake Pleasant, the Maricopa County Lake Pleasant Park, and the Lake Pleasant Visitor Center and Museum. South of the dam on the eastside is Hank Raymond Lake. The Beardsley Canal and Waddell Canal straddle the river on the eastside.

Visual Characteristics
Deeply incised channel defined by rock cut banks. Spectacular area with interesting rock formations interspersed with abundant hydric/mesic riparian vegetation. Pools of water stand within the rocky bed of the river with large rocky boulders in between. Bulrushes, grasses, reeds, and other riparian species are abundant. Saguaros occupy the elevated rocky areas. Increased wildlife activity is observed.

Flooding
Flooding concerns include discharges from the New Waddell Dam and from Morgan City Wash, located on the eastside of the river, south of the dam. Morgan City Wash is crossed by the Bypass Road near its confluence with the Agua Fria River.

Sand and Gravel
There are no active sand and gravel operations within this reach of the Agua Fria River.

Sediment Trend Analysis

The Agua Fria River is characterized as an ephemeral alluvial desert stream due to the impact of the water storage capabilities of the New Waddell Dam and local climatology. The presence of a significant amount of water is only apparent in the river during storm events on the upstream watershed. When flooding does occur in the river, the duration of the flooding is relatively short in duration. The 100-year flood event in the Agua Fria River is predicted to only last approximately less than several days according to flood studies conducted by the U.S Army Corps of Engineers.

The Agua Fria River is also characterized as a sand and gravel stream. The moveable bed materials in the river are comprised primarily of sands and gravels with some finer and coarser materials interspersed throughout the study reach. The bed material of the upper reach of the river is coarser than the lower reaches of the river. This characteristic is primarily due to the sediment trapping capability of the New Waddell Dam and the local geology of the upper reach (narrow canyon/channel and presence of bedrock). The lower reach of the Agua Fria River is predominately sands with some gravel lenses.

The anticipated general behavior of the Agua Fria River stream profile in response to long-term channel forming flows or short-term floods such as the 100-year flood is to degrade and move sediment from the upper reaches to the lower reaches. It is anticipated that flood flows in the upper reach of the river are relatively devoid of sediment load compared to the lower reach of the river. This relatively sediment hungry floodwater in the upper reaches of the river tends to obtain sediment from the bed and banks of the river. The acquisition of sediment from the bed and banks of the river tends to lower the streambed channel profile and widen the river through lateral erosion. Some of the sediment accumulated in the upper reaches of the river tends to settle out or deposit in the lower reaches of the river. This change in bed material from coarse to finer materials in the upper reaches to the lower reaches is readily observable on the Agua Fria River today.

The sediment trend analysis for the Agua Fria River will attempt to verify anticipated river channel response to long-term channel forming discharges and to short-term flood events such as the 100-year flood. The sediment trend analysis will be used to predict the anticipated behavior of the Agua Fria River through the use of a sediment transport computer model developed by the U.S Army Corps of Engineers. The computer model is known as HEC-6 "Scour and Deposition of Rivers and Reservoirs". The HEC-6 model can predict anticipated riverbed channel responses to changes in river hydrology, sediment characteristics, and channel morphology. These responses take the form of changes in riverbed channel elevations through aggradation or degradation of sediment in river subreaches and through changes in channel cross section geometry.

Limits of Study

The limits of the sediment trend analysis are bounded by the Gila River on the south (confluence with the Agua Fria River) and on the north by the New Waddell Dam. The length of the study is approximately 33.8 river miles. Several tributaries exist along the study reach of the Agua Fria River. The most notable tributary is the New River, which joins the Agua Fria River south of the Glendale Airport at the alignment of Missouri

Avenue (midway between Bethany Home Road and Camelback Road). Other tributaries include Morgan City Wash, McMicken Dam Outfall, and the I-10 collector drain. Only New River, however, is incorporated into the sediment trend analysis of the Agua Fria River. Previous hydrologic and hydraulic studies of the Agua Fria River/New River system indicate that the New River has more of a influence on the Agua Fria River south of the New River confluence than does the Agua Fria River itself.

The sediment trend analysis is used as a planning tool to predict riverbed channel responses to a long-term channel forming discharge and to short term flood flow. The short-term flood flow selected to evaluate the river response is the 100-year flood event as developed by the U.S. Army Corps of Engineers. The long-term channel forming discharge selection was based on the potential discharge from the New Waddell Dam under the 100-year flood event. The Corps of Engineers have estimated that the New Waddell Dam may discharge a flood flow of approximately 9,000 cubic feet per second into the Agua Fria River. The duration of this flood flow to simulate long-term behavior was selected by KHA in concurrence with the District (see Section 3 – Study Approach and Methodology). The sediment trend analysis, as a planning instrument, was developed to support the formation of planning level recommendations for the Agua Fria Watercourse Master Plan. The sediment trend analysis was not developed to provide site specific design details. Future designers are cautioned that it will be necessary to incorporate site specific data in order to refine estimates of channel bed change in or around the project/study site. Acceptance of these models for site design or modification of these models for site design should only be undertaken by a Professional Engineer with demonstrated competence in river mechanics and sediment transport, and the use remains the responsibility of the Professional Engineer.

SECTION 3 STUDY APPROACH AND METHODOLOGY

3. STUDY APPROACH AND METHODOLOGY

This section of the report documents the approach, methodology, and assumptions for the sediment tend analysis of the Agua Fria River. The basic steps in conducting the sediment trend analysis included data collection, field reconnaissance, collection and analysis of bed material sediment samples, development of hydraulic and sediment transport models, and documentation and interpretation of the results and conclusions.

Data Collection and Review

The sediment trend analysis was initiated by the collection, assimilation, and review of data and previous hydrologic, hydraulic, sediment transport, and geomorphic studies. The pertinent and relevant data collected used as part of this study is summarized below.

- Flood Insurance Study of the Agua Fria River, Flood Control District of Maricopa County. (1996 FIS). The District conducted a flood insurance study for the Agua Fria River that delineated the regulatory 100-year floodplain and floodway limits of the river. The limits of the study were from the Gila River to the New Waddell Dam. The study used the Corps of Engineers water surface profile computer model HEC-2 to compute river hydraulics (flow depths, flow velocity, channel topwidths) and to determine floodplain and floodway limits. The FIS study used aerial topographic mapping to develop channel cross sections of the river and establish cross section and river geometry.
- Agua Fria River Sediment Transport Study, Arizona State University. (February 1994). The Civil Engineering Department at Arizona State University conducted this study on behalf of the District. The study limits were from the Gila River confluence to the Waddell Dam. The study examined the river channel response to the 50-, 100-, 200-, and 500-year floods under post-New Waddell Dam. The discharges for the study were derived from an U.S. Army Corps of Engineers hydrology study of the New Waddell Dam (September 1988). The ASU study evaluated the ten available HEC-6 sediment transport functions in order to select an appropriate transport function. The evaluation resulted in the selection of the Toffaleti-Schoklitsch sediment transport function for use in the sediment transport study. The ASU study developed several models that evaluated existing conditions, sand and gravel mining operations, and a low-flow channel.
- Agua Fria River Study New Waddell Dam to Gila River Confluence, Arizona. Hydrologic Evaluation of Impacts of New Waddell Dam on Downstream Peak Discharges in the Agua Fria River. U.S. Army Corps of Engineers. (July 1995). The purpose of this study was to determine the impacts of New Waddell Dam on the discharge frequency relationships (with project conditions) for the Agua Fria River between New Waddell Dam and the Gila River under 1995 conditions. The discharges presented in the report update those previously provided in the September 1988 hydrologic study.
- Phoenix City Streams, Arizona – Agua Fria River – Hydrology. U.S. Army Corps of Engineers. (April 1981). This report presents the hydrology for the Agua Fria River in support of General Design Memorandum studies for the Phoenix City Streams Project. The report had three major objectives: (1) to outline the basic meteorological and hydrologic characteristics of the study area; (2) to present the methods and techniques used to model the runoff process and to determine

discharge frequency relationships; and (3) to provide standard project flood and discharge frequency values at selected locations for future conditions of development with the authorized flood control plan.

- Agua Fria River Study. Flood Control District of Maricopa County. (May 1982). This study was prepared by Willdan Associates for the District. The study was conducted to inventory the existing conditions along the Agua Fria River from the Beardsley Flume to the confluence with the Gila River and to develop feasible solutions to the flooding problems associated with the Agua Fria River in this reach.
- Standard Project Flood, Agua Fria River Between the New River Confluence and the Gila River with New Waddell Dam in place. U.S. Army Corps of Engineers. (January 1989). The report determined the Standard Project Flood (SPF) on the Agua Fria River between the New River confluence and the Gila River, for future conditions with New Waddell Dam and Phoenix Projects in place.
- Final Report – Hydraulic and Geomorphic Analysis of the Agua Fria River. Simons, Li & Associates, Inc. (September 1983). SLA conducted this study on behalf of the District. This study conducted a system analysis of the Agua Fria River from its confluence with the New River to its confluence with the Gila River. The system analysis included an assessment of the existing conditions in the study reach, and an assessment of proposed flood control projects between Camelback Road and Buckeye Road. The report provided baseline information on hydraulic and sediment transport characteristics of the Agua Fria River for future flood control projects. SLA conducted a sediment routing analysis to determine the Agua Fria River response to the 100-year flood.
- Final Report – Systems Analysis and Conceptual Design of Channelization in the Agua Fria River. Simons, Li & Associates, Inc. (October 1983). SLA conducted this study on behalf of the District. This report provided an assessment of proposed flood control projects between Camelback and Buckeye Roads. The conceptual design measures of the Agua Fria River channelization between Camelback and Buckeye Roads along with preliminary costs and quantity estimates were included. This study examined flood control project within the study reach for the 100-year flood.
- Recommendations Regarding Bank Protection, Utility Crossings, and Maintenance Anticipated for Channelization Between I-10 and Thomas Road. Simons, Li & Associates, Inc. (November 1983). SLA conducted this study on behalf of the District. SLA presented recommendations regarding bank protection, utility crossings, and maintenance anticipated for channelization between I-10 and Thomas Road. The report included discussions regarding levee and protection of levees between I-10 and Thomas Road, structural measures necessary in the channelized portion of the river, analysis of utility crossings and their present adequacy, suggested sand and gravel mining limitations for in-stream and floodplain operations between Camelback and Buckeye Roads, and inspection programs necessary to periodically identify levee problems. SLA recommended no in-stream sand and gravel mining between Camelback and Buckeye Roads unless it was to remove isolated bars and gravel islands that may develop.
- Final Report – Standard Project Flood Analysis and Conceptual Design of Channelization in the Agua Fria River. Simons, Li & Associates, Inc. (May 1984). SLA conducted this study on behalf of the District. SLA conducted (1) a Standard Project Flood (SPF) analysis on the Agua Fria River between the confluence with the New River and the confluence with the Gila River; (2) determined conceptual design measures, preliminary costs and quantity estimates between Camelback Road and Buckeye Road for the SPF; and (3) provided design plans and contract documents

for pier protection of the Indian School Road Bridge. This study located proposed grade control structures between Camelback and Buckeye Roads.

- Analysis of Alternative Alignment for Agua Fria River Channelization, Interstate 10 to Buckeye Road. Simons, Li & Associates, Inc. (October 1984). SLA conducted this study on behalf of Ball, Ball and Brosamer, Inc (BBB). SLA in their previous work for the District recommended a design for the study reach between Buckeye Road and I-10 that called for the channel bottom width to 1410 feet at I-10 gradually narrowing to 1100 feet at the Southern Pacific Railroad Bridge. BBB, a firm having land development interest in the area, suggested an alternative alignment, which narrowed the channel to 1100 feet at the drop structure downstream of the I-10 Bridge and maintained a constant width through Buckeye Road. This report summarizes the results of the alternative analysis and provides recommendations for possible modifications to the original recommended alignment.
- Application of HEC-6 to Ephemeral Rivers of Arizona. Arizona State University (January 1986). The Civil Engineering Department at ASU prepared this study on behalf of the Arizona Department of Transportation. The U.S. Army Corps of Engineers computer program HEC-6 was applied to three ephemeral rivers of Arizona – Agua Fria River, Salt River, and Rillito Creek. The input data development techniques and results from these three case studies were used to develop general input data development/calibration strategies. The theoretical and numerical bases of HEC-6 were reviewed and documented to clarify and further define the important aspects of the routing portion of the program. The overall result of the study is a document designed to aid users in the applications of HEC-6 to ephemeral rivers of Arizona.
- Effect of In-Stream Mining on Channel Stability. Simons, Li & Associates, Inc. (June 1989). SLA prepared this study on behalf of the Arizona Department of Transportation. The study presented a comprehensive treatment of the technical and non-technical issues related to the impacts of in-stream sand and gravel mining upon the stability of river systems in Arizona. Major categories addressed included engineering parameters, long-term procedures, short-term procedures, and river response simulation procedures. The physical processes associated with sand and gravel mining and the impacts of sand and gravel mining on the stream, rivers, and riverine structures are documented. Methods have been formulated and presented for evaluating both short-term and long-term response of sand and gravel mining on river behavior, bridges, and associated river control structures.
- Sediment Trend Analysis – Salt River between Granite Reef Dam and the Confluence with the Gila River. Kimley-Horn and Associates, Inc. (December 1996). KHA prepared this study on behalf of several sand and gravel mining operations within the Salt River as part of Section 404 applicants on the Salt River. KHA used the HEC-6 computer model to evaluate the Salt River response to additional sand and gravel mining within the Salt River. The sediment transport function used in this study was Yang's streampower for sands. KHA used a 10-year period of discharge for hydrologic simulation in addition to a peak flow event approximating the 100-year peak flow.

Field Reconnaissance

Kimley-Horn and Associates conducted several field reconnaissance visits to the Agua Fria River during the period from October 2000 to November 2000. The purpose of the field visits were to observe the Agua Fria River channel bed, channel banks, and floodplain from the Gila River confluence to the New Waddell Dam. Observations were made of the channel bed forms, channel bed materials, low flow thalweg, existing vegetation types and density, bank material composition, headcuts, and flood control measures such as grade control structures, levees, bank protection, pier scour countermeasures, and bridged crossings.

The field reconnaissance visits started at the downstream limit of the project (Gila River) and progressed slowly upstream to the upstream project limit (New Waddell Dam). Excerpts from the 1996 FIS study were taken into the field to field confirm the hydraulic basis of the project. These data included Manning's roughness coefficients by cross section (including channel and overbank areas), river channel cross section locations, river stationing, and structures such as bridges, roadway crossings, grade control structures, and in-channel utility corridors.

Of particular interest was the observation of active and inactive sand and gravel mining operations both within and outside the Agua Fria River floodplain. Individual sand and gravel mine limits varied in both extent and depth and on the amount of activities associated with the operations. Encroachment upon the river channel by past sand and gravel activities is apparent. Remnant pits and haul roads are located within the river channel bed. Some of the better observations of the stratification of the riverbed materials was observed along the vertical cut walls of the sand and gravel mines. Most of the sand and gravel mines are excavating vertical walls as opposed to sloping walls.

As part of the sediment trend field reconnaissance KHA observed local tributaries to the Agua Fria River within the study reach. The primary tributary incorporate as part of the sediment trend analysis is New River. KHA observed the confluence area of the Agua Fria River with the New River. It was apparent from the field visit that the Agua Fria River is locally aggrading at the confluence with New River. Sand bars interspersed with some gravels are present within the confluence.

At the confluence with the Gila River and upstream to the beginning of the levee reach, the Agua Fria River channel bed materials are comprised nearly of sands. This observation indicates that finer materials transported from upstream reaches of the Agua Fria and New River are depositing in the downstream reach of the Agua Fria River. The Gila River appears to have a major influence upon the Agua Fria River at the confluence area. The opinion of local residents in the area of the confluence indicates that the Agua Fria River is aggrading. Field evidence appears to support this opinion in the formation of sand bars and sand islands near the confluence. However, there is evidence of quite an amount of physical disturbance at the confluence through off-road vehicles to question the natural formation of the sand bars.

KHA's project geomorphology subconsultant (JE Fuller Hydrology and Geomorphology-JEF) conducted extensive detailed concurrent field observations of the river. Their observations are well detailed in their Lateral Migration Report for the Agua Fria River Watercourse Master Plan. The field observations conducted by JEF were more

extensive as required by the geomorphic investigation. JEF identified more than 10 headcuts in the river, some which may be attributable to sand and gravel mining operations. KHA observed some of these headcuts in our field reconnaissance visits.

Sediment Sampling and Gradation Analyses

The sediment trend analysis requires for the sediment routing HEC-6 modeling procedures, representative sediment gradation curves of the bed materials found in the river channel. To this end, KHA identified 42 sampling locations within the river channel to collect bed material samples. The locations were marked in the field with survey stakes. The geotechnical engineering firm, Hoque and Associates, Inc. (HA) subsequently went out to the river and collected bed material samples at the staked locations. Sediment sampling was conducted at approximately every ½ mile of the river from the Gila River upstream to State Highway 74.

Hoque and Associates conducted gradation analysis for each of the sediment samples collected. The gradation analyses were conducted according to ASTM D422. HA documented the results of their sediment collection, field observations, and gradation analyses in their report titled "Geotechical Exploration Report – Sediment Sampling for Agua Fria River Water Course, Maricopa County, Arizona" (May 2001) previously submitted to the District. The report contains a description of the river bed materials at each sampling site and a laboratory report for each sampled tested.

The sediment gradation curves are input into the HEC-6 model through the use of P and PF records. Each gradation curve is assigned to a river cross section station.

HEC-6 Capabilities, Limitations, and Applications

The U.S. Army Corps of Engineers developed the computer program HEC-6 "Scour and Deposition in Rivers and Reservoirs". HEC-6 was initiated by the Corps in the early 1970's and has since evolved in capabilities and applications.

HEC-6 is a one-dimensional moveable boundary open channel flow numerical model designed to simulate and predict changes in river profiles resulting from scour and/or deposition over moderate time periods. A continuous flow record is partitioned into a series of steady flows of variable discharges and durations. For each flow a water surface profile is calculated thereby providing energy slope, velocity, depth of flow, etc., at each cross section. Potential sediment transport rates are then computed at each cross section. These rates, combined with the duration of the flow, permit a volumetric accounting of sediment within each reach. The amount of scour or deposition at each section is then computed and the cross section adjusted accordingly. The computations then proceed to the next flow in the sequence and the cycle is repeated beginning with the updated geometry. The sediment calculations are performed by grain size fraction thereby allowing the simulation of hydraulic sorting and armoring. Features of HEC-6 include: various levee and encroachment alternatives, and to use several methods for computation of sediment transport rates.

HEC-6 is designed to simulate long-term trends of scour and/or deposition in a stream channel that might result from modifying the frequency and duration of the water discharge and/or stage, or from modifying the channel geometry (e.g. encroaching on the floodplains). Other applications of HEC-6 include design of channel contractions

required to maintain navigation depths or decrease the volume of maintenance dredging, estimate possible maximum depths of scour during large flood events, and evaluate sedimentation in fixed channels.

Geometry

A river system consisting of a main stem, tributaries and local inflow/outflow points can be simulated. Such a system is which tributary sediment transport is calculated is referred to a network model. The Agua Fria River sediment tend model is a network model that incorporates the Agua Fria's major tributary, the New River. Sediment transport is calculated by HEC-6 in primary rivers and tributaries.

Hydraulics

The one-dimensional energy equation is used by HEC-6 for water surface profile computations. Manning's equation and n-values for overbank and channel areas may be specified by discharge or elevation. Expansion and contraction losses are included in the determination of energy losses. The energy loss coefficients may be changed at any cross section.

For each discharge in a hydrograph, the downstream water surface elevation can be determined by either a user-specified rating curve or a time dependent water surface elevation. Internal boundaries can be imposed on the solution.

Flow conveyance limits, containment of the flow by levees, ineffective flow areas, and overtopping of levees are simulated in a manner similar to HEC-2. Split flow computations are not done and so special capability for computing energy losses through bridges is available. Supercritical flow, should it occur, is approximated by normal depth; therefore, sediment transport phenomena occurring in supercritical reaches are simplified in HEC-6.

HEC-6 can be executed in "fixed-bed" mode, which is similar to an HEC-2 application, in that only water surface profiles are computed. Sediment information such as inflowing sediment load and bed gradations are not needed to run HEC-6 in fixed-bed mode.

Sediment

Sediment transport rates are calculated for grain sizes up to 2048 mm. Sediment sizes greater than 2048 mm, that may exist in the bed, are used for sorting computations but are not transported. The sediment transport function for bed material load is selected by the user. The HEC-6 computer program supports 13 transport functions.

Armoring and destruction of the armor layer are simulated based upon Gessler's (1970) approach. Deposition or scour is modeled by moving each cross section point within the moveable bed (i.e., the area which is shifted vertically each time step due to sediment movement).

The moveable bed limits may extend beyond the channel bank "limits". Deposition is allowed to occur in all wetted areas, even if the wetted areas are beyond the conveyance or moveable bed limits. Scour only occurs within the moveable bed limits. Sediment transport potential is based upon the hydraulic and sediment characteristics of

the channel alone. Simulation of geological controls such as bedrock or a clay layer may be done by specifying a minimum elevation for the moveable bed at any particular cross section.

The sediment boundary conditions (inflowing sediment load as a function of water discharge) for the main river channel, its tributaries and local inflow/outflow points can be changed with time. A transmissive boundary condition is available at each downstream boundary; this boundary condition forces all sediment entering that section to pass it, resulting in no scour or deposition at that section.

General

Computed information includes the total sediment discharge passing each cross section and the volume of deposits (or scour) accumulated at each cross section for the beginning of the simulation. HEC-6 also has the ability to simulate the effects of dredging activities.

Assumptions and Limitations

HEC-6 is a one-dimensional continuous simulation model that uses a sequence of steady flows to represent discharge hydrographs. There is no provision for simulating the development of meanders or specifying a lateral distribution of sediment load across a cross section. The cross section is subdivided into two parts with input data; that part which has a moveable bed, and that which does not. The moveable bed is constrained within the limits of the wetted perimeter and other limitations. The entire wetted part of the cross section is normally moved uniformly up or down; an option is available, however, which causes the bed elevation to be adjusted in horizontal layers when deposition occurs. Bed forms are not simulated.

There are three restrictions on the description of a network system within which sediment transport can be calculated with HEC-6:

1. Sediment transport in distributaries is not possible.
2. Flow around islands; i.e., closed loops, cannot be directly accommodated.
3. Only one junction or local inflow point is allowed between any two cross sections.

Single Event Analysis

HEC-6 is designed to analyze long-term scour and/or deposition. Single event analyses should be performed with caution. HEC-6 bed material transport algorithms assume that equilibrium conditions are reached within each time step, however, the prototype is often influenced by unsteady non-equilibrium conditions during flood events. Equilibrium may not occur under these conditions because of the continuously changing hydraulic and sediment dynamics. If such situations predominate, single event analyses should be preformed only on a qualitative basis. For gradually changing sediment and hydraulic conditions, such as for large river with slow rising and falling hydrographs, single event analyses may be performed with confidence.

Development of Hydraulic and Sediment Trend Models

KHA prepared several sediment transport models for the Agua Fria River using the U.S. Army Corps of Engineers computer program HEC-6. Specifically, the HEC-6 version used in the sediment trend analysis was the HEC-6 "Oct93+FIXS95". This version is a corrected computer model from the October 1993 library version available on the Hydrologic Engineering Center's website.

Five major HEC-6 models were prepared as part of the sediment trend analysis. These models simulated and examined various conditions on the Agua Fria River. The first model was to establish a hydraulic similarity model with the 1996 FIS model of the Agua Fria River. The second model was to develop a sediment transport model that simulated the existing floodplain conditions on the river. The third model was to develop a full sand and gravel mining operations model and examine the cumulative impacts on the river. The fourth model was to develop an encroachment model of the river to examine the impacts on the river of fully encroaching on the floodway limits. The final model was to incorporate proposed grade control structures within the Agua Fria River at selected locations. The results of this model will assist with the selection of recommended grade control structure locations.

The development of the HEC-6 sediment transport models is discussed in more detail in the later sections of this report and in the accompanying supportive appendices. It should be noted that the general approach to conducting the sediment trend analysis for the Agua Fria River was initiated by first preparing a HEC-6 fixed-bed model. The fixed-bed model used the 1996 FIS HEC-2 model as the base model for preparation of input parameters such as cross section geometry, reach lengths, Manning's roughness coefficients, etc. Several iterations were conducted on the fixed-bed model of the Agua Fria River to develop a model that substantially agrees with the hydraulic results of the HEC-2 model. Once the fixed-bed model was completed, the HEC-6 moveable bed models could be developed with confidence knowing that the HEC-6 fixed-bed hydraulic model was simulating 1996 FIS results.

Sediment Trend Analysis Technical Memorandums

The sediment trend analysis was conducted in several phases with each phase building upon the framework and results of the previous phase. At the completion of each model phase, draft sediment trend analysis technical memorandums were prepared and submitted to the District for review. The technical memorandums summarized the approach taken for the development of each model, provided an interpretation of the results of each model exercise, provided conclusions of the results, and included input files, tables, and charts that summarized and illustrated the key points of the results. This approach provided District input and approvals during each phase as the sediment trend analysis progressed.

Eight (8) Sediment Trend Analysis Technical Memorandums were prepared. The Technical Memorandums are summarized in the following table and below in synopsis format. More detailed discussion is presented in later sections of this report.

Table 3.1. Summary of Sediment Trend Analysis Technical Memorandums.

Memorandum Number	Hec-6 Input Filename	Hec–6 Model Summary
1	Affbrev.dat (March 2001)	**Fixed-Bed (Hydraulic Base) Model.** Base model is 1996 FIS HEC-2 model prepared by Coe & Van Loo. 100-year floodplain hydraulic model.
2	ECAFrev.dat (June 2001)	**Existing Conditions Model.** Base model was Fixed Bed Model. Added flood hydrograph, sediment data, and inflow sediment rating curve.
3		**Sediment Transport Function Evaluation.** Four sediment transport functions were evaluated for selection of a single function for the sediment trend analysis. The four functions evaluated were: Yang's streampower, Toffeleti/Schoklitsch, Meyer-Peter/Mueller, and Toffeleti/MPM combination. Recommended sediment transport function is Yang's. Prepare separate sediment inflow curve for each function. Test reach of Agua Fria River was from Bell Road to Jomax Road.
4	Ecval.dat (June 2001)	**N-Value Sensitivity Model.** Conducted n-value sensitivity analysis in the vicinity of the confluence with Gila River.
5	Ec10Yang.dat Ec50Yang.dat (June 2001)	**Reduced Sediment Inflow Sensitivity Model(s).** Reduced sediment inflow curve to 50% and to 10% of the rating curve determined in Tech Memorandum No. 2. Selected 50% inflow sediment rating curve for further models. Recommended to reflect impacts of New Waddell Dam sediment trapping effects.
6	Sgbase50.dat Sgm1-50.dat (July 2001)	**Full Sand and Gravel HEC-6 model.** Prepared HEC-6 model to simulate future build-out of sand and gravel mining per permits and applications. Full mining limits and depths were incorporated. Impacts on Agua Fria River bed profile were evaluated.
7	Ench.dat (Sept 2001)	**Encroachment Model.** Prepared encroachment model to floodway limits of Agua Fria River. Alternative policy model to evaluate impacts of allowing sand and gravel mining in flood fringes.
8	Enchgcs.dat (Oct 2001)	**Grade Control Model.** Proposed grade control structures added to encroachment model.

Technical Memorandum No. 1 documented the fixed bed model for the Agua Fria River. The purpose of the fixed bed model was to develop a hydraulic model using HEC-6 that closely simulates the river hydraulic trends as provided in the 1996 FIS model (HEC-2 and KHA's HEC-RAS). The goal is to produce a fixed bed model representing the FIS results. Once this goal is achieved the fixed bed model was converted into moveable bed models for the purposes of the sediment trend analysis.

Technical Memorandum No. 2 documented the HEC-6 sediment trend existing condition model for the Agua Fria River The purpose of the existing conditions HEC-6 model is to review the response of the river bed of the Agua Fria River from a 100-year flood event in the river. The existing condition model was developed using the fixed bed model as the base model. KHA prepared a HEC-6 fixed bed model to closely simulated the river hydraulics trends as provided in the FIS model (HEC-2 and KHA's HEC-RAS). The existing condition model is comprised of three data sets. These sets of data are geometry data (cross section data, reach lengths, ineffective flow, Manning's roughness coefficients), sediment data (sediment inflow curves for Agua Fria River and New River and bed sediment data for the Agua Fria River from the Gila River to New Waddell Dam), and hydrology data (100-year flood hydrograph for the Agua Fria River and the New River).

Technical Memorandum No. 3 documented the HEC-6 study and results for the selection of a sediment transport function. A sediment transport function is a formula or algorithm for calculating the sediment transport rate given the hydraulics and bed material at a cross section. The HEC-6 computer program provides the option of the selection of one of ten available sediment transport functions within the model.

Four sediment transport functions were selected for evaluation by using a test reach of the Agua Fria River. The four functions were: Yang's Streampower (Yang), Toffaleti-Schoklitsch (TS), Meyer-Peter and Muller (MPM), and Toffaleti-MPM combination (TMPM). These transport functions were selected for evaluation from review of Table 5-2 in the Corps of Engineers Engineering Manual titled "Channel Stability Assessment for Flood Control Channels" (EM 1110-2-1418 Oct 1994).

Technical Memorandum No. 4 documented the HEC-6 study and results of a sensitivity analysis for the Manning's roughness coefficient (N-value) at several cross sections at the downstream limit of the Agua Fria River. The existing conditions HEC-6 model was modified to reflect increased n-values for seven cross sections. The n-values used in the existing condition model were derived from the 1996 flood insurance HEC-2 model for the Agua Fria River. The cross sections where the n-values were changed for this sensitivity analysis are located at the confluence with the Gila River. The last revised cross section is at the downstream limit of the west levee constructed by the Corps of Engineers. The n-values for these cross section were changes from their respective FIS n-values to 0.08 for the overbanks and the main channel. The higher n-value for the seven cross sections was selected in attempt to examine if a greater degree of deposition or less degradation were to occur in the lower reach of the Agua Fria River. The existing condition model indicates that the lower reach of the river trends toward degradation during the 100-year event.

Technical Memorandum No. 5 documented the HEC-6 study and results of a sensitivity analysis for a reduced sediment inflow-rating curve for the Agua Fria River. It

is important to note that the master plan is being prepared for the Agua Fria River that is downstream of a major dam and reservoir impoundment (New Waddell Dam and Lake Pleasant). A dam and reservoir typically captures upstream sediment, which settles out or deposits on the lake bottom. During large inflows into the dam there exits the potential that the dam may release flood flows into the downstream river. In this case, New Waddell Dam, under the 100-year flood event, could release 9,000 cubic feet per second into the Agua Fria River. The water that is released into the river is relatively devoid of sediment. The water discharging from the dam is considered clear water and thus hungry for sediment.

The purpose of the exercise was to investigate the impacts of reduced sediment inflow (10% and 50%) in the upstream reach of the river. The reduction of sediment inflow is to simulate "clear water" releases from New Waddell Dam into the Agua Fria River. The impact of clear water simulations is anticipated to have a greater degree of bed change in the river in the upstream reach of the river. This is due to the fact that the flood releases from the dam are fairly devoid of sediment and thus has a high sediment transport potential. The "sediment hungry" water should obtain sediment from the bed and banks of the river as the flows continue downstream.

Technical Memorandum No. 6 documented the sediment trend analysis of full sand and gravel mining operations on the channel bed profile of the Agua Fria River from the confluence with the Gila River upstream to New Waddell dam. Presently there are approximately forty-six sand and gravel mines along and within the Agua Fria River that are either inactive, active, and/or have pending permits for operations. KHA obtained floodplain permit applications from the Flood Control District of Maricopa County for sand and gravel mines with pending permits as well as mining plans for active and inactive mines. The permit applications and mining plans provide the limits of sand and gravel extraction for each mine. The extraction limits include lateral limits and depths of mining activities. These extraction limits were used to construct mining templates for the sand and gravel HEC-6 model.

The definition of "full" sand and gravel mining, for the purposes of this study, is that all thirty-three sand and gravel mines have been mined to the ultimate extent depicted in their respective mining plans or permit applications. In other words, each mine has extracted all of the aggregate from each pit or mine to the limits according to the mining plans or permits. The sand and gravel model depicts the "full" operations conditions.

Technical Memorandum No. 7 documented the effects on the bed elevation profile of the Agua Fria River of encroaching upon the river to the floodway limits defined by the effective flood insurance study (FIS). The purpose of developing a HEC-6 model of the Agua Fria River that encroached to the regulatory floodway limits was to examine the effects on the bed profile of a potential alternative future policy for encroachment on the river. The encroachment may take several forms including the filling of the floodway fringe for development or the construction of low level levees located along the floodway limits that are placed to provide a measure of flood protection to sand and gravel operations within the floodway fringe areas. The policy would potentially allow utilization of the floodplain and floodway fringe and exclude extraction of sand and gravel within the regulatory floodway.

Technical Memorandum No. 8 documented the effects of three proposed grade control structures on the bed elevation profile of the Agua Fria River. The three grade control

structures are located at river station 13.395 (downstream of Olive Avenue), river station 21.893 (upstream of Rose Garden lane and a large in-stream sand and gravel operation), and at river station 24.543 (downstream of the proposed New Estrella Parkway). These grade control structure locations were selected for investigation after joint discussions and concurrence with JE Fuller Hydrology and Geomorphology, the consulting firm responsible for the geomorphic and lateral migration analysis and investigation of the Agua Fria River for the master plan.

SECTION 4 DEVELOPMENT OF HEC-6 HYDRAULIC BASE MODEL

4. DEVELOPMENT OF HEC- 6 HYDRAULIC BASE MODEL

This section of the report documents the development of an HEC-6 fixed-bed (hydraulic base) model from the existing 1996 FIS HEC-2 model.

Background: The Flood Control District of Maricopa County completed in 1996 a Flood Insurance Study (1996 FIS) for the Agua Fria River from the confluence with the Gila River upstream to the New Waddell dam (a study length of approximately 33.8 river miles). The District contracted with Coe & Van Loo to conduct the flood insurance study. The study was conducted using the US Army Corps of Engineers HEC-2 water surface profile computer model.

Kimley-Horn and Associates, Inc, (KHA) under contract from the District, developed a sediment trend analysis for the Agua Fria River from it's confluence with the Gila River upstream to New Waddell dam. KHA used the US Army Corps of Engineers HEC-6 "Scour and Deposition of Rivers and Reservoirs" computer model to conduct the sediment trend (transport) analysis. KHA initiated the study with the development of an HEC-6 fixed bed model. The base input data for the HEC-6 fixed bed model of the Agua Fria River was the 1996 FIS HEC-2 data. This data consists of GR records (cross section station and elevation), Manning's roughness coefficients, ineffective flow areas, flow data, and expansion and contraction coefficients. Note that the HEC-6 fixed bed model was the foundation model used to develop the subsequent HEC-6 moveable bed models.

As part of the Agua Fria River Watercourse Master Plan, KHA converted the 1996 FIS HEC-2 model into an HEC-RAS computer model. The HEC-RAS model is the Corps next generation river analysis computer program and will eventually replace the HEC-2 program. The results of the HEC-RAS model compared favorably with the results of the 1996 FIS HEC-2 model of the Agua Fria River. Therefore, the development of and results from the HEC-6 fixed bed model for the present study are based on and compared to the HEC-2 and HEC-RAS models.

A previous sediment transport study for the Agua Fria River was conducted by the Civil Engineering Department at Arizona State University. The study was sponsored by the Flood Control District of Maricopa County. The study was completed in February 1994 (ASU 1994). The ASU study, based on HEC-6, included required basic data such as river cross sections, hydrology (flood hydrograph shape), and riverbed sediment data.

Purpose: The purpose of the fixed bed model was to develop a hydraulic model using HEC-6 that closely simulates the river hydraulic trends as provided in the FIS models (HEC-2 and HEC-RAS). The goal is to produce a fixed bed model representing the FIS results. Once this goal is achieved the fixed bed model will be converted into moveable bed models for the purposes of the sediment trend analysis. The river hydraulic trends represented in the FIS study (HEC-RAS) are provided in several charts which includes the channel invert, channel velocity, discharge, flow topwidth, and hydraulic depth by river station from the confluence with the Gila River upstream to New Waddell dam.

Approach: The preparation of the HEC-6 fixed bed model for the KHA study was initiated by the conversion of the 1996 FIS HEC-2 data into a geometry data set for the HEC-6 fixed bed model. The 1996 FIS HEC-2 data was provided by the District to KHA in electronic format. The primary data used in the conversion was cross section data

(GR points – cross section elevations and stations), Manning's roughness coefficients, ineffective flow areas, expansion and contraction coefficients, channel and overbank reach lengths, and flood discharge values. Cross section locations were primarily selected to match the locations provided in the FIS study and the 1994 ASU study of the Agua Fria. The purpose of locating cross sections that matched the ASU study was to enable comparison of river hydraulics and sediment trends in river reaches between the two studies. Cross sections were added to subsequent HEC-6 models as the sediment trend analysis progressed to better define model conditions.

The fixed bed routine of the HEC-6 program allows for a maximum of ten local inflows along the river reach under investigation. The 1994 FIS (HEC-2/HEC-RAS) used sixteen different discharges along the study length of the Agua Fria River. KHA converted the FIS hydrology from the sixteen values into ten representative local inflows.

The HEC-6 input filename for the fixed bed model is titled "Affbrev.dat" (March 2001). The printout of input file is provided in Appendix A. Due to the length of the output file, no printout is included in the Appendix. However, electronic copies have been previously provided to the District.

Results: The discharge versus river distance from the Gila River confluence is provided in Figure 4.1 for the FIS study and the HEC-6 fixed bed model. The shape and discharge values are reasonably conserved between the two studies.

KHA plotted the river channel velocity profile for both the FIS data and the HEC-6 fixed bed results. The velocity profile is provided in Figure 4.2. Note that the velocity profile of the fixed bed model reasonable conserves the velocity profile of the FIS study. It can be concluded based on the results of the velocity profile analysis, that the HEC-6 fixed bed model closely simulates the results of the FIS river hydraulics including flow through river reaches with contractions.

KHA plotted the river channel topwidth profile for both the FIS data and the HEC-6 fixed bed results. The topwidth profiles is provided in Figure 4.3. Note that the topwidth profile of the fixed bed model reasonably conserves the topwidth profile of the FIS study. These results lend further support to the above conclusion that the HEC-6 fixed bed model closely simulates the results of the FIS river hydraulics.

The next task in the sediment trend analysis was to develop a moveable bed model of the Agua Fria River based on existing conditions in the river. Riverbed sediment samples have been collected along the entire length of the river and gradation analyses conducted on the samples. Hydrology data was being reviewed by KHA for the sediment trend study from the Corps of Engineers "Hydrologic Evaluation of Impacts on New Waddell Dam on Downstream Peak Discharges in the Agua Fria River" (July 1995) to develop an inflow hydrograph into the Agua Fria River system.

Figure 4.1 Discharge - 1996 FIS and HEC-6 Fixed Bed

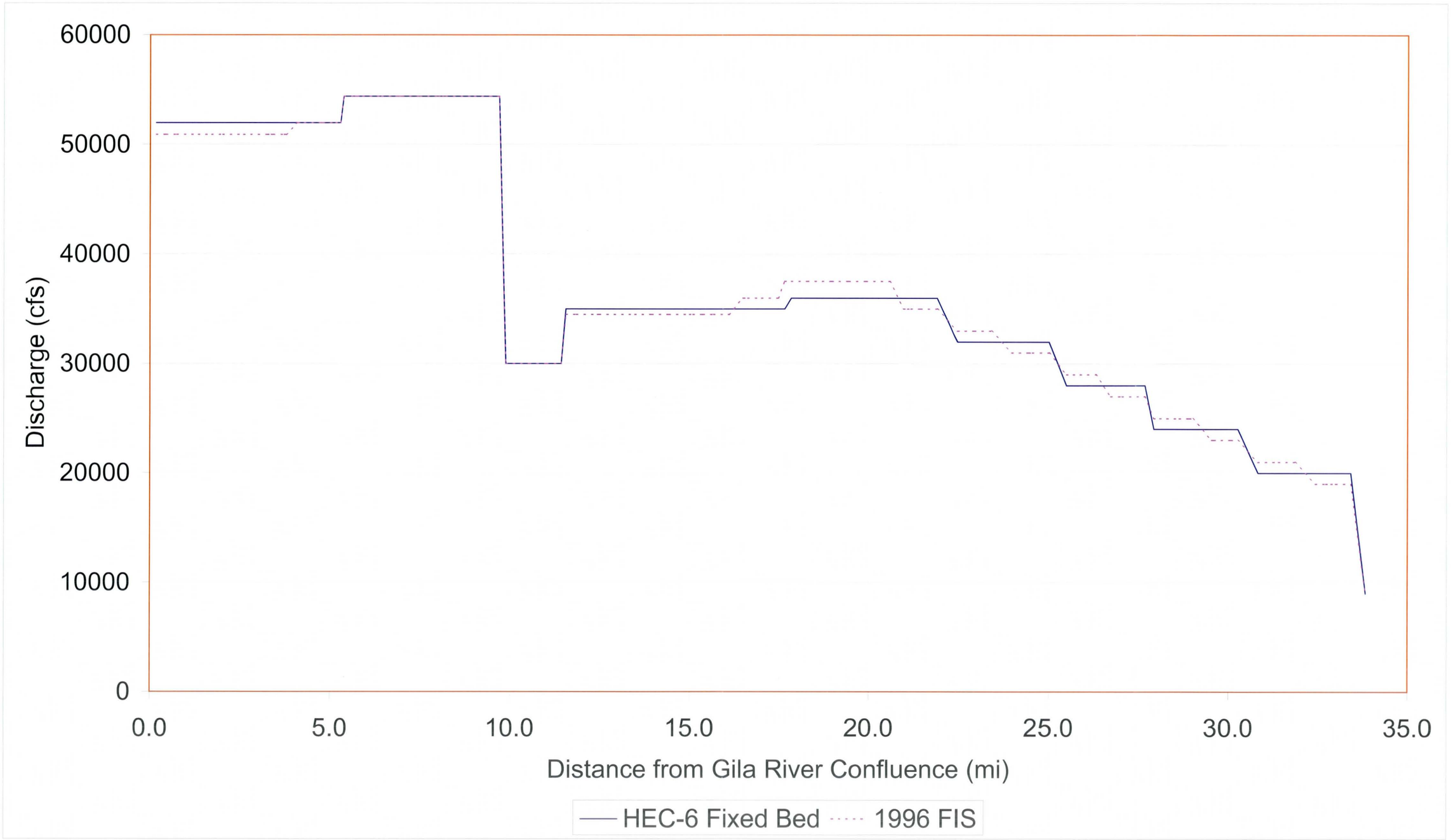


Figure 4.2. Channel Velocity - 1996 FIS and HEC-6 Fixed Bed

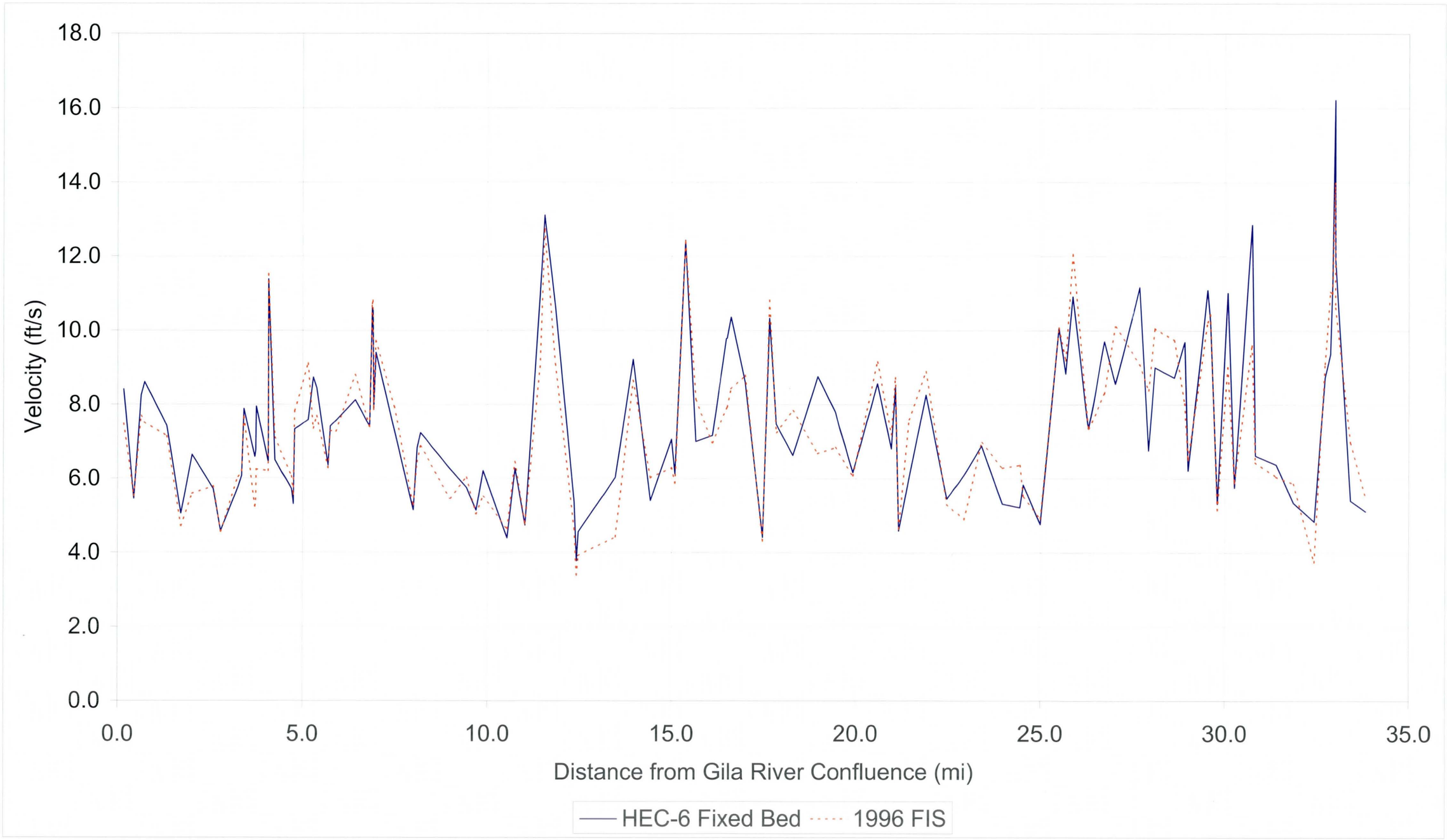
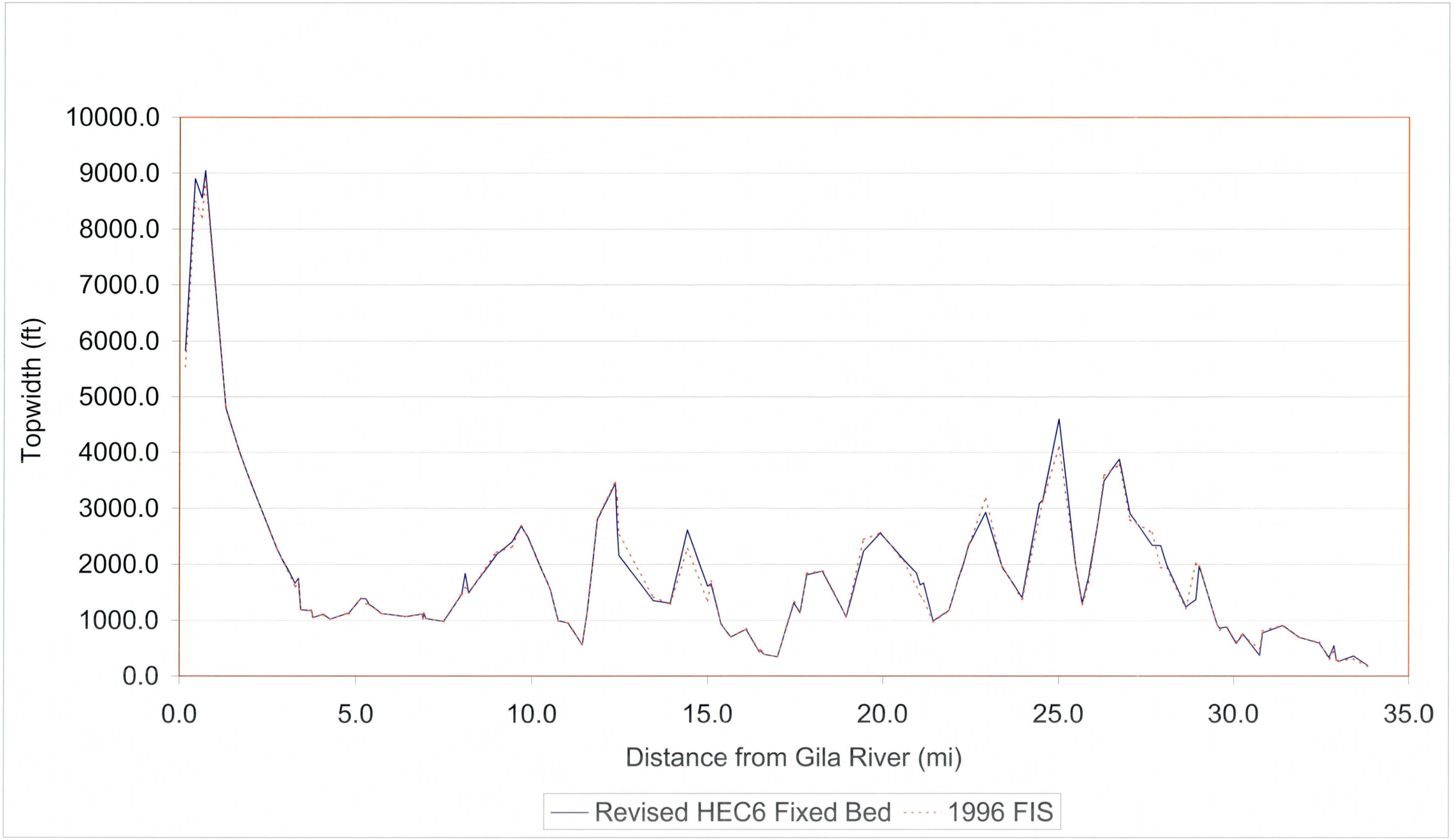


Figure 4.3 Topwidth - 1996 FIS and HEC-6 Fixed Bed



SECTION 5 DEVELOPMENT OF HEC-6 EXISTING CONDITIONS SEDIMENT TREND MODEL

SEDIMENT TREND ANALYSIS REPORT
AGUA FRIA WATERCOURSE MASTER PLAN
KHA Project No. 091131004

5. DEVELOPMENT OF HEC-6 EXISTING CONDITION SEDIMENT TREND MODEL

This section of the report documents the development of HEC-6 existing condition sediment trend model from the HEC-6 fixed bed model discussed in Section 4.

Purpose: The purpose of the existing condition HEC-6 model is to review and evaluate the response of the riverbed of the Agua Fria River from a channel forming discharge and a 100-year flood event in the river. The existing condition (EC) model was developed using the fixed bed model (Affbrev.dat) as the base model. The EC model is comprised of three data sets. These data sets are geometry data (cross section data, reach lengths, ineffective flow, Manning's roughness coefficients), sediment data (sediment inflow curves for Agua Fria River and New River and bed sediment data for the Agua Fria River from the Gila River to New Waddell Dam), and hydrology data (100-year flood hydrograph for the Agua Fria River and the New River).

Geometry: The preparation of the HEC-6 EC model was constructed by converting the HEC-6 fixed bed model into a moveable bed model. The HEC-6 fixed bed model was copied into another input data file and renamed and used as the EC data file (ECAFrev.dat – June 2001). The EC data file was modified by removing unnecessary QT records from the fixed bed model, adding additional HEC-2/HEC-6 cross sections at the locations of existing sand and gravel mines, adding the HD record and moveable bed limits to each cross section, adding X3 (encroachment) records where required, and adding XL records to set conveyance limits at appropriate cross sections. The cross sections are the same as those in the fixed bed model except the additional cross sections added to better define limits of existing sand and gravel mines.

Cross section geometry was modified at several cross sections within the levee reach in the lower Agua Fria River. In concurrence with the District, utility towers that are located in the river channel were removed from the respective cross section. Cross-section geometry for the EC model was derived from the fixed bed model (see Section 4). The locations of the river cross sections were selected to coincide basically with the river cross section stations given in the 1994 ASU sediment transport study as much as possible.

Channel bank stations for each cross section are the same as provided in the 1996 FIS HEC-2 model of the Agua Fria River. No modifications were made to riverbank stations as a result of the field reconnaissance. Channel reach lengths, overbank reach lengths, and Manning's roughness coefficients are also the same as provided in the 1996 FIS HEC-2 model. The only exception is for Manning's roughness coefficients (n-values) for the cross sections at the confluence with the Gila River where the 1996 FIS varied n-values across the cross section instead of segmenting into channel, and left and right overbanks. KHA and LTM Engineering in their conversion of the 1996 FIS HEC-2 model to HEC-RAS model revised the Manning's coefficients in the confluence area and ran the HEC-RAS model producing similar hydraulic results. Therefore the HEC-6 existing condition model used the revised HEC-RAS n-values in this portion of the river. The existing condition model also incorporated the 1996 FIS HEC-2 encroachments, particularly at the existing sand and gravel mines depicted in the FIS.

KHA reviewed each river cross section in plan (aerial photograph with cross section overlay) and with the use of cross section plots to estimate the moveable bed limits for each river cross section. In general, moveable bed limits were determined by reviewing

the 100-year floodplain limits, the depths and velocities of flow in the overbanks, and by reviewing aerial photographs for evidence of recent channel disturbance and the amount of established vegetation (in the form of shrubs, trees, and grasses).

Sediment Inflow Curve: Sediment inflow curves are required input data for the stream network. A sediment inflow curve is basically a table which relates inflowing sediment loads to water discharge for the upstream ends of the main stem, tributaries, and local inflows. The Aqua Fria River system in this sediment trend analysis has one main stem and one tributary (New River).

A sediment inflow was developed for the Aqua Fria River for water discharges of 5,000 cfs, 7,000 cfs, 17,000 cfs, and 55,000 cfs. These flowrates represent low flows, approximate bank full discharge, and high flows in the river. The sediment inflow curve for New River was taken directly from the Arizona State University HEC-6 model of the Agua Fria River. The New River sediment curve required an additional water discharge of 24,400 cfs to account for the peak discharge from New River. The sediment load for this peak discharge was determined by plotting for each grain size class the concentration versus flowrate and computing a logarithmic regression equation for each grain size class based on discharge.

The development of the sediment inflow curve for the Agua Fria River follows the methodology provided in the materials for the HEC-6 short course given by the Flood Control District in November 1999 and in the guidelines published in "Application of Hec-6 to Ephemeral Rivers of Arizona" (Report Number: FHWA/AZ86/214, prepared by Arizona State University for the Arizona Department of Transportation, January 1986).

The sediment inflow curve for the Agua Fria River was derived using the river reach between Bell Road and Jomax Road. This seven-mile reach of the upper Aqua Fria River is a relatively "undisturbed" reach of the river and essentially remains in its natural recent state. The floodplain is characterized as meandering with braided channels and a low flow channel. There are two major sand and gravel mines within the floodplain. One is located at Pinnacle Peak Road and the other at Beardsley Road (within the floodway).

This reach of the Agua Fria River could be considered as the primary upstream sediment production reach. The river upstream of Jomax is relatively confined laterally and vertically by bedrock and therefore exhibits a shallower bed sediment reservoir and bed material types than the reach between Bell and Jomax Roads.

Water discharged from the primary outlet works from New Waddell Dam is essentially free of sediment since the water is derived from the lower portions of the reservoir. Hence, the discharge does not carry sediment and can be termed "clear water". Given these observations about the floodwater discharged from the dam during 100-year flood event and the shallow depth to bedrock in the reach upstream of Jomax Road the primary sediment producing reach for this study was selected as the reach between Bell Road and Jomax Road. This is the same reach used in the ASU sediment study of the Agua Fria River for evaluation of sediment transport functions.

Bed Sediment Gradations: KHA located, sampled, collected, and performed gradation analyses for forty-two (42) bed material samples. Hoque and Associates, Inc conducted the actual collection and analyses. The locations of the bed material samples were approximately every half-mile from the Gila River confluence to north of State Route 74.

The sediment gradations were input into the EC model using the P and PF record sequence. The P records were labeled with the closest river cross section. Sediment gradation data has previously been submitted to the District in electronic and hardcopy format. Sediment gradations were documented in Hoque and Associates report titled "Geotechical Exploration Report – Sediment Sampling for Agua Fria River Watercourse, Maricopa County, Arizona" (May 2001) previously submitted to the District. Figure 5.1 provides the sediment gradation curves for each sediment sample.

Hydrology: Only one local inflow occurs in the EC model. This local inflow is the New River and the confluence is located between the cross sections at river mile 9.435 and 9.696. Only one local inflow was included in the EC model as it was determined that other local inflows into the Agua Fria River occur before releases from New Waddell Dam during the 100-year event. In other words, the only systems contributing directly to the Agua Fria River under the 100-year event is the New River system and New Waddell Dam. Other local inflows are most likely through the Agua Fria River before flows from the New River and New Waddell Dam occur. The contribution of local inflows is, however, a component of the 100-year hydrograph developed by the Corps of Engineers and used in the EC model for the Agua Fria River.

The 100-year flood event hydrograph for the Agua Fria River was developed using the Corps of Engineers document "Agua Fria River Study, New Waddell Dam to Gila River Confluence, Arizona - Hydrologic Evaluation of Impacts on New Waddell Dam on Downstream Peak Discharges in the Agua Fria River" (July, 1995). The Corps report provides a table that summarizes the 100-year peak discharges on the Agua Fria River (included in Appendix B of this report). The 100-year peak discharges range from 9,000 cubic feet per second (cfs) downstream of New Waddell dam, 54,400 cfs downstream of the New River confluence, and 48,200 cfs at the Gila River.

Figure 2 (included in Appendix B of this report) of the Corps report indicates the locations of the concentration points depicted in Table 1 of their report. Of particular importance is the concentration points located upstream (CP 1039U) and downstream (CP 1039D) of the confluence with the New River. The 100-year peak discharge in the Agua Fria River upstream of the New River is 30,000 cfs. The 100-year peak discharge in the Agua Fria River downstream of the New River is 54,400 cfs. This means that the New River system is contributing 24,400 cfs during the 100-year flood event in the Agua Fria River at its confluence.

The Corps report provides a 100-year flood hydrograph at CP 1039U, the concentration point upstream of New River. This hydrograph is provided as Figure 5.2. The report does not provide a 100-year hydrograph of the Agua Fria River just downstream of the New River confluence.

The Corps report provides a Standard Project Flood (SPF) hydrograph for the Agua Fria River at CP 1039D, the concentration point downstream of the confluence with the New River. Examination of Table 1 (Appendix B of this report) of the Corps report indicates that the ratio between the SPF and the 100-year peak discharge is 0.58. KHA developed a 100-year flood hydrograph at CP 1039D by applying the 0.58 ratio to the SPF hydrograph (see Figure 5.3).

The time to peak of the SPF is noted to occur at hour 8.0. The time to peak of the 100-year hydrograph upstream of the New River confluence (CP 1039U) is noted to occur at hour 7.5. The difference is time to peaks is 0.5 hours.

Development of the EC model requires an inflow hydrograph for the New River, which is then entered in the model hydrology data set as local inflow. KHA developed the New River hydrograph by applying a ratio of 0.81 (24,400 divided by 30,000) to the 30,000 cfs peak discharge hydrograph at CP 1039U (see Figure 5.2). KHA then developed a 100-year hydrograph for the Agua Fria River (downstream of the New River confluence) by adding the 30,000 cfs hydrograph at CP 1039U to the New River hydrograph which was lagged by 0.5 hours (see Figure 5.4). A comparison of the resulting hydrograph with the 100-year hydrograph developed from the SPF hydrograph indicates close correlation to shape, timing, and volume of flow (see Figure 5.5). This confirmed that the shape, timing, and volume of the Agua Fria 100-year hydrograph at CP 1039U and the New River hydrograph are conserved. Therefore, the 100-year combined hydrograph at CP 1039D was used as the project hydrograph for the Agua Fria River with the New River hydrograph used for the local inflow. This hydrograph as well as the New River hydrograph were prepared as input into the EC model as computational hydrographs by discretization into flow duration and flow discharge (see Figure 5.6).

The hydrology for the sediment trend analysis was initiated in the EC model with a low flow of 9,000 cfs for a duration of 30 days followed by the 100-year hydrograph. The purpose of running the 9,000-cfs through the river for a long duration is to average out the bed of the river before hitting the river with the 100-year hydrograph and to simulate a "long-term" flow prior to the 100-year flood.

It should be noted that the New Waddell Dam would discharge approximately 9,000 cfs to the Agua Fria River during a 100-year event according to the Corps hydrology report. The duration of this flowrate was not provided in the Corps study.

Results: A summary of the sediment trend analysis for the existing condition at the Agua Fria River is provided in Table 5.1. Table 5.1 provides by cross section (noted in river miles) for each time step of the 100-year hydrograph the change in bed elevation during the time step from the initial bed elevation at that cross section. Note that the maximum and minimum bed elevations are color-coded. The maximum bed change from initial bed conditions is color-coded orange and the minimum bed change from initial bed conditions is color-coded light blue. The end bed change condition at the end of the 100-year hydrograph is color-coded in red.

A hardcopy printout of the HEC-6 input file is included with Appendix B. Both the input and output files for the existing condition 100-year model was previously provided on diskette to the District.

Figure 5.7 is a plot of the bed elevation of the Agua Fria River from the Gila River to New Waddell Dam. The plots of the bed elevation are the initial bed elevation, the bed elevation after day one and day two of the 30-day routing of the 9,000 cfs flow, day 30 of the 30-day 9,000 cfs flow, and the bed elevation after each time step during the 100-year hydrograph.

Interpretation: Table 5.1 indicates for the reach of the Agua Fria River north of Jomax Road that there is a general trend toward degradation during the hydrologic event used

in the existing condition model. The maximum ending degradation was exhibited at river mile 32.984 at 8.93-ft which is the State Route 74 bridge location. The maximum degradation at this location is 9.19-ft.

The reach from Jomax Road to Bell Road indicates a general aggradation condition. The maximum ending aggradation occurs at river mile 21.431 with a deposition of 2.7-ft. The maximum event deposition in this reach occurs at river mile 24.543, which is upstream of Happy Valley Road.

The reach from Bell to Grand Avenue appears to be aggrading due to deposition of sediment in the gravel mines during the 100-year event. The channel bed is degrading at the Grand Avenue Bridge with a small aggradation along the El Mirage landfill.

The Agua Fria River channel is degrading at the confluence with the New River and aggrading at the beginning of the Corps levees at river mile 8.198. The contributing flow from New River may be causing the Agua Fria channel to degrade at the confluence. The results indicate that the material transported from the confluence may be depositing at the upstream end of the beginning of the levee reach.

Within the levee reach of the lower Agua Fria River the grade control structures appear to be functioning to aggrade the channel. The maximum ending condition degradation in the levee reach (river station 8.198 to river station 3.729) is 2.6-ft. The maximum degradation occurring during the flood event is 2.64-ft at river mile 5.15. The maximum event deposition is 3.72-ft at river mile 4.754.

The reach of the Agua Fria downstream of the levee reach indicates an ending degradation condition. The maximum degradation occurs at river mile 1.33 with a depth of 3.62-ft.

Table 5.2 provides a comparison of the ending net bed change between the present KHA study of the Agua Fria and the 1994 Arizona State University study of the Agua Fria River. Review of the bed change by cross sections and by reaches indicates a general agreement in the trend of sediment transport in the Agua Fria River.

Note: The existing condition model depicted in this Section of the report has been updated. The updated model is provided in Section 9 – Development of Sand and Gravel Sediment Trend Model. The results in this Section 5 do not necessarily reflect the updated model results provided in Section 9. Please refer to Section 9.

Figure 5.1. Bed Material Gradation Analyses Results.

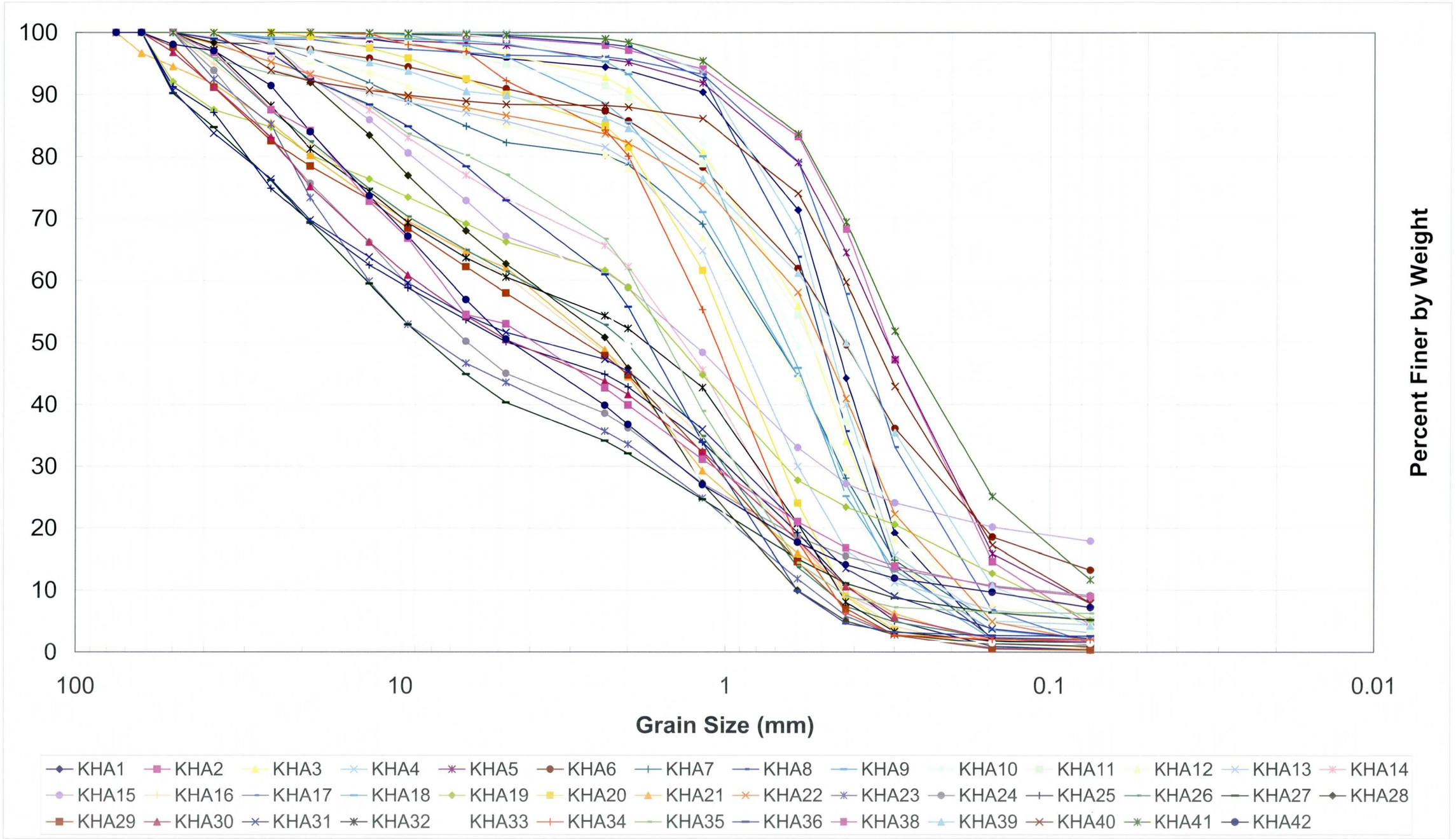


Figure 5.2 100-Year Hydrograph at CP 1039U
(Corps of Engineers)

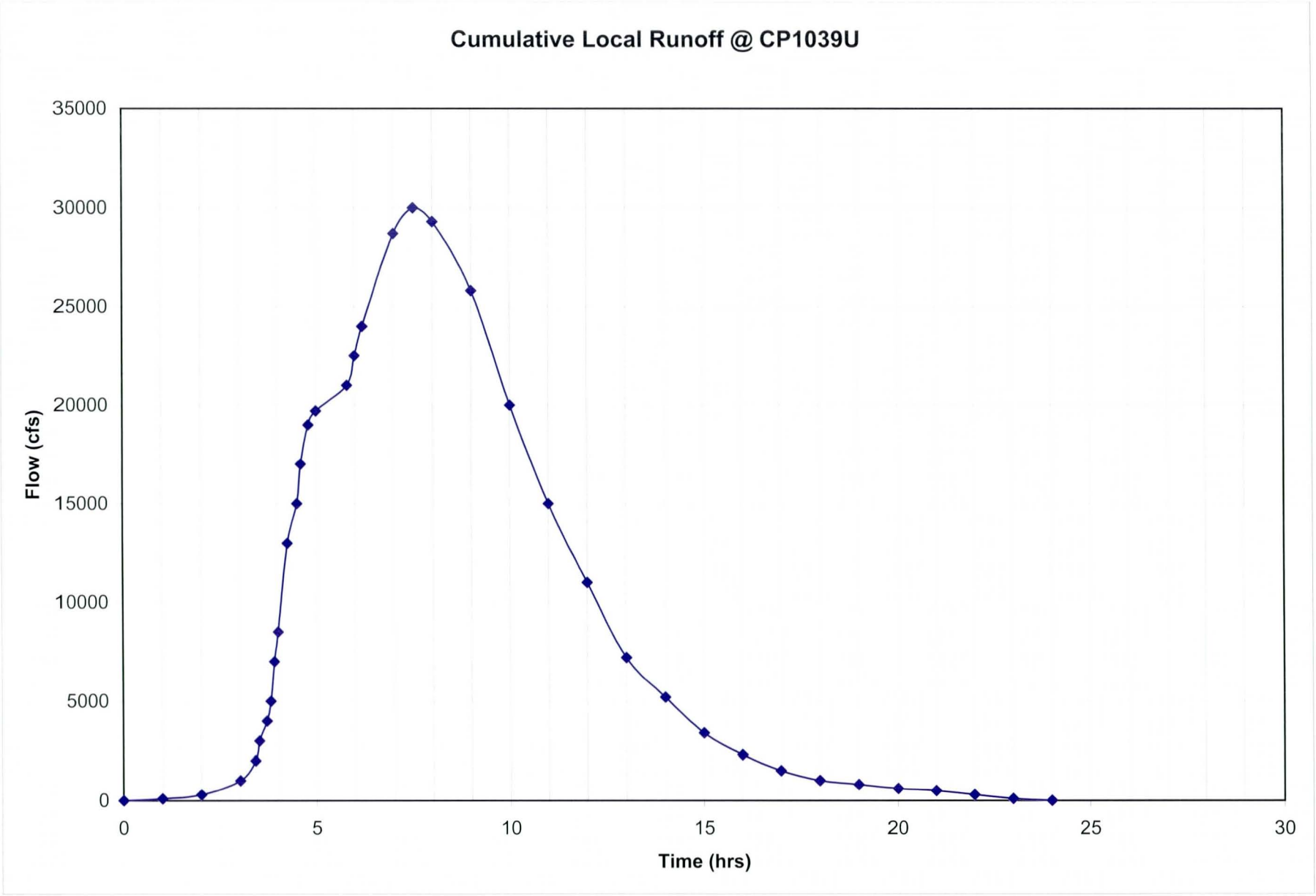


Figure 5.3. 100-Year Agua Fria River Hydrograph - Corp SPF with 0.58 ratio at CP 1039D.

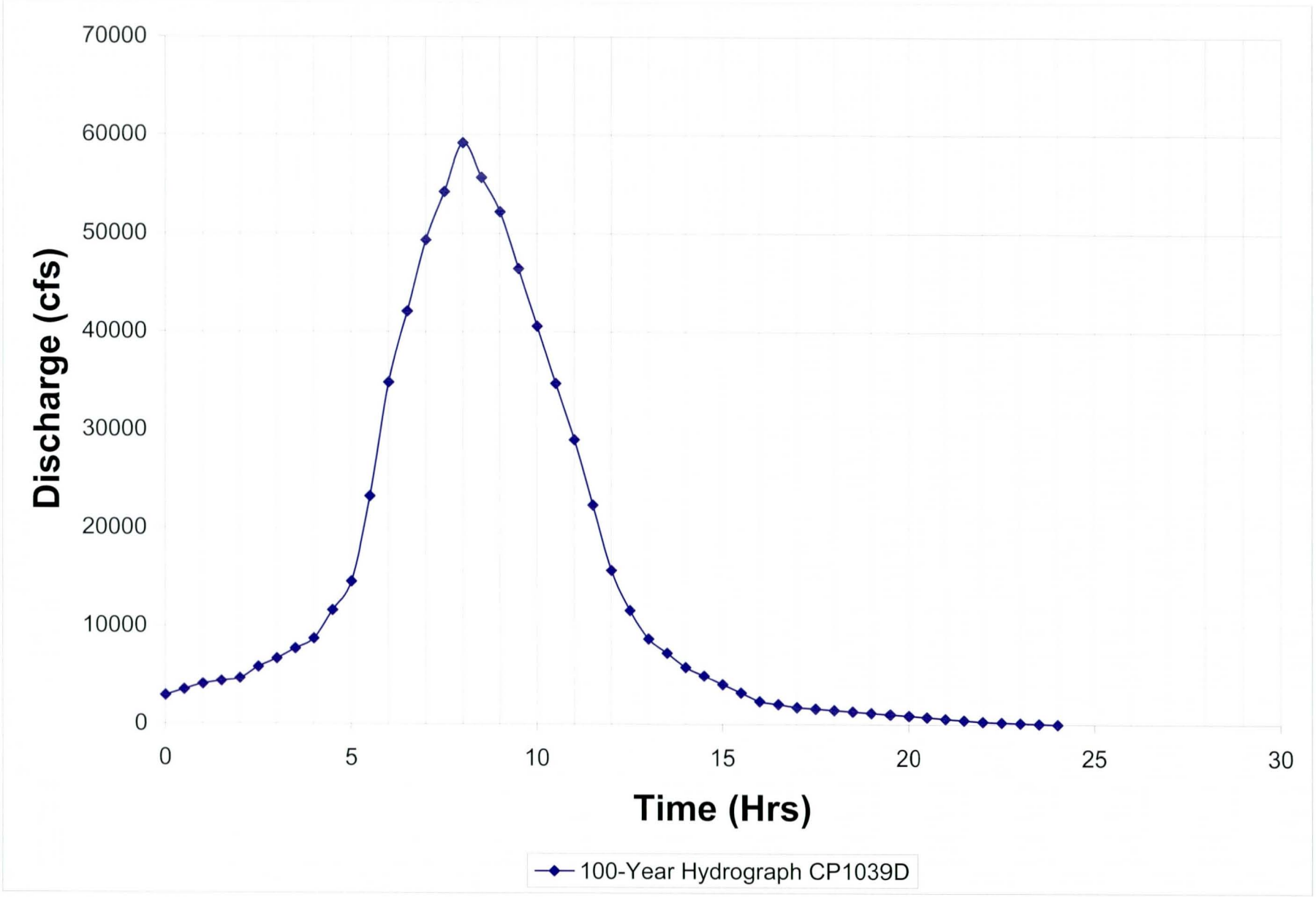


Figure 5.4. 100-Year Hydrograph at CP1039D

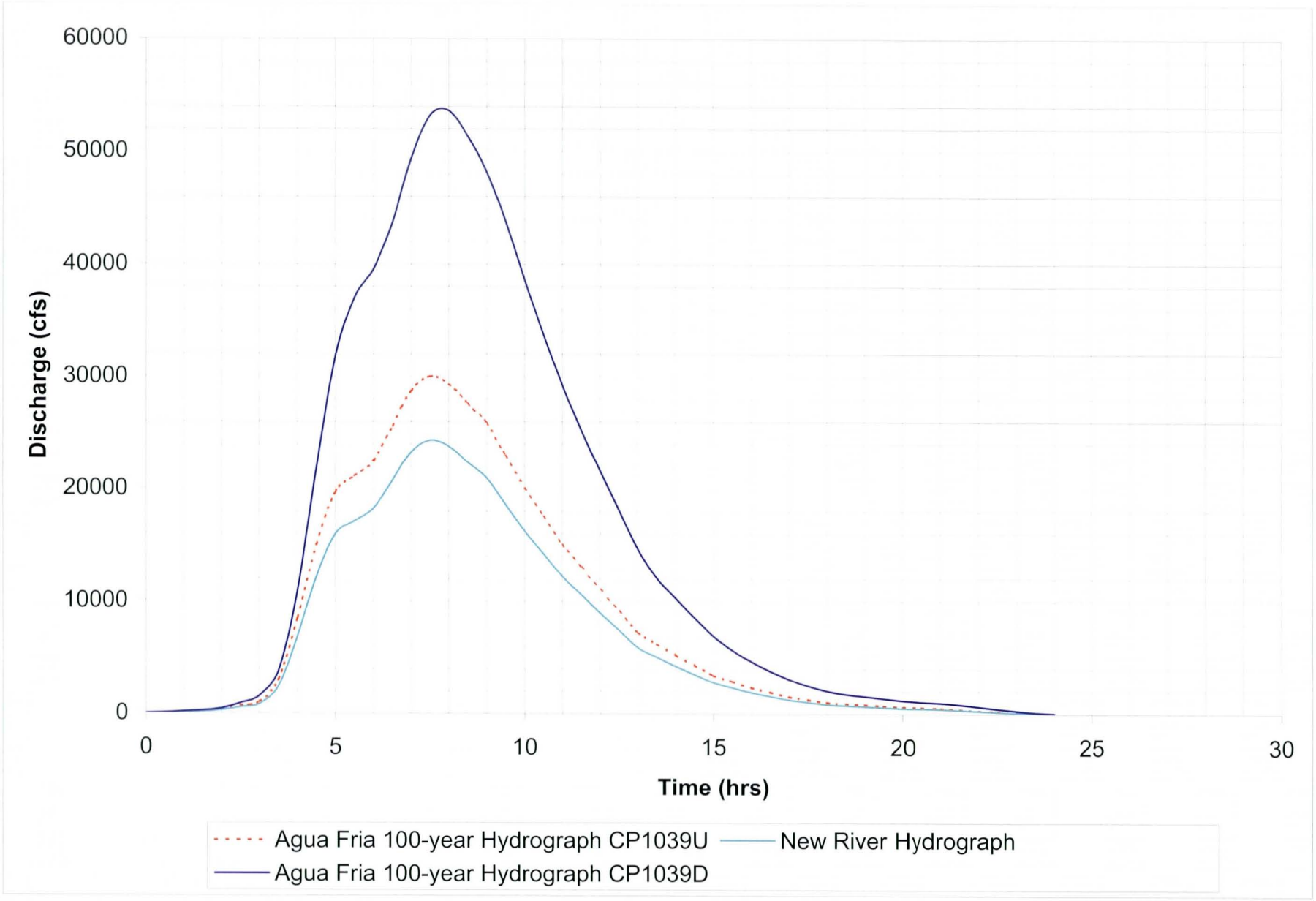


Figure 5.5 Comparison of Corps and Combined 100-Year Hydrographs

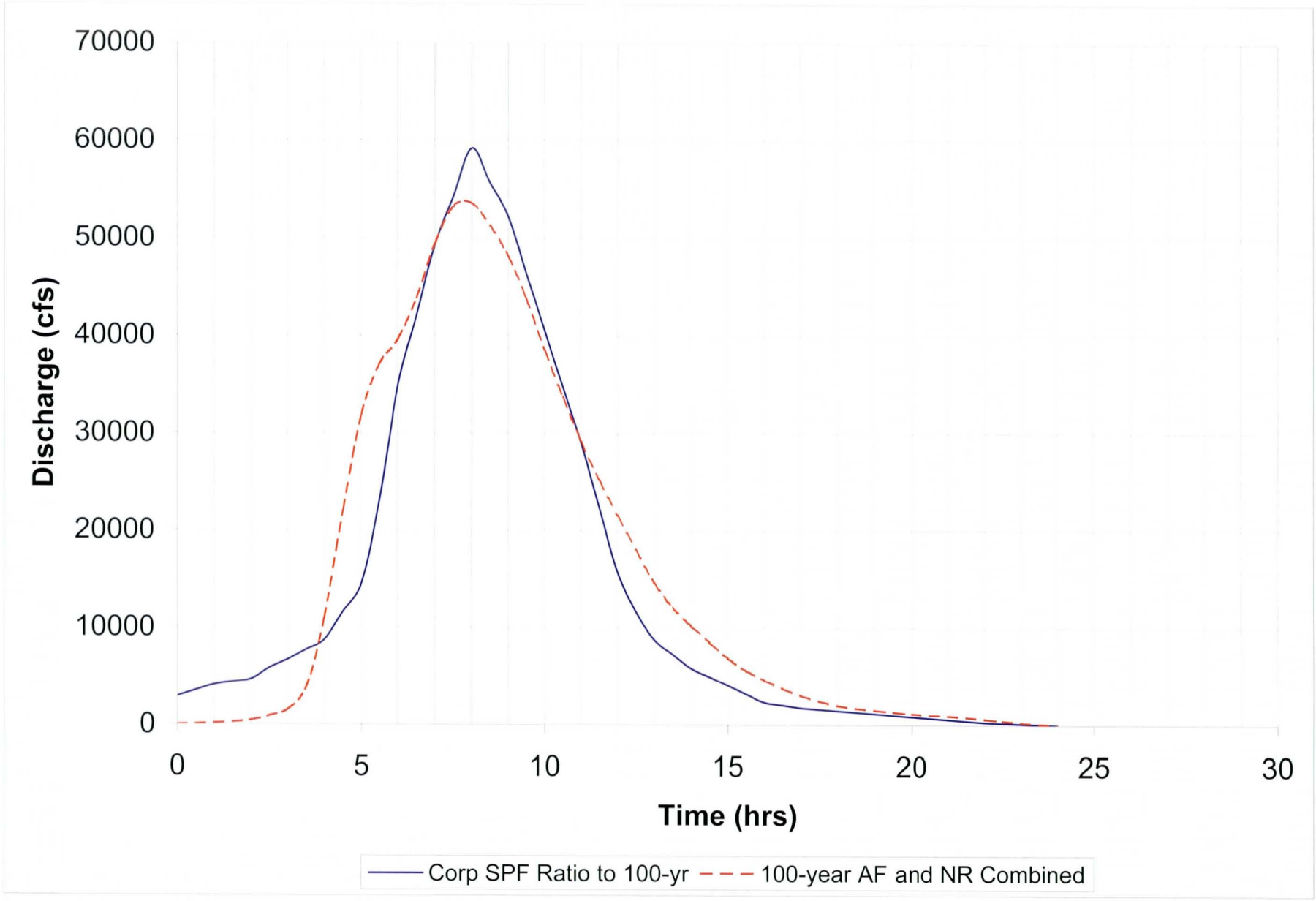


Figure 5.6. Computational Hydrographs

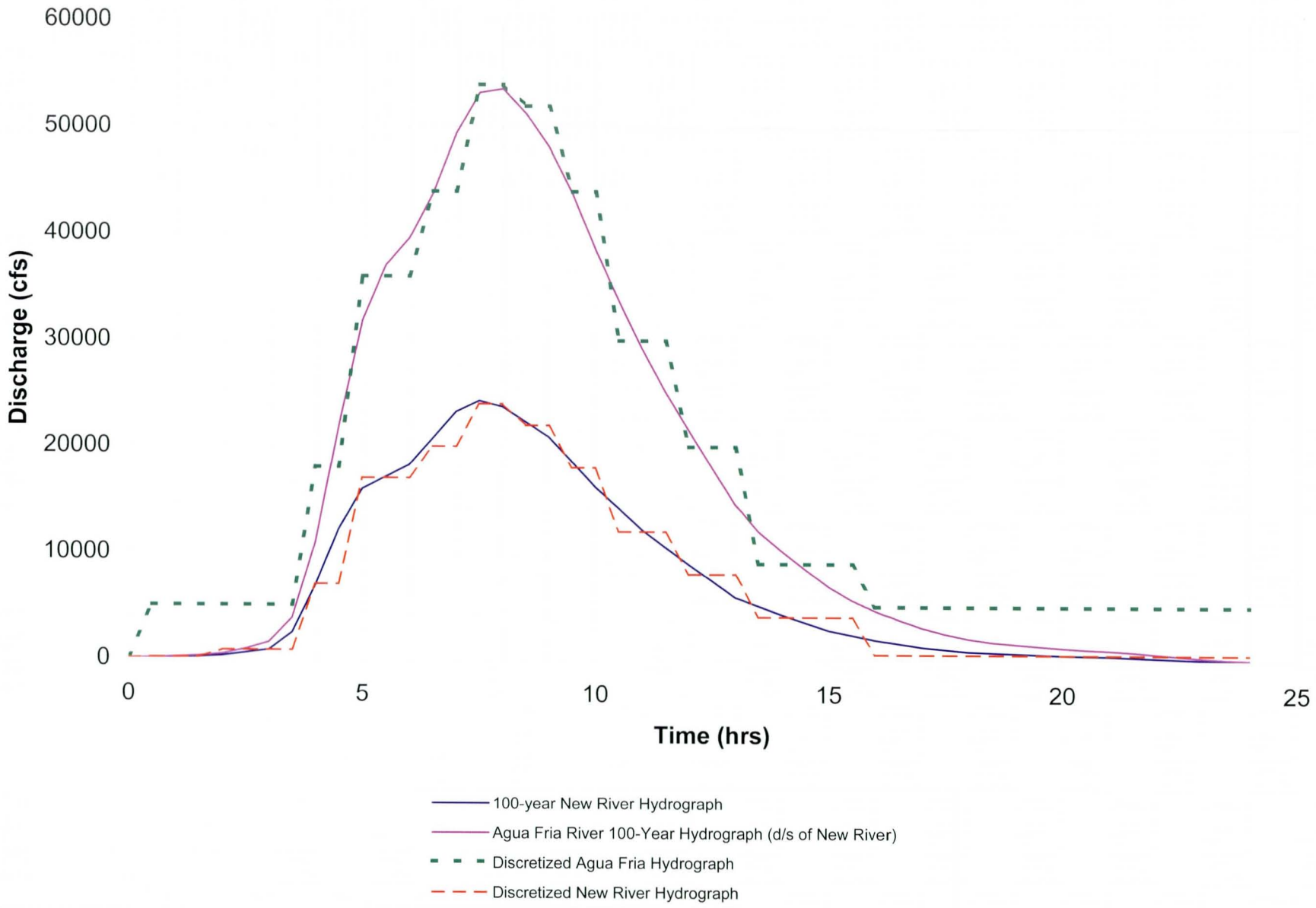


Table 5.1. Summary of Results HEC-6 Exisiting Conditions

Cross Section	30 day run @ 9,000 cfs			Begin 100-year hydrograph											End 100-yr hydrograph						Cross Section	
Station	Time 1 day Elevation (ft)	Time 2 day Elevation (ft)	Time 30 day Elevation (ft)	Time 30.06 day Elevation (ft)	Time 30.15 day Elevation (ft)	Time 30.20 day Elevation (ft)	Time 30.27 day Elevation (ft)	Time 30.32 day Elevation (ft)	Time 30.37 day Elevation (ft)	Time 30.42 day Elevation (ft)	Time 30.47 day Elevation (ft)	Time 30.54 day Elevation (ft)	Time 30.61 day Elevation (ft)	Time 30.75 day Elevation (ft)	Time 30.09 day Elevation (ft)	Time 31.10 day Elevation (ft)	Condition at end of 31.10 days	Max	Min	Maxchange during event	Station	Reference Location
33.82	0.12	0.12	0.53	0.55	0.58	0.55	0.48	0.42	0.4	0.39	0.39	0.42	0.47	0.54	0.64	0.64	deposition	0.64	0.12	0.64 deposition	33.82	
33.41	0.07	0.08	0.02	0.01	0.01	0.02	0.03	0.04	0.03	0.04	0.03	0.02	0.01	0.01	0.02	0.02	deposition	0.08	0.01	0.08 deposition	33.41	
32.998	-0.95	-1.16	-4.37	-4.41	-4.46	-4.45	-4.44	-4.44	-4.45	-4.45	-4.47	-4.47	-4.48	-4.51	-4.65	-4.65	scour	-0.95	-4.65	-4.65 scour	32.998	Morgan City Wash
32.984	-1.14	-2.3	-9.19	-9.15	-9.1	-9.08	-9.01	-8.85	-8.73	-8.84	-8.85	-8.86	-9.06	-9.03	-8.93	-8.93	scour	-1.14	-9.19	-9.19 scour	32.984	State Rte 74
32.92	-0.88	-1.03	-3.37	-3.34	-3.32	-3.33	-3.28	-3.31	-3.26	-3.36	-3.26	-3.34	-3.29	-3.29	-3.21	-3.21	scour	-0.88	-3.37	-3.37 scour	32.92	
32.86	-1.05	-0.96	-0.98	-1.02	-1.04	-1.05	-1.02	-0.97	-0.94	-0.89	-0.88	-0.85	-0.89	-1.01	-1.12	-1.12	scour	-0.85	-1.12	-1.12 scour	32.86	
32.72	-0.12	0.05	2.49	2.52	2.55	2.53	2.47	2.42	2.35	2.31	2.3	2.31	2.33	2.4	2.52	2.52	deposition	2.55	-0.12	2.55 deposition	32.72	
32.43	-0.01	-0.15	-0.1	-0.1	-0.1	-0.1	-0.08	-0.07	-0.05	-0.05	-0.05	-0.06	-0.06	-0.07	-0.07	-0.07	scour	-0.01	-0.15	-0.15 scour	32.43	
31.86	-0.01	0.03	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.01	-0.01	0	-0.01	-0.01	-0.01	-0.01	scour	0.03	-0.04	-0.04 scour	31.86	
31.39	-0.47	-0.51	-0.58	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.58	-0.59	-0.59	-0.59	scour	-0.47	-0.59	-0.59 scour	31.39	
30.82	-0.74	-1.2	-3.75	-3.75	-3.74	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.73	-3.72	-3.72	scour	-0.74	-3.75	-3.75 scour	30.82	
30.73	-1.31	-1.59	-2.77	-2.77	-2.76	-2.76	-2.8	-2.84	-2.88	-2.92	-2.94	-2.94	-2.94	-2.91	-2.83	-2.83	scour	-1.31	-2.94	-2.94 scour	30.73	
30.26	2.83	2.87	1.16	1.12	1.06	1.08	1.16	1.23	1.21	1.17	1.15	1.19	1.19	1.1	0.92	0.92	deposition	2.87	0.92	2.87 deposition	30.26	
30.07	-0.91	-1.25	-3.8	-3.78	-3.77	-3.79	-3.81	-3.82	-3.82	-3.83	-3.83	-3.84	-3.85	-3.81	-3.78	-3.78	scour	-0.91	-3.85	-3.85 scour	30.07	
29.8	3.79	2.11	3.48	3.5	3.52	3.5	3.4	3.4	3.43	3.46	3.45	3.41	3.41	3.51	3.53	3.53	deposition	3.79	2.11	3.79 deposition	29.8	
29.611	-0.5	-1.42	-2.28	-2.28	-2.29	-2.29	-2.29	-2.31	-2.33	-2.37	-2.4	-2.43	-2.48	-2.5	-2.48	-2.48	scour	-0.5	-2.5	-2.5 scour	29.611	
29.54	0.1	0.23	-0.26	-0.26	-0.24	-0.25	-0.28	-0.29	-0.3	-0.31	-0.31	-0.32	-0.32	-0.3	-0.27	-0.27	scour	0.23	-0.32	-0.32 scour	29.54	
29.04	0.17	0	-0.23	-0.23	-0.24	-0.24	-0.21	-0.19	-0.17	-0.16	-0.15	-0.13	-0.14	-0.21	-0.23	-0.23	scour	0.17	-0.24	-0.24 scour	29.04	
28.95	-0.33	-0.29	-0.58	-0.57	-0.57	-0.58	-0.58	-0.59	-0.59	-0.6	-0.6	-0.61	-0.62	-0.6	-0.59	-0.59	scour	-0.29	-0.62	-0.62 scour	28.95	
28.67	0.1	-0.04	-0.84	-0.84	-0.84	-0.84	-0.84	-0.84	-0.85	-0.85	-0.85	-0.85	-0.84	-0.83	-0.83	-0.83	scour	0.1	-0.85	-0.85 scour	28.67	
28.12	0.08	0	-0.77	-0.77	-0.77	-0.77	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.79	-0.79	scour	0.08	-0.79	-0.79 scour	28.12	
27.94	-0.09	-0.34	-0.94	-0.93	-0.92	-0.92	-0.93	-0.93	-0.94	-0.94	-0.94	-0.93	-0.93	-0.91	-0.87	-0.87	scour	-0.09	-0.94	-0.94 scour	27.94	
27.68	0.1	0.14	0.19	0.15	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.12	0.11	0.1	0.1	deposition	0.19	0.1	0.19 deposition	27.68	
27.03	-0.04	0.11	-0.37	-0.35	-0.35	-0.36	-0.37	-0.39	-0.4	-0.41	-0.41	-0.4	-0.4	1.77	1.75	1.75	deposition	1.77	-0.41	1.77 deposition	27.03	
26.73	0.04	0.09	-1.76	-1.76	-1.76	-1.76	-1.75	-1.76	-1.76	-1.77	-1.78	-1.78	-1.78	-1.77	-1.75	-1.75	scour	0.09	-1.78	-1.78 scour	26.73	
26.29	-0.11	-0.25	-4.5	-4.5	-4.51	-4.51	-4.52	-4.51	-4.51	-4.52	-4.52	-4.53	-4.54	-4.55	-4.57	-4.57	scour	-0.11	-4.57	-4.57 scour	26.29	
25.86	-0.19	-0.05	-0.94	-0.94	-0.94	-0.94	-0.96	-0.97	-0.99	-1.01	-1.03	-1.06	-1.08	-1.08	-1.14	-1.14	scour	-0.05	-1.14	-1.14 scour	25.86	
25.666	0.73	0.73	0.17	0.18	0.19	0.18	0.19	0.2	0.22	0.23	0.23	0.23	0.21	0.2	0.17	0.17	deposition	0.73	0.17	0.73 deposition	25.666	
25.478	-0.43	-0.44	-0.89	-0.9	-0.91	-0.9	-0.91	-0.91	-0.96	-1	-0.99	-0.98	-0.97	-0.96	-0.93	-0.93	scour	-0.43	-1	-1 scour	25.478	Jomax Road
24.996	0.46	0.82	-0.29	-0.28	-0.28	-0.27	-0.23	-0.2	-0.14	-0.09	-0.07	-0.03	-0.06	-0.1	-0.17	-0.17	scour	0.82	-0.29	0.82 deposition	24.996	
24.543	1.76	1.7	1.72	3.28	3.25	1.7	1.54	1.5	1.44	1.37	1.34	1.25	1.26	1.3	1.38	1.38	deposition	3.28	1.25	3.28 deposition	24.543	
24.449	-0.11	-0.13	1.18	1.19	1.2	1.2	1.27	1.24	1.23	1.23	1.19	1.23	1.21	1.18	1.1	1.1	deposition	1.27	-0.13	1.27 deposition	24.449	Happy Valley Road
23.974	0.16	0.1	1.03	1.03	1.04	1.04	1.02	1.05	1.05	1.05	1.08	1.05	1.04	1.05	1.07	1.07	deposition	1.08	0.1	1.08 deposition	23.974	
23.692	-0.16	-0.2	-0.29	-0.29	-0.29	-0.29	-0.3	-0.31	-0.31	-0.3	-0.31	-0.32	-0.33	-0.33	-0.34	-0.34	scour	-0.16	-0.34	-0.34 scour	23.692	
23.409	0.11	0.13	0.33	0.34	0.35	0.34	0.33	0.33	0.3	0.28	0.27	0.26	0.27	0.29	0.32	0.32	deposition	0.35	0.11	0.35 deposition	23.409	Pinnacle Peak Road
22.935	0.45	0.45	0.51	0.5	0.49	0.41	0.42	0.43	0.45	0.47	0.47	0.48	0.55	0.53	0.5	0.5	deposition	0.55	0.41	0.55 deposition	22.935	
22.462	0.02	0.03	-0.2	-0.19	-0.19	-0.2	-0.2	-0.21	-0.22	-0.23	-0.23	-0.23	-0.22	-0.21	-0.2	-0.2	scour	0.03	-0.23	-0.23 scour	22.462	
21.893	-0.33	-0.54	-0.14	-0.15	-0.16	-0.16	-0.16	-0.15	-0.14	-0.12	-0.12	-0.11	-0.1	-0.12	-0.15	-0.15	scour	-0.1	-0.54	-0.54 scour	21.893	
21.431	0.65	0.87	2.46	2.48	2.51	2.51	2.52	2.52	2.53	2.53	2.54	2.55	2.56	2.6	2.69	2.7	deposition	2.7	0.65	2.7 deposition	21.431	
21.157	0.48	0.7	0.59	0.59	0.59	0.6	0.63	0.66	0.68	0.71	0.73	0.74	0.75	0.73	0.71	0.71	deposition	0.75	0.48	0.75 deposition	21.157	
21.061	0.15	0.17	0.14	0.15	0.15	0.15	0.1	0.08	0.07	0.07	0.06	0.05	0.06	0.11	0.18	0.18	deposition	0.18	0.05	0.18 deposition	21.061	Beardsley Road
20.958	0.02	0.13	0.08	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.07	deposition	0.13	0.02	0.13 deposition	20.958	
20.579	-0.05	-0.03	-0.1	-0.09	-0.08	-0.08	-0.08	-0.1	-0.11	-0.12	-0.12	-0.11	-0.11	-0.09	-0.06	-0.06	scour	-0.03	-0.12	-0.12 scour	20.579	
19.92	-0.02	-0.02	0.37	1.71	1.65	0.37	0.36	0.37	0.36	0.36	0.35	0.33	0.33	1.54	1.42	1.42	deposition	1.71	-0.02	1.71 deposition	19.92	Union Hills Road
19.446	-0.06	-0.07	-0.21	-0.18	-0.15	-0.16	-0.15	-0.17	-0.17	-0.17	-0.17	-0.15	-0.16	-0.13	-0.1	-0.1	scour	-0.06	-0.21	-0.21 scour	19.446	
19.066	-0.32	-0.39	-0.86	-0.84	-0.82	-0.84	-0.86	-0.84	-0.84	-0.84	-0.84	-0.84	-0.85	-0.82	-0.78	-0.78	scour	-0.32	-0.86	-0.86 scour	19.066	
18.962	0.05	0.03	0.48	0.48	0.49	0.5	0.48	0.48	0.46	0.45	0.45	0.44	0.45	0.46	0.51	0.51	deposition	0.51	0.03	0.51 deposition	18.962	Bell Road
18.275	0.08	0.07	0.05	0.05	0.04	0.04	0.06	0.07	0.09	0.11	0.12	0.12	0.12	0.1	0.07	0.07	deposition	0.12	0.04	0.12 deposition	18.275	
17.821	0	0.01	-0.71	-0.7	-0.69	-0.7	-0.72	-0.74	-0.85	-0.95	-1	-1.01	-1	-0.96	-0.91	-0.9	scour	0.01	-1.01	-1.01 scour	17.821	
17.638	-1.84	-2.09	-2.71	-2.71	-2.71	-2.71	-2.72	-2.72	-2.71	-2.7	-2.7	-2.71	-2.71	-2.72	-2.72	-2.72	scour	-1.84	-2.72	-2.72 scour	17.638	
17.458	0.61	0.71	1.63	1.62	1.62	1.62	1.65	1.68	1.76	1.85	1.9	1.92	1.91	1.89	1.83	1.83	deposition	1.92	0.61	1.92 deposition	17.458	
16.99	0.23	0.03	0.15	0.16	0.16	0.16	0.14	0.14	0.13	0.12	0.11	0.11	0.12	0.13	0.15	0.15	deposition	0.23	0.03	0.23 deposition	16.99	
16.612	-0.03	-0.15	-1.14	-1.13	-1.13	-1.14	-1.18	-1.34	-1.46	-1.5	-1.49	-1.46	-1.43	-1.39	-1.3	-1.3	scour	-0.03	-1.5	-1.5 scour	16.612	
16.506	-0.67	-0.51	-0.96	-0.96	-0.96	-0.96	-0.95	-0.94	-0.91	-0.89	-0.86	-0.84	-0.84	-0.84	-0.83	-0.83	scour	-0.51	-0.96	-0.96 scour	16.506	Grand Avenue
16.482	-0.04	-0.15	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.74	-0.74	-0.75	-0.75	-0.75	scour	-0.04	-0.75	-0.75 scour	16.482	
16.099	0.14	0.15	-0.13	-0.13	-0.14	-0.13	-0.11	-0.06	-0.05	-0.05	-0.06	-0.06	-0.06	-0.08	-0.12	-0.13	scour	0.15	-0.14	0.15 deposition	16.099	
15.719	0.32	0.34	0.22	0.22	0.21	0.21	0.2	0.18	0.17	0.15	0.15	0.15	0.16	0.17	0.18	0.18	deposition	0.34	0.15	0.34 deposition	15.719	Cactus Road - El Mirage Landfill
15.374	-0.61	-0.49	-0.89	-0.89	-0.88	-0.89	-0.9	-0.91	-0.92	-0.92	-0.93	-0.93	-0.93	-0.91	-0.9	-0.9	scour	-0.49	-0.93	-0.93 scour	15.374	
15.094	0.33	0.48	0.11	0.11	0.1	0.1	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.11	0.1	0.1	deposition	0.48	0.1	0.48 deposition	15.094	
15	-0.06	-0.02	-1.9	-1.91	-1.91	-1.92	-1.93	-1.95	-1.98	-2.02	-2.07	-2.12	-2.15	-2.18	-2.21	-2.21	scour	-0.02	-2.21	-2.21 scour	15	
14.43	-0.07	-0.28	-4.03	-4.03	-4.03	-4.03	-4.02	-4.01	-4	-3.99	-3.98	-3.97	-3.97	-3.97	-3.97	-3.97	scour	-0.07	-4.03	-4.03 scour	14.43	
13.952	-1.13	-1.43	-2.16	-2.16	-2.16	-2.16	-2.17	-2.17	-2.17	-2.18	-2.18	-2.18	-2.18	-2.18	-2.17	-2.17	scour	-1.13	-2.18	-2.18 scour	13.952	
13.467	0.65	0.9	0.28	0.27	0.26	0.26	0.26	0.27	0.28	0.29	0.3	0.3	0.3	0.29	0.25	0.25	deposition	0.9	0.25	0.9 deposition	13.467	Olive Ave
13.007	-0.14	-0.17	-0.28	-0.26	-0.24	-0.26	-0.28	-0.3	-0.33	-0.34	-0.35	-0.36	-0.35	-0.33	-0.28	-0.27	scour	-0.14	-0.36	-0.36 scour	13.007	
12.816	0.44	0.43	1.06	1.06	1.05	1.05	1	0.94	0.88	0.8	0.73	0.71	0.7	0.72	0.75	0.75	deposition	1.06	0.43	1.06 deposition	12.816	
12.47	0.14	0.14	0.31	0.3	0.28	0.29	0.35	0.41	0.47	0.54	0.59	0.57	0.53	0.46	0.32	0.32	deposition	0.59	0.14	0.59 deposition	12.47	
12.42	1.23	1.57	1.87	1.68	1.53	1.55	1.63	1.7	1.76	1.84	1.92	2.03	2.06	1.59	1.31	1.3	deposition	2.06	1.23	2.06 deposition	12.42	
12.359	0.03	0.09	0.26	0.32	0.36	0.36	0.35	0.34	0.33	0.32	0.31	0.31	0.31	0.42	0.48	0.48	deposition	0.48	0.03	0.48 deposition	12.359	
11.847	-0.25	-0.23	-0.6	-0.58	-0.55	-0.56	-0.62	-0.65	-0.71	-0.78	-0.84	-0.88	-0.88	-0.8	-0.72	-0.72	scour	-0.23	-0.88	-0.88 scour	11.847	
11.557	-0.35	-0.38	-0.37	-0.32	-0.25	-0.26	-0.34	-0.42	-0.52	-0.57	-0.59	-0.59	-0.58	-0.43	-0.17	-0.17	scour	-0.17	-0.59	-0.59 scour	11.557	
11.428	-0.14	-0.08	1.07	1.07	1.07	1.08	1.08	1.03	0.97	0.89	0.82	0.76	0.74	0.74	0.8	0.8	deposition	1.08	-0.14	1.08 deposition	11.428	Glendale Ave
11.029	0.26	0.26	2.19	2.18	2.17	2.18	2.23	2.27	2.31	2.33	2.35	2.35	2.35	2.31	2.24	2.23	deposition	2.35	0.26	2.35 deposition	11.029	
10.752	0.15	0.18	1	1.01	1.02	1.02	1	0.99	0.99	0.98	0.97	0.95	0.95	0.98	1.04	1.04	deposition	1.04	0.15	1.04 deposition	10.752	
10.538	0.09	0.16	0.75	0.74	0.72	0.73	0.76	0.77	0.79	0.8	0.83	0.84	0.84	0.81	0.75	0.75	deposition	0.84	0.09	0.84 deposition	10.538	
10.343	-0.16	-0.2	-0.19	-0.18	-0.17	-0.18	-0.19	-0.21	-0.23	-0.25	-0.26	-0.25	-0.25	-0.23	-0.19	-0.19	scour	-0.16	-0.26	-0.26 scour	10.343	
9.885	-0.19	-0.27	-0.11	-0.12	-0.12	-0.12	-0.1	-0.08	-0.05	-0.01	0.01	0.01	0	-0.02	-0.05	-0.05	scour	0.01	-0.27	-0.27 scour	9.885	
9.696	0.03	-0.07	0.32	0.32	0.32	0.32	0.32	0.33	0.34	0.35	0.35	0.34	0.33	0.31	0.31	0.31	deposition	0.35	-0.07	0.35 deposition	9.696	D/S Glendale Airport
9.435	0.17	0.31	0.77	0.77	0.77	0.75	0.72	0.69	0.64	0.61	0.58	0.57	0.56	0.56	0.55	0.55	deposition	0.77	0.17	0.77 deposition	9.435	U/S Camelback Road
8.992	-0.07	-0.09	-0.59	-0.59	-0.59	-0.58	-0.56	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.54	-0.58	-0.58	scour	-0.07	-0.59	-0.59 scour	8.992	
8.768	-0.8	-1.03	-1.41	-1.4	-1.39	-1.4	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.4	-1.35	-1.35	scour	-0.8	-1.42	-1.42 scour	8.768	
8.433	0.08	-0.01	-0.14	-0.14	-0.13	-0.15	-0.18	-0.21	-0.23	-0.23	-0.23	-0.23	-0.23	-0.22	-0.19	-0.19	scour	0.08	-0.23	-0.23 scour	8.433	
8.198	0.05	0.04	0.29	0.29	0.29	0.3	0.29	0.28	0.26	0.22	0.19	0.18	0.17	0.18	0.2	0.2	deposition	0.3	0.04	0.3 deposition	8.198	
8.105	-0.27	-0.18	0.33	0.33	0.32	0.34	0.41	0.44	0.46	0.47	0.45	0.41	0.4	0.38	0.36	0.36	deposition	0.47	-0.27	0.47 deposition	8.105	
8	0.97	1.05	1.75	1.75	1.75	1.76	1.8	1.84	1.86	1.89	1.9	1.87	1.84	1.8	1.77	1.77	deposition	1.9	0.97	1.9 deposition	8	
7.99	0.93	0.96	1.61	1.61	1.61	1.6	1.55	1.56	1.54	1.55	1.6	1.61	1.63	1.64	1.64	1.64	deposition	1.64	0.93	1.64 deposition	7.99	Indian School Road
7.988	0.26	0.48	1.37	1.37	1.37	1.37	1.38	1.38	1.38	1.37	1.36	1.36	1.36	1.36	1.36	1.36	deposition	1.38	0.26	1.38 deposition	7.988	Grade control structure
7.49	-0.07	-0.09	-0.58	-0.58	-0.58	-0.58	-0.58	-0.62	-0.67	-0.7	-0.72	-0.73	-0.73	-0.72	-0.72	-0.72	scour	-0.07	-0.73	-0.73 scour	7.49	
6.99	-0.08	-0.47	-0.91	-0.9	-0.9	-0.91	-0.94	-0.94	-0.96	-0.98	-1.02	-1.02	-1.02	-1.01	-0.99	-0.99	scour	-0.08	-1.02	-1.02 scour	6.99	
6.93	0.19	0	-0.16	-0.16	-0.16	-0.14	-0.14	-0.1	-0.16	-0.06	-0.11	-0.07	-0.11	-0.14	-0.17	-0.17	scour	0.19	-0.17	0.19 deposition	6.93	
6.91	-0.68	-0.59	-0.75	-0.7	-0.67	-0.85	-0.94	-0.94	-0.94	-0.94	-0.94	-0.94	-0.93	-0.81	-0.65	-0.65	scour	-0.59	-0.94	-0.94 scour	6.91	
6.89	0	0	0	0	0.05	0	0.82	0	1.6	0	1.22	0	0.41	0.11	0.05	0	no change	1.6	0	1.6 deposition	6.89	
6.888	-1.49	-1.49	-1.5	-1.5	-1.5	-1.5	-1.5	-1.49	-1.49	-1.49	-1.48	-1.48	-1.48	-1.48	-1.49	-1.49	scour	-1.48	-1.5	-1.5 scour	6.888	
6.82	0.21	0.44	-0.16	-0.16	-0.17	-0.15	-0.2	-0.16	-0.23	-0.19	-0.22	-0.18	-0.19	-0.18	-0.2	-0.2	scour	0.44	-0.23	0.44 deposition	6.82	
6.43	-0.06	-0.12	-0.2	-0.2	-0.2	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	scour	-0.06	-0.2	-0.2 scour	6.43	
6.07	0.26	0.42	0.86	0.86	0.86	0.86	0.86	0.84	0.86	0.84	0.82	0.81	0.79	0.79	0.79	0.79	deposition	0.86	0.26	0.86 deposition	6.07	
6.068	0.34	0.46	0.85	0.85	0.85	0.85	0.86	0.84	0.84	0.84	0.82	0.8	0.79	0.79	0.78	0.78	deposition	0.86	0.34	0.86 deposition	6.068	
5.9	-0.04	0.03	0.49	0.49	0.49	0.49	0.48	0.48	0.47	0.48	0.46	0.46	0.45	0.44	0.43	0.43	deposition	0.49	-0.04	0.49 deposition	5.9	Grade control structure
5.75	0.09	0.1	0.61	0.61	0.61	0.6	0.57	0.55	0.51	0.49	0.48	0.47	0.48	0.49	0.48	0.48	deposition	0.61	0.09	0.61 deposition	5.75	
5.689	0.28	0.5	1.19	1.19	1.18	1.18	1.17	1.15	1.12	1.09	1.08	1.07	1.07	1.07	1.06	1.06	deposition	1.19	0.28	1.19 deposition	5.689	McDowlell Road
5.38	-0.35	-0.49	-0.58	-0.58	-0.58	-0.58	-0.57	-0.59	-0.61	-0.62	-0.62	-0.62	-0.62	-0.63	-0.62	-0.62	scour	-0.35	-0.63	-0.63 scour	5.38	
5.29	-0.16	-0.34	-0.3	-0.29	-0.28	-0.3	-0.39	-0.41	-0.4	-0.39	-0.39	-0.41	-0.41	-0.39	-0.35	-0.35	scour	-0.16	-0.41	-0.41 scour	5.29	
5.203	0	0	0	0	0.01	0	0.19	0	0.3	0	0.22	0	0.07	0.02	0.01	0	no change	0.3	0	0.3 deposition	5.203	
5.201	0.95	0.1	0.09	0.03	0	0.26	0	0.95	0	1.12	0	0.5	0	0	0	0.03	deposition	1.12	0	1.12 deposition	5.201	
5.15	-0.35	-0.35	-2.64	-2.64	-2.64	-2.64	-2.61	-2.62	-2.62	-2.61	-2.58	-2.55	-2.57	-2.59	-2.6	-2.6	scour	-0.35	-2.64	-2.64 scour	5.15	Grade control structure
4.79	-0.22	-0.16	1.8	1.8	1.8	1.79	1.88	1.92	2.09	2.1	2.22	2.19	2.25	2.23	2.16	2.16	deposition	2.25	-0.22	2.25 deposition	4.79	
4.754	1.65	1.85	3.49	3.48	3.48	3.48	3.49	3.52	3.56	3.62	3.67	3.71	3.72	3.71	3.67	3.67	deposition	3.72	1.65	3.72 deposition	4.754	
4.7	0.53	0.92	2.95	2.95	2.95	2.95	2.94	2.94	2.95	2.97	3	3.04	3.07	3.08	3.08	3.08	deposition	3.08	0.53	3.08 deposition	4.7	
4.3	0.05	0.18	1.82	1.82	1.83	1.82	1.73	1.66	1.56	1.49	1.44	1.43	1.44	1.47	1.54	1.54	deposition	1.83	0.05	1.83 deposition	4.3	
4.094	0	0	0	0	0.01	0	0.13	0	0.21	0	0.15	0	0.05	0.01	0	0	no change	0.21	0	0.21 deposition	4.094	
4.092	0.08	0.01	0.02	0.01	0	0.05	0	0.19	0	0.23	0	0.1	0	0	0	0.01	deposition	0.23	0	0.23 deposition	4.092	Grade control structure
3.767	-0.41	-1	-1.74	-1.73	-1.74	-1.75	-1.63	-1.66	-1.51	-1.57	-1.41	-1.42	-1.34	-1.33	-1.41	-1.41	scour	-0.41	-1.75	-1.75 scour	3.767	
3.757	-0.04	-0.14	-0.98	-1	-1.02	-0.97	-0.96	-0.93	-0.92	-0.84	-0.78	-0.7	-0.62	-0.58	-0.77	-0.77	scour	-0.04	-1.02	-1.02 scour	3.757	
3.734	-0.39	-0.38	-1.2	-1.28	-1.31	-1.18	-0.94	-0.86	-0.83	-0.79	-0.79	-0.78	-0.77	-0.8	-1.1	-1.1	scour	-0.38	-1.31	-1.31 scour	3.734	
3.729	-0.28	-0.29	-1.09	-1.1	-1.11	-1.11	-1.09	-1.07	-1.05	-1.02	-0.99	-0.96	-0.95	-0.93	-0.94	-0.94	scour	-0.28	-1.11	-1.11 scour	3.729	
3.43	-0.26	-0.24	0.47	0.49	0.51	0.49	0.42	0.38	0.33	0.31	0.3	0.32	0.32	0.33	0.47	0.47	deposition	0.51	-0.26	0.51 deposition	3.43	
3.37	0.76	1.06	1.82	1.82	1.81	1.79	1.71	1.65	1.61	1.57	1.53	1.51	1.51	1.52	1.57	1.57	deposition	1.82	0.76	1.82 deposition	3.37	
3.27	0.09	0.23	1.03	1.03	1.03	1.03	1.05	1.05	1.05	1.05	1.05	1.04	1.04	1.03	1.02	1.02	deposition	1.05	0.09	1.05 deposition	3.27	
2.8	0.01	0.02	-0.62	-0.62	-0.62	-0.62	-0.59	-0.56	-0.52	-0.49	-0.47	-0.47	-0.48	-0.5	-0.53	-0.53	scour	0.02	-0.62	-0.62 scour	2.8	
2.6	-0.08	-0.16	-1.61	-1.61	-1.61	-1.61	-1.62	-1.67	-1.71	-1.74	-1.75	-1.75	-1.75	-1.74	-1.74	-1.74	scour	-0.08	-1.75	-1.75 scour	2.6	
2.02	-0.26	-0.38	-1.41	-1.41	-1.41	-1.41	-1.4	-1.38	-1.37	-1.35	-1.35	-1.35	-1.35	-1.35	-1.35	-1.34	scour	-0.26	-1.41	-1.41 scour	2.02	
1.71	0.35	0.53	-0.23	-0.24	-0.24	-0.25	-0.24	-0.21	-0.18	-0.16	-0.15	-0.16	-0.16	-0.18	-0.22	-0.22	scour	0.53	-0.25	0.53 deposition	1.71	
1.33	-0.22	-0.43	-3.43	-3.43	-3.43	-3.44	-3.47	-3.5	-3.53	-3.54	-3.58	-3.61	-3.62	-3.61	-3.6	-3.6	scour	-0.22	-3.62	-3.62 scour	1.33	
0.73	0	-0.04	-0.62	-0.62	-0.63	-0.64	-0.64	-0.65	-0.7	-0.74	-0.74	-0.74	-0.74	-0.74	-0.75	-0.75	scour	0	-0.75	-0.75 scour	0.73	
0.63	-0.49	-0.62	-1.16	-1.16	-1.16	-1.16	-1.18	-1.2	-1.15	-1.11	-1.11	-1.14	-1.15	-1.16	-1.17	-1.17	scour	-0.49	-1.2	-1.2 scour	0.63	
0.44	0.08	0.04	-0.08	-0.18	-0.22	-0.24	-0.23	-0.22	-0.2	-0.17	-0.16	-0.16	-0.16	-0.19	-0.25	-0.26	scour	0.08	-0.26	-0.26 scour	0.44	
0.16	0.36	0.4	0.14	0.31	0.38	0.04	0.08	0.07	-0.03	-0.11	-0.09	-0.02	0.03	0.37	0.44	0.44	deposition	0.44	-0.11	0.44 deposition	0.16	Gila River confluence

Figure 5. 7. Channel Bed Profile during 100-Year Flood - Existing Conditions

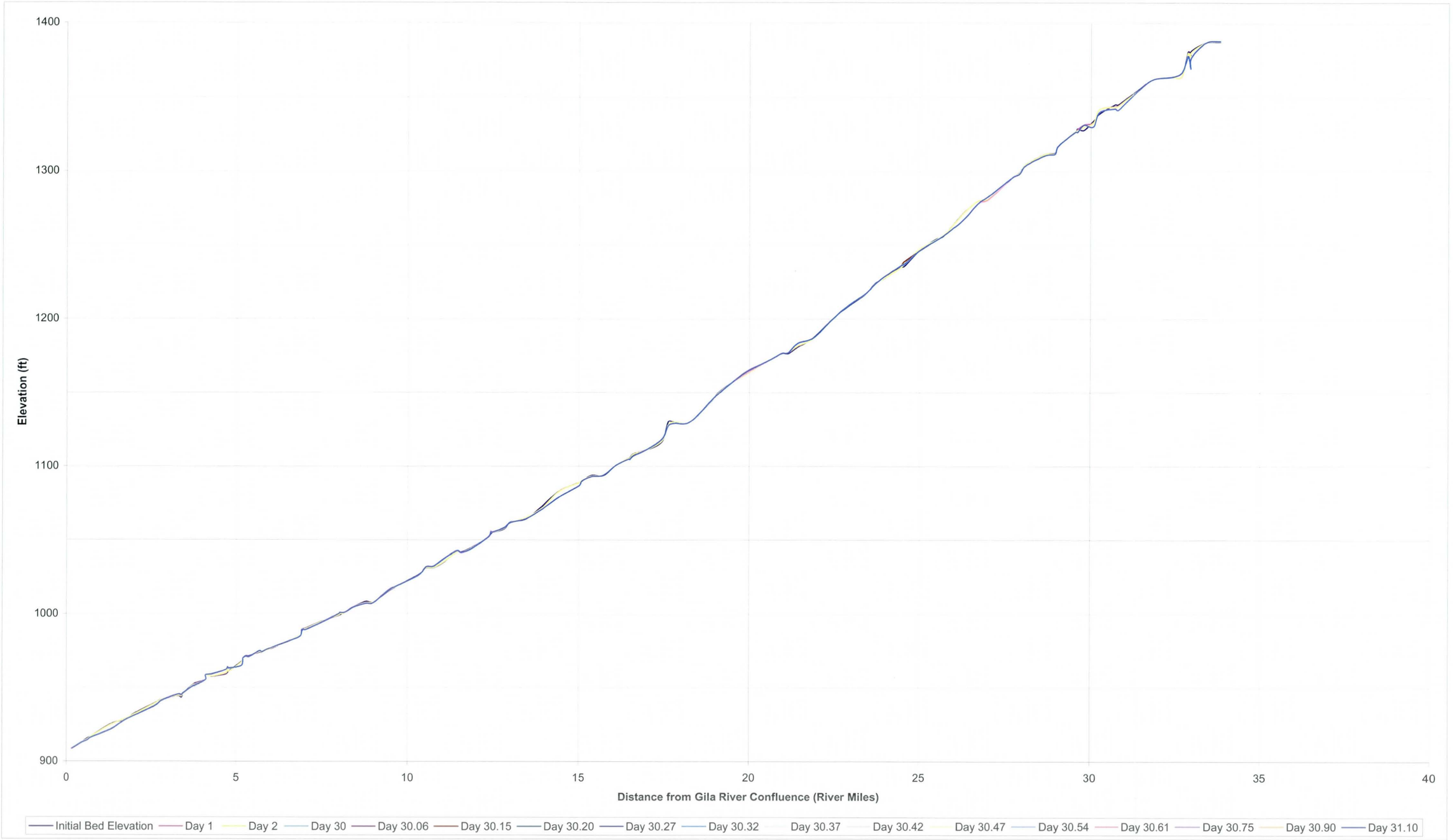


Table 5.2. Comparison of Bed Elevation Change End of Simuation - Existing Conditions

ASU Study	Bed Elevation Change	KHA Study	Bed Elevation Change
Station No.	**100-year**	**Station No.**	**100-year**
33.820	-2.520	33.820	0.640
33.410	-0.730	33.410	0.020
32.998	-6.540	32.998	-4.650
32.984	-4.640	32.984	-8.930
		32.920	-3.210
32.860	1.200	32.860	-1.120
		32.720	2.520
32.430	0.310	32.430	-0.070
31.860	0.210	31.860	-0.010
31.390	-1.200	31.390	-0.590
30.820	0.120	30.820	-3.720
		30.730	-2.830
30.260	-0.110	30.260	0.920
30.070	-0.280	30.070	-3.780
29.800	1.700	29.800	3.530
29.611	-0.420	29.611	-2.480
29.540	-0.440	29.540	-0.270
29.040	0.230	29.040	-0.230
		28.950	-0.590
28.670	-0.140	28.670	-0.830
28.120	-0.330	28.120	-0.790
		27.940	-0.870
27.680	-0.230	27.680	0.100
27.030	-0.120	27.030	1.750
26.730	-0.060	26.730	-1.750
26.290	-0.180	26.290	-4.570
25.860	-0.460	25.860	-1.140
		25.666	0.170
25.590	0.320		
		25.478	-0.930
25.370	-0.050		
		24.996	-0.170
24.900	0.120		
		24.543	1.380
24.540	1.140		
		24.449	1.100
24.350	-0.230		
		23.974	1.070
23.890	-0.210		
		23.692	-0.340
		23.409	0.320
23.350	-0.070		
		22.935	0.500
22.790	-0.170		
		22.462	-0.200
22.320	-0.090		
		21.893	-0.150
21.760	0.000		
		21.431	2.700
21.420	-0.020		
		21.157	0.710
		21.061	0.180
21.010	1.000		
		20.958	0.070
20.920	0.160		
		20.579	-0.060
20.450	-1.250		
		19.920	1.420
19.890	-0.880		
		19.446	-0.100
19.440	-0.030		
		19.066	-0.780
		18.962	0.510
18.920	-0.018		
		18.275	0.070
18.240	-0.050		
		17.821	-0.900
17.760	0.750		
		17.638	-2.720
		17.458	1.830
17.380	0.230		
		16.990	0.150
16.910	-2.020		
		16.612	-1.300
16.450	-3.930		
		16.506	-0.830
16.446	-8.540		
		16.482	-0.750
16.420	2.770		
		16.099	-0.130
15.980	1.160		
		15.719	0.180
15.510	2.050		
		15.374	-0.900
15.320	-0.750		
		15.094	0.100

ASU Study	Bed Elevation Change	KHA Study	Bed Elevation Change
Station No.	**100-year**	**Station No.**	**100-year**
		15.000	-2.210
14.940	0.860		
14.850	-0.570		
		14.430	-3.970
14.380	-0.180		
		13.952	-2.170
13.810	-0.110		
		13.467	0.250
13.330	-0.080		
		13.007	-0.270
		12.816	0.750
		12.470	0.320
		12.420	1.300
12.380	-0.010		
		12.359	0.480
		11.847	-0.720
11.800	-2.350		
		11.557	-0.170
11.520	-4.390		
		11.428	0.800
11.340	1.850		
		11.029	2.230
11.010	3.040		
		10.752	1.040
10.720	0.320		
		10.538	0.750
10.530	-0.160		
		10.343	-0.190
9.900	-0.220		
		9.885	-0.050
		9.696	0.310
		9.435	0.550
9.130	-0.210		
		8.992	-0.580
		8.768	-1.350
		8.433	-0.190
8.210	-0.060		
		8.198	0.200
		8.105	0.360
8.100	1.120		
8.000	0.980	8.000	1.770
		7.990	1.640
		7.988	1.360
7.490	0.440	7.490	-0.720
6.990	-0.910	6.990	-0.990
		6.930	-0.170
		6.910	-0.650
6.890	-0.580	6.890	0.000
		6.888	-1.490
		6.820	-0.200
6.430	-0.170	6.430	-0.190
		6.070	0.790
		6.068	0.780
5.900	0.270	5.900	0.430
5.750	-0.250	5.750	0.480
5.689	-0.020	5.689	1.060
5.380	-1.570	5.380	-0.620
5.290	-1.730	5.290	-0.350
		5.203	0.000
		5.201	0.030
5.150	-0.190	5.150	-2.600
4.790	0.690	4.790	2.160
4.754	2.650	4.754	3.670
4.700	1.500	4.700	3.080
		4.300	1.540
4.270	0.550		
4.094	-1.900	4.094	0.000
		4.092	0.010
3.767	0.000	3.767	-1.410
3.757	0.010	3.757	-0.770
3.734	0.080	3.734	-1.100
3.729	0.000	3.729	-0.940
3.430	-6.800	3.430	0.470
3.400	2.580		
		3.370	1.570
3.270	1.590	3.270	1.020
2.800	0.720	2.800	-0.530
2.600	-0.170	2.600	-1.740
2.020	-0.160	2.020	-1.340
1.710	0.680	1.710	-0.220
1.330	-0.090	1.330	-3.600
0.730	-0.270	0.730	-0.750
		0.630	-1.170
0.440	-0.200	0.440	-0.260
0.160	0.000	0.160	0.440

SECTION 6 SELECTION OF HEC-6 SEDIMENT TRANSPORT FUNCTION

6. SELECTION OF HEC-6 SEDIMENT TRANSPORT FUNCTION

This section of the report documents the investigation into selection of an appropriate sediment transport function for the sediment trend analysis.

Importance of Sediment Transport Function: The selection of an appropriate sediment transport function for a moveable bed model is one of the most important considerations of the study. Numerous transport functions have been developed with the aim of computing the rate and size distribution of the transport of bed material, given the hydraulics and bed material gradation. As it cannot be stated which one is the "best" to use in a particular situation, the engineer should become familiar with how the functions were derived, what types of data they have been compared to (laboratory flume versus river measurements), and past experience. Guidance on the selection of a sediment transport function is provided by the Hydrologic Engineering Center Training Document No. 13 (TD-13). TD-13 indicates that previous guidelines on the selection of sediment transport functions does not guarantee that any particular formula is superior to others under all flow and sediment conditions.

Sediment transport functions have been developed for sand bed streams, sand and gravel bed streams, and gravel rivers. The functions have been derived based on laboratory flume data and/or streambed data. Care must be exercised to match the average conditions of the river under investigation with the premises under which the sediment transport functions were derived.

HEC-6 offers ten (10) sand and gravel sediment transport functions to be used in the model. Only one function can be used in the study. This includes the main channel and any tributaries. Therefore, preliminary review of the available transport functions is required to match the function(s) with the average conditions found at the study site. KHA reviewed several publications to assist in this preliminary evaluation.

Sediment Transport Functions: Four sediment transport functions were selected for evaluation for the sediment trend analysis by using a test reach of the Agua Fria River. The four functions were: Yang's Streampower (Yang), Toffaleti-Schoklitsch (TS), Meyer-Peter and Mueller (MPM), and Toffaleti-MPM combination (TMPM). These transport functions were selected for evaluation from review of Table 5-2 in the Corps of Engineers Engineering Manual titled "Channel Stability Assessment for Flood Control Channels" (EM 1110-2-1418 Oct 1994) (included in Appendix C of this report).

Yang's is a version of Yang D_{50} which was modified at the Corps of Engineers Waterways Experimental Station, for multiple grain size calculations in sand and gravel streams (less than 10mm).

MPM is a multiple grain size function for gravel bed rivers. It is not valid when appreciable suspended load is present.

TMPM is a combined function for sand and gravel bed streams. Sediment transport is calculated using both functions by sediment size class. Calculated bed load from the Toffaleti function is compared to the total capacity by MPM and the larger is used for bed load. Suspended load is then calculated using Toffaleti.

TS is a combined function for sand and gravel bed streams. Sediment transport is calculated using both functions by sediment size class. Calculated bed load from the Toffaleti function is compared to the total capacity by Schoklitsch and the larger is used for bed load. Suspended load is then calculated using Toffaleti. This is the sediment transport function used in the ASU Agua Fria River sediment transport study in 1994.

Data Ranges used in Development of Sediment Transport Functions: The range of data used in the development of the four sediment transport functions are summarized below. These summaries are based on the authors' stated ranges when presented in their original papers.

Table 6.1. Data Range for Meyer-Peter/Mueller Transport Function.

Meyer-Peter And Mueller, 1948, Transport Function	
Parameter	**Data Range**
Particle Size Range, mm	0.4 - 29
Particle Specific gravity	1.25 - 4
Multiple size classes	yes
Velocity, fps	1.2 - 9.4
Depth, ft	0.03 - 3.9
Slope, ft./ft	0.0004 - 0.02
Width, ft	0.5 - 6.6
Water temperature, Deg F	Not published

Table 6.2. Data Range for Schoklitsch Transport Function.

Schoklitsch Transport Function	
Parameter	**Data Range**
Particle Size Range, mm	0.3 - 4.9
Particle Specific gravity	
Multiple size classes	no
Velocity, fps	0.8 - 4.5
Depth, ft	0.037 - 0.74
Slope, ft./ft	0.00012 - 0.055
Width, ft	0.23 - 2.0
Water temperature, Deg F	Not published

Table 6.3. Data Range for Toffaleti Transport Function.

Toffaleti Transport Function		
Parameter	**Data Range**	
	River Data	**Flume Data**
Particle Size Range, mm	0.095 - 0.76	0.91 - 0.45
Total Particle Size Range, mm	0.062 - 4	0.062 - 4
Multiple size classes	yes	yes
Velocity, fps	0.7 - 7.8	0.7 - 6.3
Hydraulic Radius, ft	0.7 - 56.7	0.07 - 1.1
Slope, ft./ft	0.0000002 - 0.001	0.00014 - 0.019
Width, ft	63 - 3640	40 - 93
Water temperature, Deg F	32 - 93	40 - 93

Table 6.4. Data Range for Yang Transport Function.

Yang (D_{50})Transport Function		
Parameter	**Data Range**	
	Sand Data	**Gravel Data**
Particle Size Range, mm	0.15 - 1.7	2.5 - 7.0
Multiple size classes	no	no
Velocity, fps	0.8 - 6.4	1.4 - 5.1
Depth, ft	0.04 - 50	0.08 - 0.72
Slope, ft./ft	0.000043 - 0.028	0.0012 - 0.029
Width, ft	0.44 - 1750	0.7 - 1.3
Water temperature, Deg F	32 - 94	Not reported

Test Reach Location: The test reach of the Agua Fria River was selected from Jomax Road downstream to Bell Road. This reach represents the major upstream sediment producing reach of the Agua Fria River. The river reach channel bed upstream from Jomax Road is underlain by shallow bedrock and is not considered a major sediment producing reach.

Hydrology: The hydrology for the four sediment transport function models was the same for each model. The hydrology began with 10 days of low flow discharge from New Waddell Dam (9,000 cfs). The 100-year hydrograph for the Agua Fria River at Bell Road was appended to the end of the 10-day 9,000 cfs flow. Figure 6.1 present the 100-year flood hydrograph at Bell Road.

Sediment Inflow Curves: Sediment inflow curves are required input data for the stream network. A sediment inflow curve is basically a table which relates inflowing sediment loads to water discharge for the upstream ends of the main stem, tributaries, and local inflows.

A sediment inflow curve was developed for each sediment transport function for the test reach of the river. The water discharges were 5,000 cfs, 7,000 cfs, 17,000 cfs, and 55,000 cfs. These flowrates represent low flows, approximate bank full discharge, and high flows in the river.

The development of the sediment inflow curve for the Agua Fria River follows the methodology provided in the materials for the HEC-6 short course given by the Flood Control District in November 1999 and in the guidelines published in "Application of Hec-6 to Ephemeral Rivers of Arizona" (Report Number: FHWA/AZ86/214, prepared by Arizona State University for the Arizona Department of Transportation, January 1986). Tables 6.5, 6.6, 6.7, and 6.9 present the sediment inflow curves for each of the sediment transport functions.

Table 6.5. Meyer-Peter/Mueller Sediment Inflow Table.

Discharge (Cfs)	5000	7000	17000	55000
Sediment (tons/day)	4742.2	5163.6	15768.4	63183.8
Very Fine Sand	0.0020	0.03423	0.00327	0.00451
Fine Sand	0.4344	0.41116	0.37369	0.24304
Medium Sand	0.2830	0.26786	0.24345	0.15833
Coarse Sand	0.1145	0.10837	0.09850	0.06406
Very Coarse Sand	0.1082	0.12301	0.18647	0.36556
Very Fine Gravel	0.0250	0.02369	0.02153	0.014
Fine Gravel	0.0175	0.01654	0.01504	0.00978
Medium Gravel	0.0150	0.01466	0.05764	0.14044
Coarse Gravel	0.0003	0.00030	0.00027	0.00018
Very Coarse Gravel	0.0002	0.00017	0.00015	0.0001

Table 6.6. Toffaletti/Schoklitsch Sediment Inflow Table.

Discharge (Cfs)	5000	7000	17000	55000
Sediment (tons/day)	12456.0	19508.7	41242.0	110743.2
Very Fine Sand	0.0129	0.1771	0.1771	0.1862
Fine Sand	0.4397	0.3518	0.3518	0.2004
Medium Sand	0.2865	0.2292	0.2292	0.1305
Coarse Sand	0.1159	0.0927	0.0927	0.0528
Very Coarse Sand	0.0931	0.1023	0.1023	0.3621
Very Fine Gravel	0.0253	0.0203	0.0203	0.0115
Fine Gravel	0.0177	0.0142	0.0142	0.0081
Medium Gravel	0.0084	0.0121	0.0121	0.0482
Coarse Gravel	0.0003	0.0003	0.0003	0.0001
Very Coarse Gravel	0.0002	0.0001	0.0001	0.0001

Table 6.7 Toffaleti/Meyer-Peter/Mueller Sediment Inflow Table.

Discharge (Cfs)	5000	7000	17000	55000
Sediment (tons/day)	12261.1	19202.5	59986.3	133682.8
Very Fine Sand	0.0114	0.0624	0.1576	0.1638
Fine Sand	0.4208	0.3953	0.2858	0.1773
Medium Sand	0.2742	0.2575	0.1862	0.1155
Coarse Sand	0.1109	0.1042	0.0753	0.0467
Very Coarse Sand	0.1269	0.1170	0.2092	0.3589
Very Fine Gravel	0.0242	0.0228	0.0165	0.0102
Fine Gravel	0.0169	0.0159	0.0115	0.0071
Medium Gravel	0.0142	0.0244	0.0575	0.1201
Coarse Gravel	0.0003	0.0003	0.0002	0.0001
Very Coarse Gravel	0.0002	0.0002	0.0001	0.0001

Table 6.8 Yang Sediment Inflow Table.

Discharge (Cfs)	5000	7000	17000	55000
Sediment (tons/day)	12913.7	21760.1	66948.7	293920.5
Very Fine Sand	0.0256	0.0368	0.0180	0.0072
Fine Sand	0.1377	0.1685	0.1320	0.1020
Medium Sand	0.2104	0.2294	0.2143	0.2154
Coarse Sand	0.2311	0.2252	0.2254	0.2512
Very Coarse Sand	0.3672	0.3249	0.3898	0.3927
Very Fine Gravel	0.0037	0.0026	0.0020	0.0012
Fine Gravel	0.0068	0.0045	0.0038	0.0028
Medium Gravel	0.0108	0.0068	0.0068	0.0065
Coarse Gravel	0.0059	0.0013	0.0069	0.0105
Very Coarse Gravel	0.0007	0.0000	0.0011	0.0104

The sediment inflow curve for the Agua Fria River was derived using the river reach between Bell Road and Jomax Road. This seven mile reach of the upper Aqua Fria river is a relatively undisturbed reach of the river and essentially remains in it's recent natural state. The floodplain is characterized as meandering with braided channels and a low flow channel. There are two major sand and gravel mines within the floodplain. One is located at Pinnacle Peak Road and the other at Beardsley Road (within the floodway).

This reach of the Agua Fria River could be considered the primary upstream sediment producing reach. The river upstream of Jomax is relatively laterally and vertically confined by bedrock and therefor exhibits a shallower bed sediment reservoir and bed material types than the reach between Bell and Jomax Roads. Water discharged from the primary outlet works from New Waddell Dam is essentially sediment free since the water is derived from the lower portions of the reservoir. Hence, the discharge does not carry sediment and can be termed "clear water". Given these observations about the flood water discharged from the dam during 100-year flood event and the shallow depth to bedrock in the reach upstream of Jomax the primary sediment producing reach for this study was selected as the reach between Bell Road and Jomax Road. This is the same reach used in the ASU sediment study of the Agua Fria River.

Bed Sediment Gradations: KHA located, sampled, collected, and performed gradation analyses for forty-two (42) bed material samples. The locations of the bed material samples were approximately every half-mile from the Gila River confluence to north of State Route 74. The sediment gradations were input into the EC model using the P and PF record sequence. The P records were labeled with the closest river cross section. Sediment gradation data (discussed in Section 5 of this report: see Figure 5.1) has previously been submitted to the District in electronic and hardcopy format.

Results: A summary of the sediment transport function evaluation is provided in the Figures 6.2, 6.3, 6.4, and 6.5 for each function. The graphs show by river station (miles) the change in bed elevation from initial bed elevation through the passage of the hydrograph through the test reach.
Interpretation: A review of the graphs indicates similar trends for all four sediment transport functions. The sediment transport functions indicate degradation at the upstream limit of the test reach followed by, at river station 24.999, deposition ranging from 0.6 - 2.0 ft. At river station 24.449, all four functions indicate degradation just downstream of the depositional segment.

At river station 23.974, the upstream limit of a sand and gravel mine, the models indicate a positive bed change (deposition). Downstream of the sand and gravel mine, however, the models show a negative bed change (at river stations 23.41 and 22.94) indicating degradation due to the mine. The same relationship is shown at the sand and gravel mine at river station 21.43: there is aggradation in the segment with the gravel mine and degradation just downstream of the mine. The two functions showing the relatively greater degradation at this location are MPM and TMPM. This in not unexpected with these functions since both have MPM .

Observation of the figures of each transport function also indicates that the final bed change is reached early in the 100-year hydrograph and at a discharge lower than the peak discharge (37,500 cfs at Bell).

The range of maximum degradation and aggradation all of four sediment transport functions varies by only less than 0.5 ft. This indicates that for this reach under the assumed hydrology that the maximum degradation and aggradation for all four functions is relatively the same and occurs at relatively the same locations in the test river reach.

The Toffaleti/Schoklitsch function appears to provide the most variability in bed change when compared to the other three functions. The function shows at the end of the 100-year hydrograph (day 10.59) downstream of the sand and gravel mine at river mile 21.43 aggradation instead of degradation as depicted on the graphs of the other three functions.

Conclusions: The Agua Fria River may be considered as an ephemeral, large sand and gravel bed river. As such the selection of a sediment transport function is narrowed to several available functions coded within HEC-6. The previously cited Corps of Engineers reference suggests that the Yang Streampower function be used for sand and gravel bed rivers, such as the Agua Fria River. The same citation also suggests the Toffaleti/MPM combination. For an added measure of conservatism with the nature of the Agua Fria River and because of previous geomorphic studies of the Agua Fria River, the MPM transport function was also evaluated. MPM was developed and based primarily on gravel bed rivers.

As stated above, the range of difference in maximum degradation and aggradation all of four transport functions varies by approximately 0.5 ft. This indicates that for this reach under the assumed hydrology that the maximum degradation and aggradation for all four functions is relatively the same and occurs at relatively the same locations in the test river reach. Therefore, based on this result, all four transport functions were providing similar maximums.

Williams, in his paper titled "Selection of Sediment Transport Relations" states that Yang suggested that when no measured sediment data is available (such as the case for the Agua Fria River) for the stream or river under consideration that the investigator use MPM (when the bed material D_{50} is coarser that 5 mm) and/or Yang's sand formula (washload excluded) or Yang's gravel formula (for gravel transportation when the bed material is between 2 and 10 mm). (David Williams, West Consultants).

Kimley-Horn and Associates conducted a similar sediment trend analysis of the Salt River from the Granite Reef dam to the confluence with the Gila River in December 1996. The study reach of the Salt River was approximately 35 miles. KHA used the Yang Streampower sediment transport function for the purposes of the Salt River study. The Salt River is a similar ephemeral sand and gravel bed river as the Agua Fria River.

Figure 6.6 presents the grain size distribution of Agua Fria River sediment samples by d_{15}, d_{50}, and d_{85} from the Gila River confluence to New Waddell dam. The average d_{50} of the Agua Fria River is less than 5 mm according to a review of the grain size distribution (see Figure 6.6). MPM was developed for gravel bed rivers with an average d_{50} of greater than 5 mm. Yang's Streampower transport function is a modified version of Yang's D_{50} to include multiple grain sizes for sand and gravel streams (less than 10 mm).

Recommended Sediment Transport Function: Kimley-Horn and Associates recommended the Yang Streampower sediment transport function for sands for the sediment trend analysis of the Agua Fria River. Our recommendation is based on (1) the grain size distribution results from sediment samples collected along the river, (2) from the above discussion regarding application of sediment transport functions and grain size, (3) our previous HEC-6 sediment trend analysis on the Salt River, and (4) published guidelines on the selection of sediment transport relations.

Figure 6.1. 100-Year Hydrograph at Bell Road.

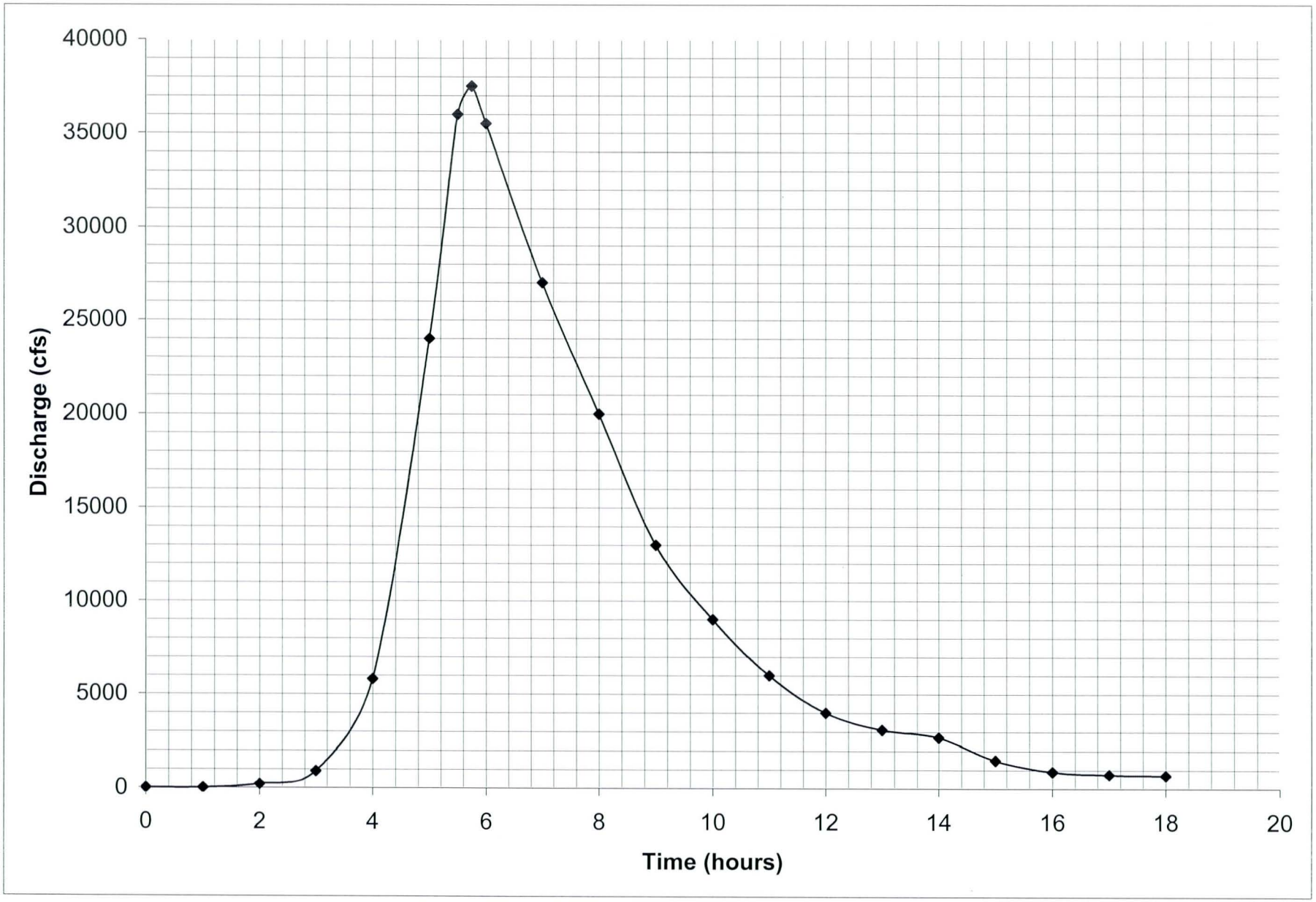


Figure 6.2. Yang's Streampower Bed Change.

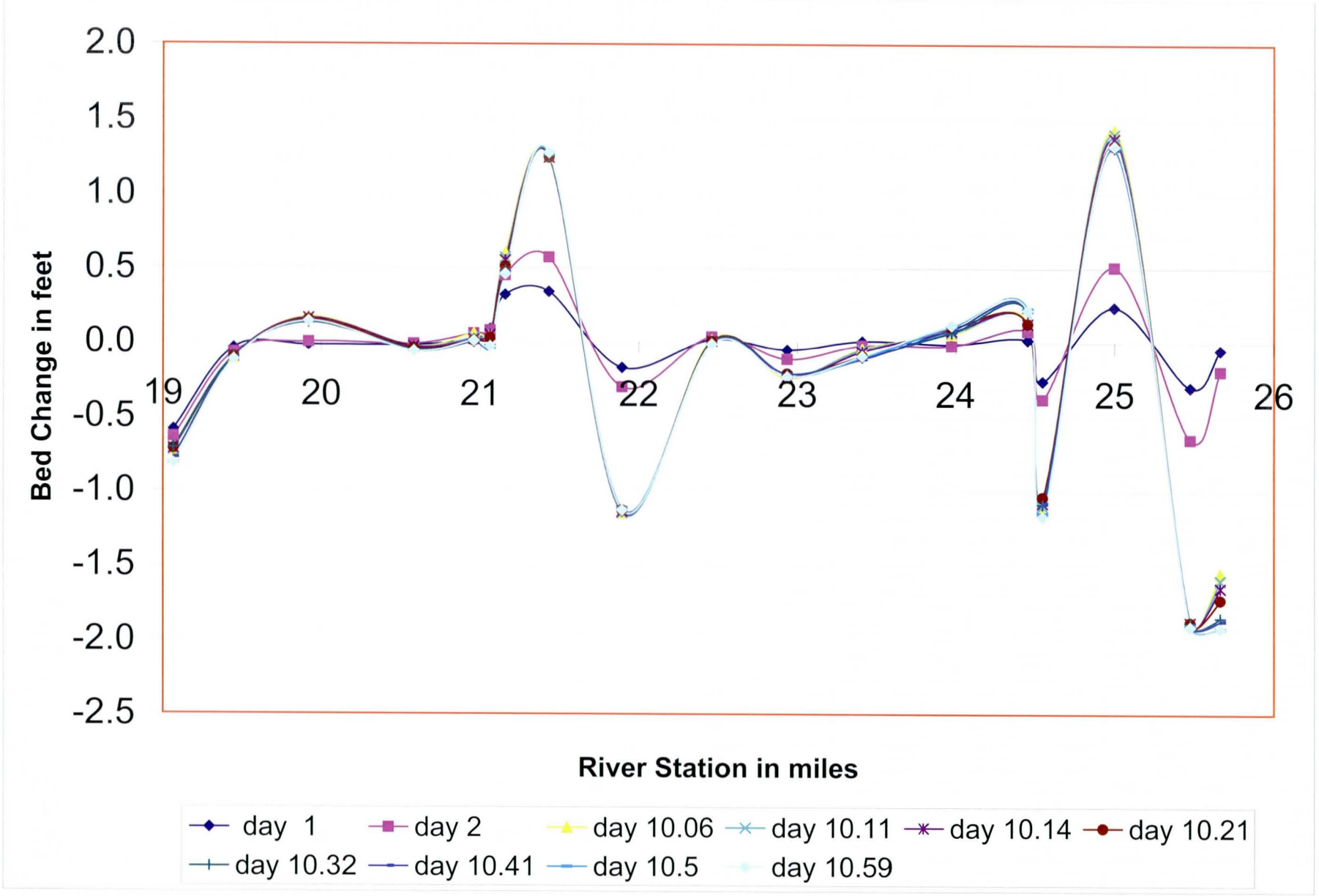


Figure 6.3. Meyer/Peter Mueller Bed Change.

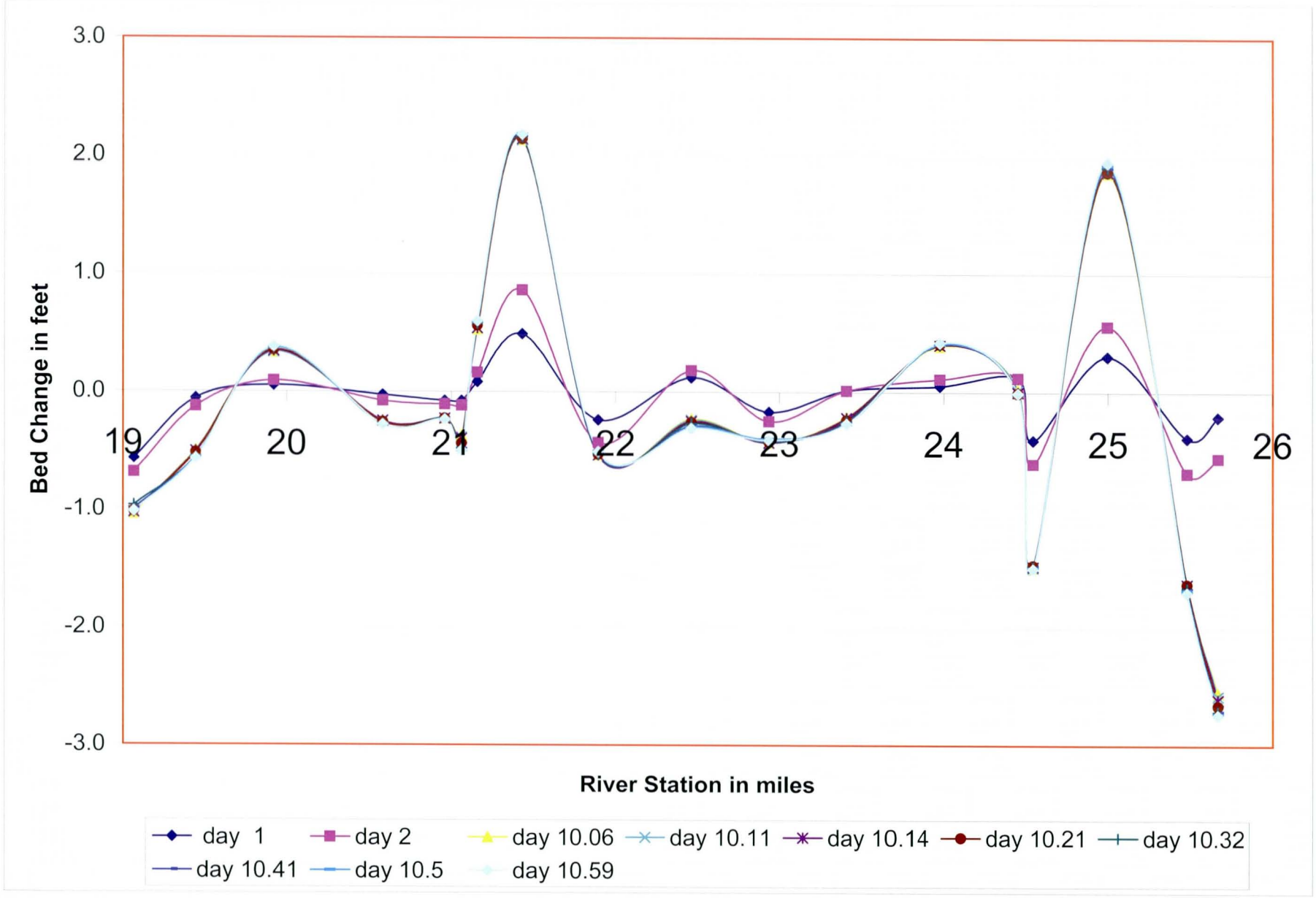


Figure 6.4. Toffaleti/Meyer-Peter/Mueller Bed Change.

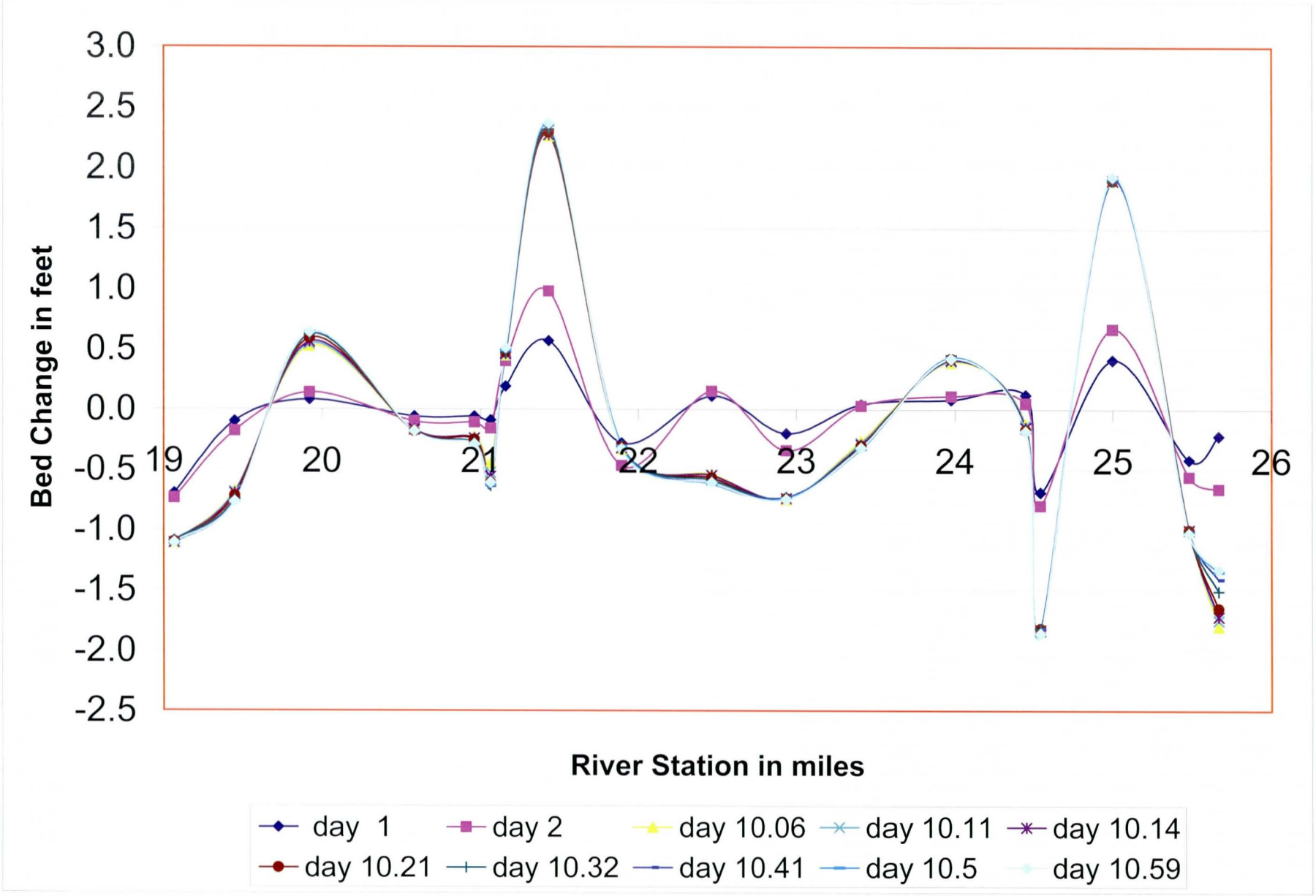


Figure 6.5. Toffaleti/Schoklitsch Bed Change.

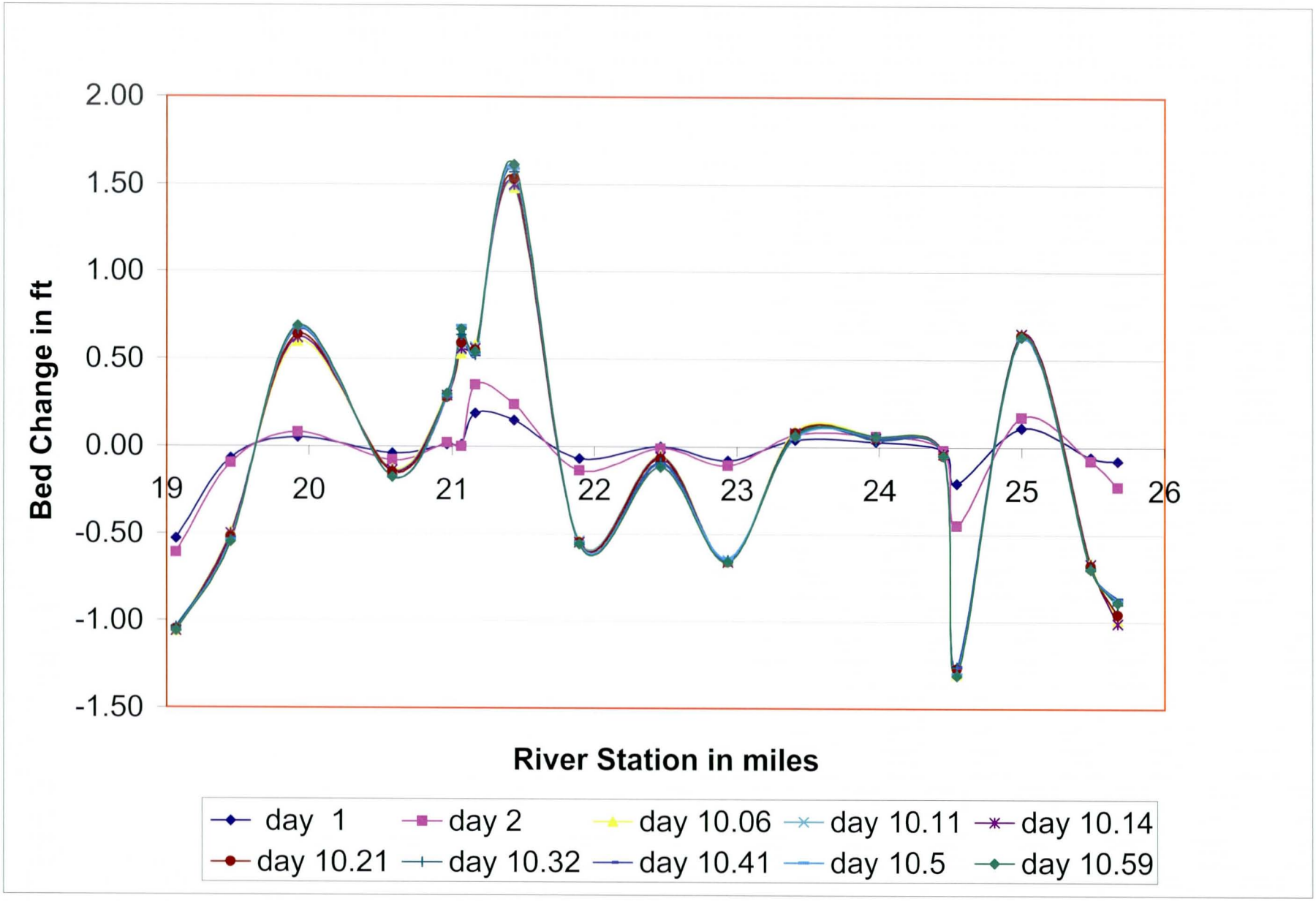
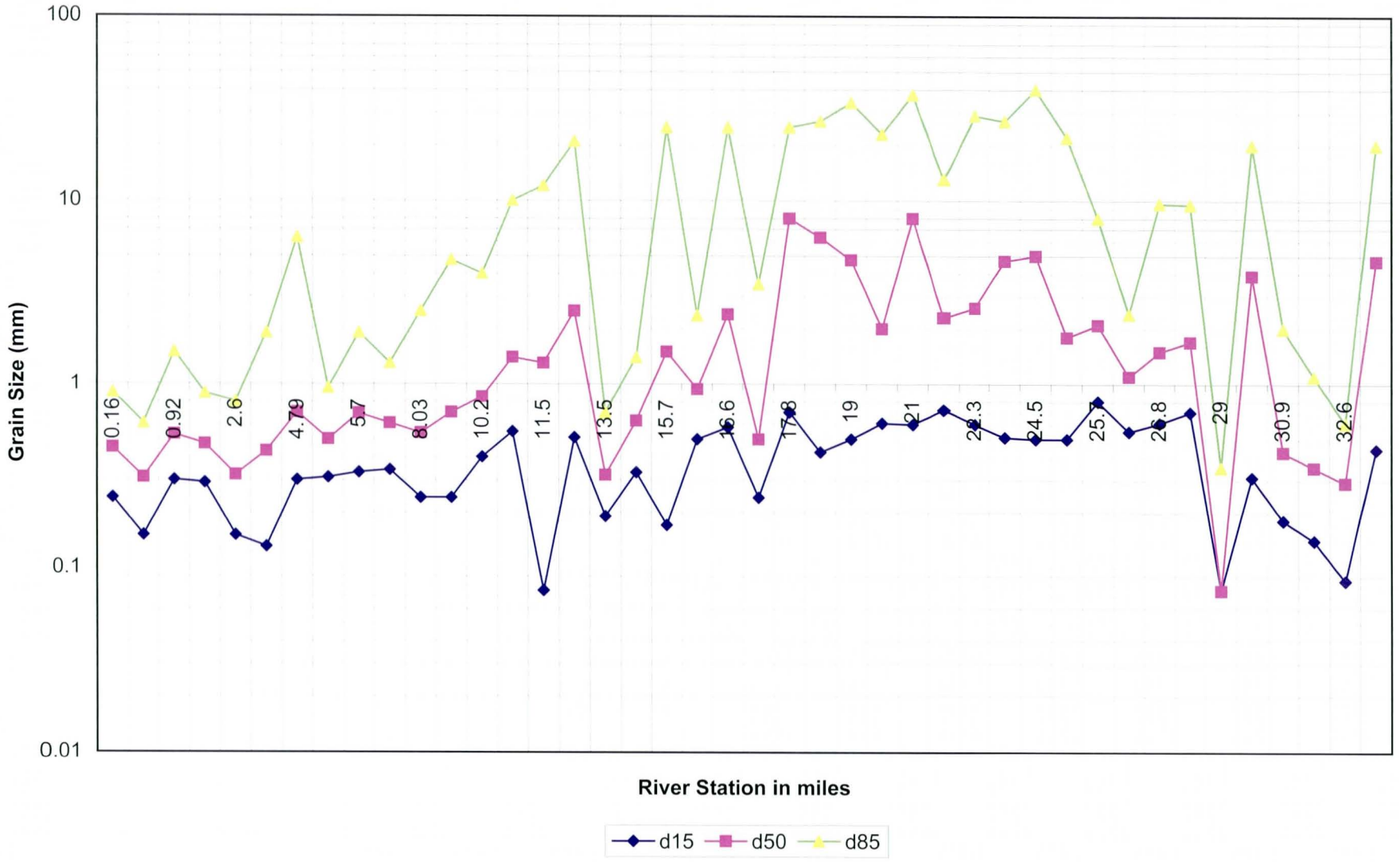


Figure 6.6. Grain Size Distribution of Agua Fria River Sediment Samples



SECTION 7 SENSITIVITY ANALYSIS – MANNING'S ROUGHNESS COEFFICIENT

7. SENSITIVITY ANALYSIS – MANNING'S ROUGHNESS COEFFIECIENT

This section of the report documents a sensitivity analysis conducted to evaluate changes in Manning's roughness coefficient on the response of the lower Agua Fria River due to project hydrology. This sensitivity analysis is part of the scope of work for the sediment trend anlaysis.

Background: Field reconnaissance and discussions with District staff imply that the Agua Fria River, at its' confluence with the Gila River, appears to be aggrading. Field visits have indicated that the bed of the lower Agua Fria River is primarily composed of sands and that the bed of the river is exhibiting the formation of sandbars and islands at the confluence with the Gila River. The existing conditions HEC-6 model results, however, indicates that this reach of the lower Agua Fria River is degrading in response to the passage of the project hydrology. The purpose of this sensitivity analysis was to evaluate changing the Manning's roughness coefficient at the confluence and to observe if aggradation would occur as a result. Note that HEC-6 cannot model the formation of sandbars and island bars.

Approach: The existing conditions HEC-6 model (EC100AF.DAT) was modified (Ecval.dat) to reflect increased N-values for seven Agua Fria River cross sections. The N-values used in the existing condition model were derived from the 1996 flood insurance HEC-2 model for the Agua Fria River. The cross sections where the N-values were changed for this sensitivity analysis are located at the confluence with the Gila River. These cross sections are (in river miles above confluence): 0.16, 0.44, 0.63, 0.73, 1.33,1.71, and 2.02. The last revised cross section, 2.02, is at the downstream limit of the west levee constructed by the Corps of Engineers. The N-values for these cross section were changes from their respective FIS N-values to 0.08 for the overbanks and the main channel. The numerical selection of the new N-values were approved by the District.

The higher N-value for the seven river cross sections were selected in attempt to examine if a greater response of deposition or less degradation were to occur in the lower reach of the Agua Fria River. The existing condition model indicates that the lower reach of the river trends toward degradation during the 100-year event.

Interpretation: A review of the Table 7.1 and Figure 7.1 of the river bed change from river stations 0.16 to 5.20 indicates that the increase in N-value reduced the degree of degradation in the lower reach of the river. However, the reach still degrades with the higher N-values under the project conditions. The water surface profile (Figure 7.2) has changed in response to the increase in N-value as anticipated. The water surface elevations have increased over the FIS N-value model. The final bed elevation of the Agua Fria River from river station 0.16 to 5.20 has not degraded to the degree as reflected under the existing condition model (Figure 7.3).

Conclusions: The change in N-values for the seven cross sections to 0.08 (from typically 0.064 to 0.1 main channel) had reduced the degree of degradation exhibited in the existing condition model. The Agua Fria River existing condition model is sensitive to the change in N-value. However, the degree of sensitivity was not as great to reverse the trend from degradation to aggradation in the lower reach of the Agua Fria River. The expectation was the river would exhibit a greater degree of deposition in the lower reach and not degradation. The N-value selected for the sensitivity analysis is bounded by the

existing FIS main channel N-values. Perhaps a higher N-value of 0.1 to 0.15 would exhibit aggradation instead of degradation.

The other factor to consider is that the Gila River may have more of an influence at the confluence than what is observed/interpreted in the field or exhibited in the Agua Fria River HEC-6 model. The "aggradation" observed in the field may actually be a result of the Gila River floodplain conditions and not the result of the Agua Fria River floodplain conditions.

Table 7.1. Summary of N-Value HEC- 6 Sensitivity Results.

FIS N-values						Revised N-values					
SECTION NUMBER	BED CHANGE (ft)	WS ELEV (ft)	THALWEG (ft)	Q (cfs)	TRANSPORT RATE SAND (tons/day)	SECTION NUMBER	BED CHANGE (ft)	WS ELEV (ft)	THALWEG (ft)	Q (cfs)	TRANSPORT RATE SAND (tons/day)
33.82	0.64	1398.66	1388.04	5000	11149	33.82	0.64	1398.65	1388.04	5000	11113
33.41	0.02	1394.25	1386.92	5000	10518	33.41	0.01	1394.24	1386.91	5000	10574
33.00	-4.65	1384.64	1376.75	5000	13868	33.00	-4.65	1384.67	1376.75	5000	13943
32.98	-8.93	1383.00	1369.47	5000	13265	32.98	-8.93	1383.03	1369.47	5000	12782
32.92	-3.21	1382.79	1377.79	5000	13763	32.92	-3.21	1382.84	1377.79	5000	13990
32.86	-1.12	1381.30	1373.78	5000	15073	32.86	-1.12	1381.34	1373.78	5000	15332
32.72	2.52	1378.79	1366.32	5000	9895	32.72	2.52	1378.80	1366.32	5000	10139
32.43	-0.07	1375.57	1363.73	5000	10728	32.43	-0.07	1375.57	1363.73	5000	10940
31.86	-0.01	1368.22	1361.99	5000	11493	31.86	-0.01	1368.26	1361.99	5000	11600
31.39	-0.59	1360.09	1354.11	5000	12064	31.39	-0.59	1360.07	1354.11	5000	12303
30.82	-3.72	1349.37	1341.48	5000	11845	30.82	-3.74	1349.29	1341.46	5000	12092
30.73	-2.83	1348.67	1342.37	5000	8199	30.73	-2.83	1348.58	1342.37	5000	8369
30.26	0.92	1342.71	1339.82	5000	16916	30.26	0.93	1342.74	1339.83	5000	16503
30.07	-4.18	1338.94	1330.22	5000	16185	30.07	-4.19	1338.99	1330.21	5000	16402
29.80	0.03	1335.39	1331.23	5000	16224	29.80	0.03	1335.35	1331.23	5000	16738
29.61	-2.48	1331.47	1326.42	5000	16197	29.61	-2.49	1331.44	1326.41	5000	16268
29.54	-0.27	1330.47	1326.43	5000	15180	29.54	-0.27	1330.45	1326.43	5000	15604
29.04	-0.23	1321.00	1316.97	5000	16464	29.04	-0.23	1321.00	1316.97	5000	16911
28.95	-0.59	1318.89	1311.71	5000	15782	28.95	-0.59	1318.89	1311.71	5000	16191
28.67	-0.83	1315.38	1310.67	5000	14096	28.67	-0.82	1315.37	1310.68	5000	14157
28.12	-0.79	1307.11	1303.81	5000	15471	28.12	-0.79	1307.11	1303.81	5000	15346
27.94	-0.87	1305.13	1298.23	5000	9413	27.94	-0.87	1305.13	1298.23	5000	9309
27.68	0.10	1301.51	1294.80	5000	9196	27.68	0.10	1301.49	1294.80	5000	9267
27.03	-0.45	1287.14	1282.95	5000	12622	27.03	-0.45	1287.16	1282.95	5000	12429
26.73	-1.75	1281.36	1278.05	5000	10115	26.73	-1.75	1281.40	1278.05	5000	9327
26.29	-4.57	1272.21	1267.03	5000	13616	26.29	-4.58	1272.26	1267.02	5000	13073
25.86	-1.14	1263.88	1258.86	5000	17439	25.86	-1.13	1263.88	1258.87	5000	17602
25.67	0.17	1259.97	1255.57	5000	19829	25.67	0.17	1259.90	1255.57	5000	19900
25.48	-0.93	1257.46	1252.97	5000	18466	25.48	-0.95	1257.42	1252.95	5000	17997
25.00	-0.17	1251.06	1246.13	5000	26276	25.00	-0.13	1251.06	1246.17	5000	26230
24.54	3.20	1243.54	1236.98	5000	13949	24.54	3.45	1243.54	1236.98	5000	13492
24.45	1.10	1240.69	1236.10	5000	26172	24.45	1.01	1240.65	1236.01	5000	25627
23.97	1.07	1233.66	1228.57	5000	22779	23.97	1.04	1233.64	1228.54	5000	22752
23.69	-0.34	1227.19	1223.46	5000	23508	23.69	-0.35	1227.19	1223.45	5000	23211
23.41	0.32	1223.12	1217.02	5000	16983	23.41	0.31	1223.10	1217.01	5000	16964
22.94	0.00	1213.55	1209.50	5000	23315	22.94	0.00	1213.56	1209.50	5000	22724
22.46	-0.20	1205.93	1200.10	5000	22298	22.46	-0.20	1205.95	1200.10	5000	22079
21.89	-0.15	1193.93	1187.25	5000	28061	21.89	-0.16	1193.90	1187.24	5000	28124
21.43	2.70	1188.20	1183.70	5000	18666	21.43	2.69	1188.23	1183.69	5000	18389
21.16	0.71	1184.25	1177.31	5000	19907	21.16	0.71	1184.27	1177.31	5000	20097
21.06	0.18	1182.68	1176.68	5000	18400	21.06	0.18	1182.69	1176.68	5000	18552
20.96	0.07	1181.57	1176.67	5000	18145	20.96	0.08	1181.57	1176.68	5000	18276
20.58	-0.06	1177.61	1171.84	5000	13387	20.58	-0.06	1177.59	1171.84	5000	13412
19.92	0.02	1168.29	1164.02	5000	26524	19.92	0.03	1168.28	1164.03	5000	26983
19.45	-0.10	1160.16	1155.80	5000	24083	19.45	-0.10	1160.19	1155.80	5000	23952
19.07	-0.78	1152.78	1148.62	5000	20858	19.07	-0.78	1152.82	1148.62	5000	21479
18.96	0.51	1151.10	1146.71	5000	12705	18.96	0.51	1151.06	1146.71	5000	13324
18.28	0.07	1138.53	1130.17	5000	17586	18.28	0.07	1138.50	1130.17	5000	17506
17.82	-0.90	1132.50	1129.10	5000	13667	17.82	-0.90	1132.52	1129.10	5000	13710
17.64	-2.72	1129.19	1127.28	5000	13186	17.64	-2.72	1129.17	1127.28	5000	13297
17.46	1.83	1123.98	1118.33	5000	19939	17.46	1.84	1123.97	1118.34	5000	20700
16.99	0.15	1116.98	1111.05	5000	18410	16.99	0.15	1116.99	1111.05	5000	18274
16.61	-1.30	1112.68	1107.00	5000	14490	16.61	-1.35	1112.69	1106.95	5000	14402
16.51	-0.83	1110.90	1104.57	5000	14656	16.51	-0.84	1110.90	1104.56	5000	14452
16.48	-0.75	1110.52	1104.85	5000	14619	16.48	-0.75	1110.52	1104.85	5000	14294
16.10	-0.13	1105.86	1100.67	5000	17315	16.10	-0.11	1105.88	1100.69	5000	17257
15.72	0.18	1102.19	1093.88	5000	16606	15.72	0.19	1102.15	1093.89	5000	17196
15.37	-0.90	1099.27	1092.90	5000	16087	15.37	-0.89	1099.18	1092.91	5000	16479
15.09	0.10	1095.03	1090.00	5000	16717	15.09	0.10	1095.01	1090.00	5000	17047
15.00	-2.21	1092.49	1086.59	5000	19345	15.00	-2.21	1092.58	1086.59	5000	19150
14.43	-3.97	1084.14	1079.23	5000	19657	14.43	-3.96	1084.13	1079.24	5000	20295
13.95	-2.17	1077.50	1071.13	5000	19214	13.95	-2.17	1077.52	1071.13	5000	19519
13.47	0.25	1070.37	1064.35	5000	24856	13.47	0.25	1070.35	1064.35	5000	24957
13.01	-0.27	1065.51	1061.73	5000	20554	13.01	-0.28	1065.54	1061.72	5000	20136
12.82	0.75	1063.79	1058.15	5000	17265	12.82	0.74	1063.80	1058.14	5000	17682
12.47	0.32	1059.40	1055.22	5000	27311	12.47	0.31	1059.40	1055.21	5000	26627
12.42	1.30	1058.55	1055.30	5000	31183	12.42	1.32	1058.56	1055.32	5000	30799
12.36	0.48	1057.54	1052.18	5000	29798	12.36	0.47	1057.56	1052.17	5000	29116
11.85	-0.72	1051.37	1043.88	5000	26456	11.85	-0.71	1051.47	1043.89	5000	26156
11.56	-0.17	1048.70	1041.53	5000	20058	11.56	-0.14	1048.72	1041.56	5000	20329
11.43	0.80	1047.85	1042.60	5000	15723	11.43	0.77	1047.87	1042.57	5000	15376
11.03	2.23	1041.70	1036.93	5000	23251	11.03	2.22	1041.69	1036.92	5000	23793
10.75	1.04	1038.40	1032.34	5000	17955	10.75	1.03	1038.39	1032.33	5000	17895
10.54	0.75	1035.63	1031.95	5000	23786	10.54	0.75	1035.62	1031.95	5000	24086
10.34	-0.19	1032.94	1026.51	5000	19279	10.34	-0.19	1032.87	1026.51	5000	19848
9.89	-0.05	1027.15	1021.05	5000	24297	9.89	-0.05	1027.15	1021.05	5000	23328
9.70	0.31	1024.52	1019.01	5000	23348	9.70	0.32	1024.53	1019.02	5000	23541
9.44	0.55	1021.25	1015.75	5500	27814	9.44	0.57	1021.33	1015.77	5500	26189
8.99	-0.58	1014.57	1007.52	5500	29365	8.99	-0.55	1014.62	1007.55	5500	28944
8.77	-1.35	1011.76	1007.05	5500	25684	8.77	-1.35	1011.73	1007.05	5500	26119
8.43	-0.19	1008.15	1004.81	5500	20120	8.43	-0.18	1008.20	1004.82	5500	19668
8.20	0.20	1004.63	1001.70	5500	16738	8.20	0.19	1004.60	1001.69	5500	17494
8.11	0.36	1003.55	1000.86	5500	20392	8.11	0.34	1003.55	1000.84	5500	18537
8.00	1.77	1002.30	1000.97	5500	18430	8.00	1.76	1002.30	1000.96	5500	20243
7.99	1.64	1002.18	1000.74	5500	17680	7.99	1.62	1002.18	1000.72	5500	20225
7.99	1.36	1001.97	1000.46	5500	18679	7.99	1.35	1001.96	1000.45	5500	19174
7.49	-0.72	996.49	994.48	5500	19249	7.49	-0.73	996.47	994.47	5500	19242
6.99	-0.99	992.00	989.21	5500	14924	6.99	-1.00	992.00	989.20	5500	14705
6.93	-0.17	991.37	989.73	5500	15597	6.93	-0.17	991.37	989.73	5500	15463
6.91	-0.65	991.25	988.85	5500	15337	6.91	-0.65	991.25	988.85	5500	15353
6.89	0.00	990.59	989.40	5500	28917	6.89	0.00	990.59	989.40	5500	28584
6.89	-1.49	989.38	987.91	5500	29009	6.89	-1.49	989.42	987.91	5500	28703
6.82	-0.20	988.49	984.60	5500	17728	6.82	-0.22	988.49	984.58	5500	18164
6.43	-0.19	984.60	980.81	5500	17264	6.43	-0.19	984.60	980.81	5500	17404
6.07	0.79	980.77	977.49	5500	18026	6.07	0.79	980.74	977.49	5500	18623
6.07	0.78	980.75	977.48	5500	18652	6.07	0.77	980.73	977.47	5500	18381
5.90	0.43	979.03	975.83	5500	19129	5.90	0.42	979.06	975.82	5500	18761
5.75	0.48	977.23	974.18	5500	19557	5.75	0.47	977.23	974.17	5500	19466
5.69	1.06	976.46	974.91	5500	21088	5.69	1.05	976.51	974.90	5500	19764
5.38	-0.62	973.44	970.78	5500	17867	5.38	-0.62	973.40	970.78	5500	18836
5.29	-0.35	972.88	971.15	5500	15187	5.29	-0.35	972.83	971.15	5500	14714
5.20	0.00	970.83	970.00	5500	30069	5.20	0.00	970.83	970.00	5500	30286
5.20	0.03	969.83	969.13	5500	753	5.20	0.03	969.83	969.13	5500	771
5.15	-2.60	968.26	964.80	5500	10857	5.15	-3.52	967.88	963.88	5500	8793
4.79	2.16	966.23	963.26	5500	26820	4.79	2.37	966.36	963.47	5500	27434
4.75	3.67	965.58	963.97	5500	25410	4.75	3.78	965.70	964.08	5500	25431
4.70	3.08	965.00	962.18	5500	25008	4.70	3.21	965.12	962.31	5500	25229
4.30	1.54	962.17	959.14	5500	13344	4.30	1.63	962.21	959.23	5500	13734
4.09	0.00	959.47	958.50	5500	26283	4.09	0.00	959.47	958.50	5500	27050
4.09	0.01	956.79	955.21	5500	4	4.09	0.01	956.86	955.21	5500	3
3.77	-1.41	953.24	951.49	5500	23332	3.77	-1.29	953.39	951.61	5500	23301
3.76	-0.77	953.11	951.33	5500	23932	3.76	-0.66	953.27	951.44	5500	24171
3.73	-1.10	952.83	951.20	5500	23610	3.73	-1.00	952.98	951.30	5500	25582
3.73	-0.94	952.72	951.26	5500	25586	3.73	-0.82	952.85	951.38	5500	29069
3.43	0.47	950.04	946.47	5500	14070	3.43	0.54	950.09	946.54	5500	14347
3.37	1.57	949.04	944.97	5500	10082	3.37	1.58	949.12	944.98	5500	9606
3.27	1.02	948.41	945.52	5500	12338	3.27	1.12	948.53	945.62	5500	11286
2.80	-0.53	943.88	941.47	5500	19578	2.80	-0.21	944.10	941.79	5500	19519
2.60	-1.74	941.28	937.86	5500	18786	2.60	-1.22	942.29	938.38	5500	12738
2.02	-1.34	935.24	931.36	5500	16017	2.02	1.89	938.27	934.59	5500	13310
1.71	-0.22	930.67	927.98	5500	23216	1.71	0.37	933.16	928.57	5500	12643
1.33	-3.60	925.88	921.90	5500	19084	1.33	-1.30	929.01	924.20	5500	16118
0.73	-0.75	920.21	916.15	5500	22708	0.73	0.04	921.83	916.94	5500	11835
0.63	-1.17	919.37	914.53	5500	25240	0.63	-0.18	921.06	915.52	5500	16264
0.44	-0.26	916.93	912.54	5500	39220	0.44	-0.07	917.34	912.73	5500	18594
0.16	-0.86	912.63	908.74	5500	34574	0.16	-2.53	912.63	907.07	5500	6377

Figure 7.1. Bed Elevation Change - Existing Conditions versus Changes N-Values

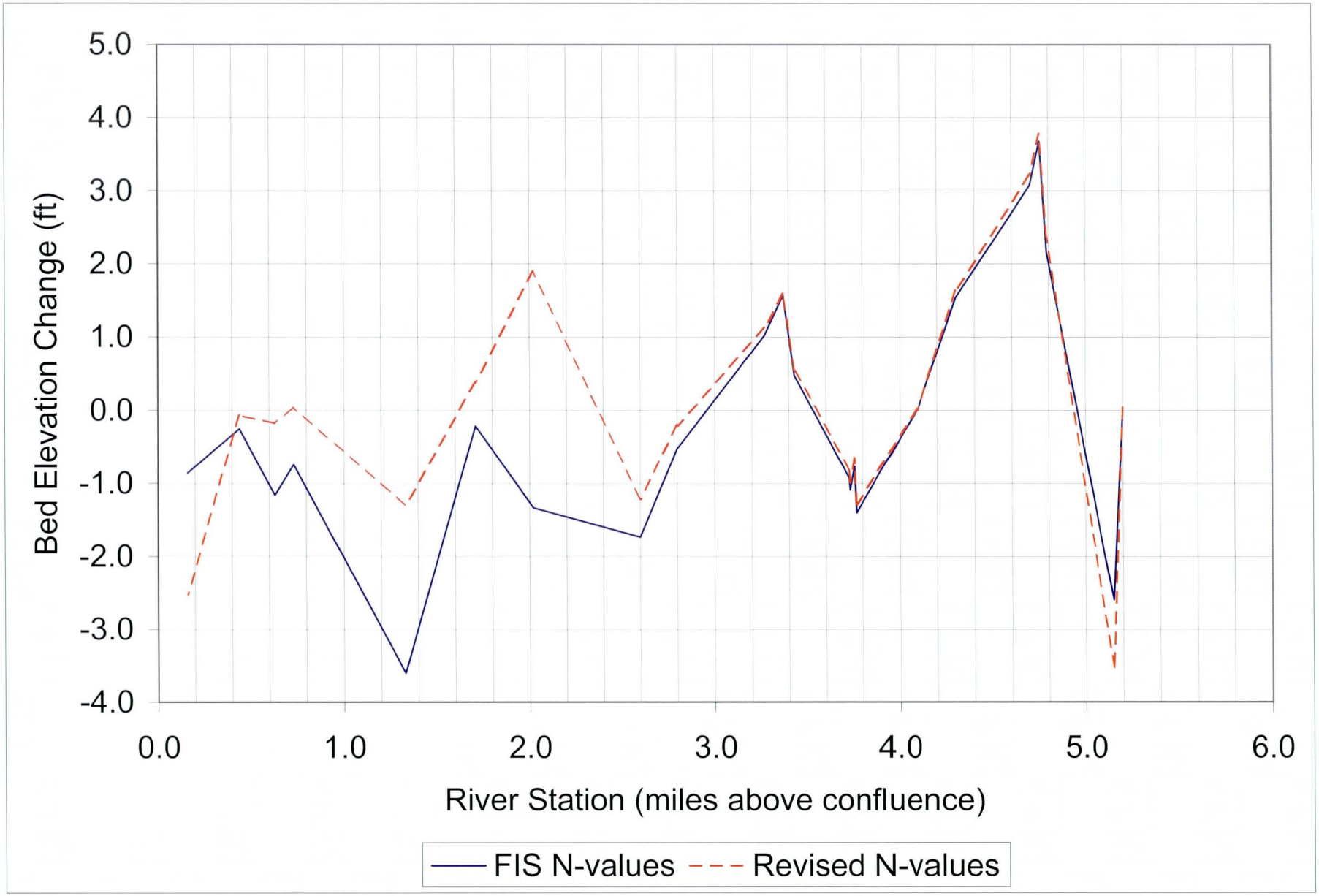


Figure 7.2. Water Surface Profile - Existing Conditons versus Changed N-Value.

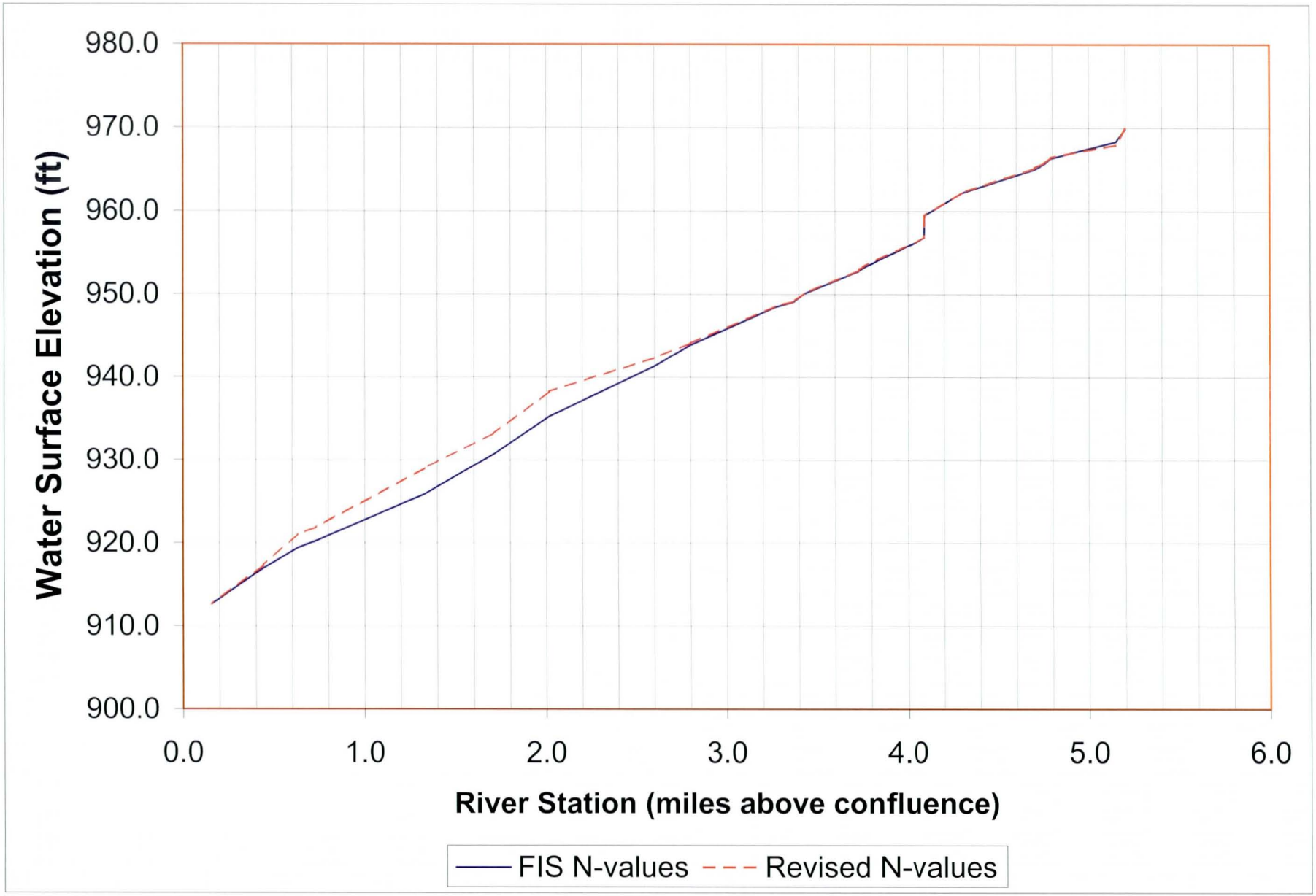
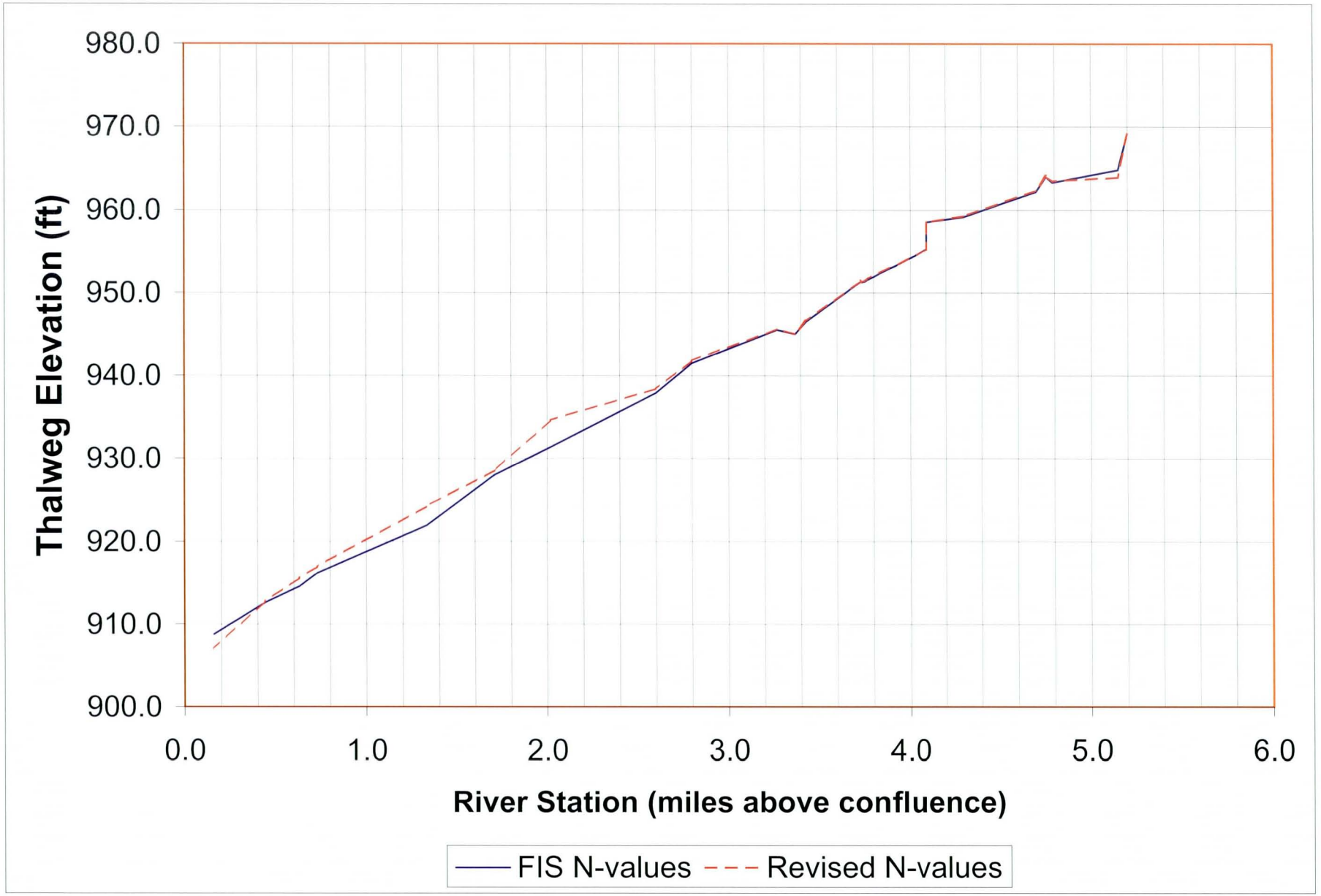


Figure 7.3. Thalweg Elevation - Existing Conditions versus Changed N-Values



SECTION 8 SENSITIVITY ANALYSIS – INFLOW SEDIMENT CURVE

8. SENSITIVITY ANALYSIS – INFLOW SEDIMENT RATING CURVE

This section of the report documents a sensitivity analysis conducted to evaluate changes in the inflow sediment rating curve on the response of the Agua Fria River to project hydrology.

Background: The sediment inflow curve was developed based on the guidelines and procedures discussed in Section 3 and Section 5. The development of the sediment inflow curve used a test reach of the Agua Fria River between Jomax Road and Bell Road. The objective was to establish the sediment load and gradation that accompanies river flows entering the upstream study area. It was assumed that the inflow point to the Agua Fria River was the most upstream cross section of the study which is located just downstream of New Waddell Dam. Note that the reach that was used to generate the sediment inflow rating curve is downstream of the application point of the curve. This approach assumed that the sediment generating test reach was applicable to be used at the most upstream cross section of the river study. In other words, all the sediment load derived from the test reach is applied at the upstream most cross section without due consideration of the influence of New Waddell Dam. The assumption that 100 percent of the derived sediment inflow rating curve would in actuality be attributable to the flows from the New Waddell low level outlet works in not essentially valid. This is due to the fact that in the case of water releases from New Waddell Dam through the low-level outlet works that the discharged water would be relatively free of sediment.

In order to address the question regarding the influence of the New Waddell Dam on the sediment inflow curve KHA prepared a sensitivity analysis that reduced the sediment load in the inflow rating curve.

Purpose: The purpose of the exercise was to investigate the impacts of reduced sediment inflow in the upstream reach of the river. The reduction of sediment inflow is to simulate "clear water" releases from New Waddell Dam into the Agua Fria River. The impact of clear water simulations is anticipated to have a greater degree of bed change in the river in the upstream reach of the river. This is due to the fact that the flood releases from the dam are fairly devoid of sediment and thus has a high sediment transport potential. The "sediment hungry" water should obtain sediment from the bed of the river as the flows continue downstream.

Approach: The revised existing conditions HEC-6 model (ECAFREV.DAT) was modified to reflect decreased sediment inflow for the Agua Fria River for two conditions. The two conditions represent a reduction in the sediment inflow rates provided in the existing condition model for sediment transport for the Agua Fria River. The sediment rating curve for existing conditions is provided in Table 8.1.

The sediment rating curve is given on the HEC-6 LQ and LT records. The discharges (cfs) are given on the LQ record and the sediment inflow (tons/day) is given on the LT record. The LF records provide the percentage of the sediment inflow by grain size per the given discharge and sediment inflow data values.

Table 8.1. Sediment Inflow Rating Curve (Agua Fria River – Existing Conditions).

LQ	Discharge (cfs)	5000	7000	17000	55000
LT	Sediment (tons/day)	12913	21760	66948	293920
LF	Very Fine Sand	0.02563	0.03675	0.01795	0.00716
LF	Fine Sand	0.13772	0.16853	0.13200	0.10199
LF	Medium Sand	0.21035	0.22940	0.21429	0.21542
LF	Coarse Sand	0.23112	0.22521	0.22541	0.25124
LF	Very Coarse Sand	0.36207	0.32486	0.38978	0.39271
LF	Very Fine Gravel	0.00367	0.00255	0.00203	0.00119
LF	Fine Gravel	0.00683	0.00452	0.00379	0.00284
LF	Medium Gravel	0.01083	0.00681	0.00677	0.00652
LF	Coarse Gravel	0.00587	0.00134	0.00686	0.01048
LF	Very Coarse Gravel	0.00073	0.00000	0.00108	0.01041

The two conditions evaluated in this study are based on reducing the sediment inflow on the LT record to 50% and to 10% of the levels given in the above table. The grain size percentage on the LF records remained unchanged. The HEC-6 models are EC10YANG.DAT and EC50YANG.DAT. The models were executed using the hydrology provided in the existing condition model ECAFREV.DAT and assuming the sediment rating curve for New River is unchanged from the existing condition model.

The "Reduced Sediment Inflow" models were prepared and executed using the Corps of Engineers "fixedS95" HEC-6 model.

Interpretation: The results of the two conditions (10% and 50% sediment inflow) are provided in the include tables and figures. Figure 8.1 shows the bed elevation change at the end of the flood hydrograph. The greatest variation in bed elevation change is demonstrated in the upstream reach of the river as anticipated. Variations begin approximately at river Station 22+00 and continue upstream. The greater variations in bed change are exhibited from river Station 31+00 to the upstream limit of the study. The 10% inflow model shows the greatest scour bed change approximately around river Station 32+00, followed by the 50% inflow model, and then the existing condition model. The bed change in the downstream reach of the river remains essentially the same in all three models. There is a slight tendency for deposition to occur in the 10% and 50% models from river Station 5+00 upstream to river Station 22+00. The bed thalweg (Figure 8.2) elevation varies the most in the upstream reach. The bed elevation is lower in the 10% model as compared to the 50% model and the existing condition model. This indicates that sediment is being removed in the upstream portion of the river and transported downstream.

Conclusions: A review of Table 8.2, which is the table showing the values for the bed changes in the three models, indicates the same general trends in bed change along the river. In other words, where degradation occurs, it generally occurs in the same river stations in all three models. The greater degree of degradation occurs in the upstream reach in the 10% model, as anticipated. The difference in the bed changes between models however is not remarkable.

This study does demonstrate a greater degree of degradation for the 10% model, followed by the 50% model, and then the existing condition model in the upstream reach, as anticipated during the onset of the study. The study does demonstrate a somewhat greater degree of aggradation for the 10% model, followed by the 50% model, and then the existing condition model in the downstream reach, as anticipated during the onset of the study.

For the purposes of the remainder of the sediment trend analysis and to provide an accountability of the influence of the New Waddell Dam, the 50% sediment inflow model was used at the base conditions model for the Agua Fria River sediment trend analysis. The 50% model was selected as an average conditions model although the influence of the dam may actually vary from values lower than 50%. Since no studies were conducted to evaluate the sediment discharge from the dam during the 100-year storm event, a value lower than the 50% sediment inflow could not be recommended.

Figure 8.1. Bed Elevation Change for Full, 50%, and 10% Sediment Inflow Curve.

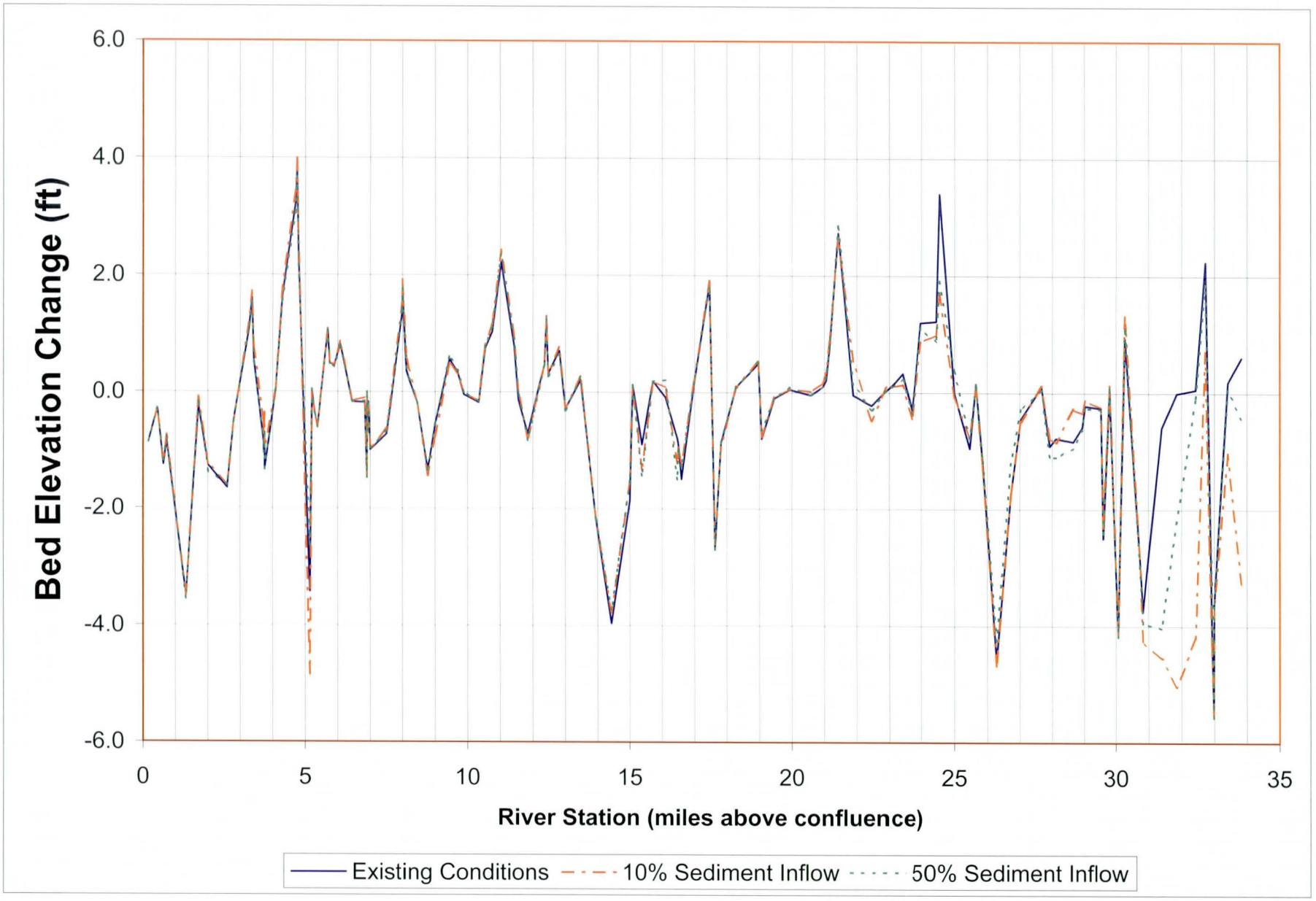


Figure 8.2. Channel Thalweg Elevation for Existing, 50%, and 10% Sediment Inflow Curve.

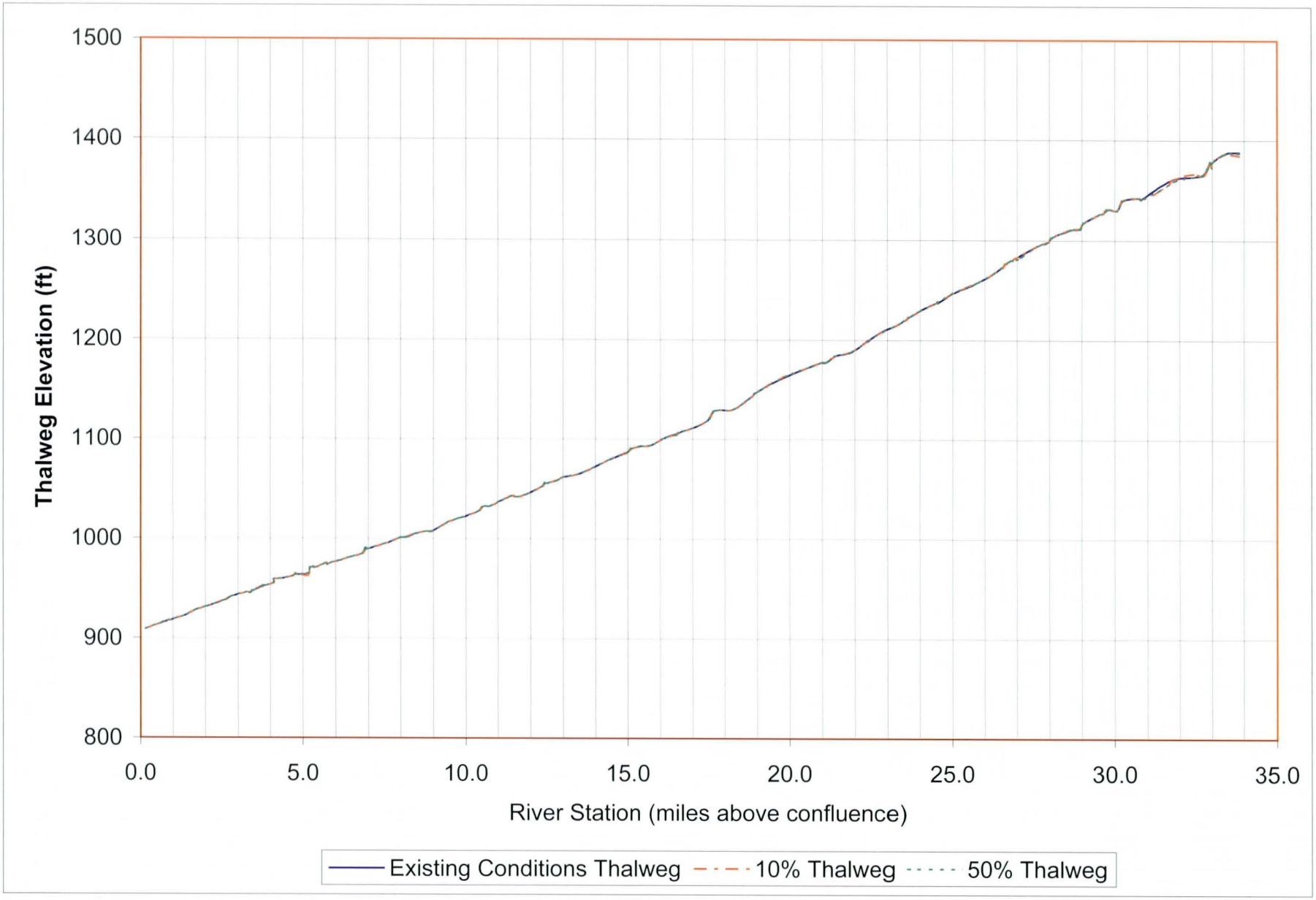


Table 8.2. Bed Elevation Change for Existing, 50%, and 10% Sediment Inflow Curve.

HEC-6 Model	Existing Conditions	Existing Conditions 10%	Existing Conditions 50%
SECTION NUMBER	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)
33.820	0.600	-3.270	-0.440
33.410	0.180	-1.040	0.050
32.998	-3.620	-3.700	-3.660
32.984	-5.560	-5.570	-5.570
32.920	-4.170	-4.380	-3.270
32.860	-1.530	-2.640	-1.710
32.720	2.240	0.710	1.860
32.430	0.050	-4.200	-0.120
31.860	-0.010	-5.040	-2.210
31.390	-0.600	-4.550	-4.040
30.820	-3.760	-4.260	-3.960
30.730	-2.830	-2.790	-2.990
30.260	0.940	1.320	1.110
30.070	-4.170	-4.120	-4.190
29.800	0.040	0.120	0.080
29.611	-2.500	-2.320	-2.410
29.540	-0.270	-0.250	-0.290
29.040	-0.230	-0.130	-0.270
28.950	-0.590	-0.350	-0.640
28.670	-0.840	-0.280	-0.950
28.120	-0.780	-0.850	-1.110
27.940	-0.920	-0.780	-1.100
27.680	0.100	0.110	0.040
27.030	-0.460	-0.490	-0.290
26.730	-1.750	-1.730	-1.210
26.290	-4.610	-4.690	-4.260
25.860	-1.160	-1.240	-1.090
25.666	0.150	0.090	0.130
25.478	-0.960	-0.760	-0.790
24.996	-0.010	-0.090	0.370
24.543	3.400	1.710	1.910
24.449	1.220	0.990	0.880
23.974	1.200	0.870	1.110
23.692	-0.310	-0.450	-0.370
23.409	0.320	0.130	0.240
22.935	0.030	0.090	0.020
22.462	-0.230	-0.490	-0.300
21.893	-0.050	0.530	0.130
21.431	2.730	2.650	2.860
21.157	0.740	0.860	0.790
21.061	0.200	0.340	0.270
20.958	0.090	0.160	0.100
20.579	-0.050	0.010	-0.050
19.920	0.040	0.050	0.090
19.446	-0.110	-0.080	-0.120
19.066	-0.800	-0.770	-0.660
18.962	0.490	0.520	0.500
18.275	0.080	0.100	0.080
17.821	-0.870	-0.940	-0.850
17.638	-2.710	-2.610	-2.700
17.458	1.860	1.910	1.790
16.990	0.130	0.180	0.160
16.612	-1.500	-1.240	-1.290
16.506	-0.890	-0.950	-1.000
16.482	-0.800	-1.240	-1.510
16.099	-0.090	0.080	0.200
15.719	0.190	0.180	0.180
15.374	-0.900	-1.350	-1.440
15.094	0.120	0.080	0.110
15.000	-1.870	-1.540	-1.530
14.430	-3.970	-3.800	-3.750
13.952	-2.170	-2.170	-2.180

HEC-6 Model	Existing Conditions	Existing Conditions 10%	Existing Conditions 50%
SECTION NUMBER	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)
13.467	0.200	0.270	0.240
13.007	-0.290	-0.290	-0.330
12.816	0.700	0.770	0.630
12.470	0.310	0.300	0.260
12.420	1.300	1.280	1.250
12.359	0.470	0.460	0.430
11.847	-0.720	-0.820	-0.840
11.557	-0.140	0.010	-0.010
11.428	0.780	0.970	0.900
11.029	2.220	2.430	2.360
10.752	1.030	1.160	1.100
10.538	0.750	0.810	0.780
10.343	-0.190	-0.160	-0.160
9.885	-0.050	-0.010	0.000
9.696	0.320	0.310	0.360
9.435	0.550	0.470	0.590
8.992	-0.570	-0.770	-0.550
8.768	-1.350	-1.450	-1.360
8.433	-0.190	-0.190	-0.180
8.198	0.190	0.350	0.210
8.105	0.350	0.580	0.390
8.000	1.760	1.920	1.780
7.990	1.630	1.790	1.640
7.988	1.350	1.530	1.380
7.490	-0.730	-0.650	-0.690
6.990	-1.000	-0.970	-0.970
6.930	-0.180	-0.210	-0.200
6.910	-0.650	-0.700	-0.690
6.890	0.000	0.000	0.000
6.888	-1.480	-1.480	-1.480
6.820	-0.190	-0.110	-0.160
6.430	-0.180	-0.160	-0.180
6.070	0.830	0.860	0.790
6.068	0.800	0.840	0.770
5.900	0.440	0.460	0.420
5.750	0.490	0.500	0.470
5.689	1.070	1.080	1.050
5.380	-0.620	-0.620	-0.620
5.290	-0.360	-0.370	-0.380
5.203	0.000	0.000	0.000
5.201	0.030	0.040	0.030
5.150	-3.430	-4.850	-2.630
4.790	2.380	2.680	2.150
4.754	3.800	3.980	3.670
4.700	3.230	3.420	3.070
4.300	1.640	1.780	1.560
4.094	0.000	0.000	0.000
4.092	0.010	0.010	0.010
3.767	-1.340	-0.970	-1.350
3.757	-0.700	-0.370	-0.710
3.734	-1.030	-0.730	-1.050
3.729	-0.880	-0.510	-0.890
3.430	0.540	0.750	0.500
3.370	1.610	1.710	1.530
3.270	1.050	1.170	1.030
2.800	-0.500	-0.520	-0.520
2.600	-1.660	-1.590	-1.610
2.020	-1.280	-1.260	-1.380
1.710	-0.240	-0.090	-0.180
1.330	-3.500	-3.500	-3.570
0.730	-0.830	-0.740	-0.780
0.630	-1.260	-1.190	-1.200
0.440	-0.290	-0.310	-0.290
0.160	-0.870	-0.860	-0.870

SECTION 9 DEVELOPMENT OF HEC-6 SAND AND GRAVEL SEDIMENT TREND MODEL

SEDIMENT TREND ANALYSIS REPORT
AGUA FRIA WATERCOURSE MASTER PLAN
KHA Project No. 091131004

9. DEVELOPMENT OF HEC- 6 SAND AND GRAVEL SEDIMENT TREND MODEL

The purpose of this section of the report is to document the study of full sand and gravel mining on the channel bed profile for the Agua Fria River from the confluence with the Gila River upstream to New Waddell dam. Presently there are approximately thirty-three sand and gravel mines along and within the Agua Fria River that are either inactive, active, and/or have pending permits for operations. Table 9.1 provides a summary table of the sand and gravel mines that have been researched by Kimley-Horn and Associates (KHA).

Approach: KHA obtained floodplain permit applications from the Flood Control District of Maricopa County for sand and gravel mines with pending permits as well mining plans for active and inactive mines. The permit applications and mining plans provide the limits of sand and gravel extraction for each mine. The extraction limits include lateral limits and depths of mining activities. These extraction limits were used to construct mining templates for the sand and gravel HEC-6 model.

KHA prepared two HEC-6 models for the purpose of this study. The first model is an updated base conditions model which is a revised existing conditions model of the river that KHA previously prepared and submitted to the District (see Section 5). The base model sand and gravel model includes added cross sections at sand and gravel mines to better reflect the upstream and downstream limits of each sand and gravel mine at full extraction. The second HEC-6 model is the full sand and gravel model. This model includes mining (dredging) templates for each cross section of each sand and gravel mine. Each sand and gravel mine has a minimum of two to three cross sections to depict the limits of the mine in the upstream and downstream directions. The HD records include the dredging template for each cross section of a sand and gravel mine. The dredging template includes the elevation of the average maximum depth of sand and gravel extraction and the horizontal station limits of extraction across each cross section. No considerations of mining setbacks are provided from existing structures and all mines were assumed to have vertical walls.

Figures 9.1 through 9.17 provide the locations of the permitted and pending permit sand and gravel mines. The figures also provide the location and orientation of cross sections used in the base model and sand and gravel model.

The definition of "full" sand and gravel mining, for the purposes of this study, is that all thirty-three sand and gravel mines have been mined to the ultimate extent depicted in their respective mining plans or permit applications. In other words, each mine has extracted all of the aggregate from each pit or has mined to the limits according to the mining plans or permits. The sand and gravel model depicts the "full" operations conditions.

The depth of the sediment bed reservoir was increased in the sand and gravel model as appropriate for each mine as needed. This is a requirement of the HEC-6 program such that the final pit elevation cannot extend below the bottom of the model (bottom elevation of the bed sediment reservoir) at each mining cross section.

The base model and the sand and gravel model were both executed assuming 50% sediment inflow in the Agua Fria River. This condition reflects a sediment trapping capability for New Waddell Dam and "clear" water releases from the dam during a flood

event. The sediment rating curve for base sand and gravel model and full sand and gravel model conditions is provided in Table 9.2 as follows:

Table 9.2. Sediment Inflow Rating Curve (Agua Fria River).

LQ	Discharge (cfs)	5000	7000	17000	55000
LT	Sediment (tons/day)	6456	10880	33474	146960
LF	Very Fine Sand	0.02563	0.03675	0.01795	0.00716
LF	Fine Sand	0.13772	0.16853	0.13200	0.10199
LF	Medium Sand	0.21035	0.22940	0.21429	0.21542
LF	Coarse Sand	0.23112	0.22521	0.22541	0.25124
LF	Very Coarse Sand	0.36207	0.32486	0.38978	0.39271
LF	Very Fine Gravel	0.00367	0.00255	0.00203	0.00119
LF	Fine Gravel	0.00683	0.00452	0.00379	0.00284
LF	Medium Gravel	0.01083	0.00681	0.00677	0.00652
LF	Coarse Gravel	0.00587	0.00134	0.00686	0.01048
LF	Very Coarse Gravel	0.00073	0.00000	0.00108	0.01041

The sediment rating curve is given on the LQ and LT records. The discharges (cfs) are given on the LQ record and the sediment inflow (tons/day) is given on the LT record. The LF records provide the percentage of the sediment inflow by grain size per the given discharge and sediment inflow data values.

The two models (base model and sand and gravel model) evaluated in this memorandum are based on reducing the sediment inflow on the LT record to 50% of the levels given in the above table. The models were executed using the hydrology provided in the existing condition model with 30-days of 9,000-cfs preceded the 100-year hydrograph of the Agua Fria River and assuming the sediment rating curve for New River is unchanged from the existing condition model.

The base model and the sand and gravel models were prepared and executed using the Corps of Engineers "fixedS95" HEC-6 model.

Interpretation: Several tables and figures have been prepared to aid in the interpretation and presentation of the results. Table 9.3 is a summary of the mining extraction limits, the moveable bed limits, and the conveyance limits for each "group" of sand and gravel mines. The extraction limits include average maximum depths of excavation and horizontal (footprint) limits of excavation. Bridge locations are noted in Table 9.3 to the nearest river station.

Table 9.4 is a summary of the channel bed profile for both the base model and sand and gravel model for the peak discharge in the Agua Fria River at time step 30.37 days. Table 9.5 is a summary of the channel bed profile for both the base model and sand and gravel model at time step 31.10 days (at the end of the 100-year hydrograph). Figures 9.18 and 9.19 illustrate the bed channel profile of the river during the passage of the 100-year flood for the peak and at the end of the 100-year flood, respectively. The profiles incorporated the mines, which are readily apparent on the figures. Appendix D provides additional backup documentation for the revised base (existing) condition HEC-6 model.

The results of the sand and gravel model indicate the potential for upstream headcutting to occur as a result of the passage of the 100-year flood through the fully developed sand and gravel mines. Table 9.5 (end of 100-year hydrograph) highlights the sand and gravel mine groups in shaded boxes. The cross sections upstream of the sand and gravel mines indicate a general degradation of the channel invert. This is particularly evident at cross section 18.962, which indicates a channel degradation of -6.38 ft at the Bell Road Bridge. Other bridge and at-grade crossings potentially exposed to channel degradation include Indian School Road bridge (cross section 8.105, -1.78 ft), Camelback Road bridge (cross section 8.992, -0.55-ft), and Northern Avenue at-grade crossing (cross section 12.42, -9.20-ft).

Tables 9.4 and 9.5 show several cells that are highlighted in red in the "difference" column. The red (negative) numbers are located upstream of sand and gravel mines and these numbers indicate a trend for the potential for initiation of headcutting.

Figures 9.18 and 9.19 show the Agua Fria River channel profiles from the impact of the passage of the 100-year flood through the river after full sand and gravel extraction. The exhibits confirm the observation of potential formation of headcuts upstream of the mines.

A review of the results for the sand and gravel model from cross sections 8.105 through 10.846 indicates minor degradation and deposition occurring in the river. This reach of the river incorporates sand and gravel mines downstream of Indian School Road to upstream to the Glendale airport area (Bethany Home Road). There are a number of mining pits that are active or have pending permits within this reach of the Agua Fria River. The maximum pit depths range from 10-ft to 80-ft. Pit depths included depths of 12, 25, and 40-ft. HEC-6 cross sections for this reach of the Agua Fria River extend across several mining operations all of which have different mining depths. For the purposes of this study and the limitations of the HEC-6 model, an average pit depth was assumed for each mining cross section within this reach of the river. The average pit depth is not necessarily the maximum pit depth. Average pit depths were used across the cross section as the HEC-6 model is not capable of individually distinguishing separate mines across a cross section using the dredging option in HEC-6. Future sediment studies of this reach of the river should include a sensitivity analysis on maximum pit depth to evaluate the impact of the mines located in this reach of the river.

The bed channel profile in the downstream reach of the Agua Fria River, which includes the Corps of Engineers levees, appears to be relatively stable during the passage of the 100-year hydrograph. This is anticipated since this reach contains five grade control structures, has no active sand and gravel mines, and the banks of the river are stabilized with soil cement levee bank protection.

From the Gila River confluence upstream to the beginning of the Corps levees, the Agua Fria River indicates degradation (scour) during the passage of the 100-year flood flows. There is a minor (permit pending) sand and gravel mine located between river stations 1.10 to 1.25 near the west bank. The impacts of this mine at full extraction is to lower the invert of the river locally by a much as 10.3-ft during the 100-year flood.

Conclusions: The results of the full sand and gravel model of the Agua Fria River indicate the need for management of a potential erosion hazard - headcutting. The headcutting may result from and be attributable to the extensive sand and gravel mining

extraction activities incorporated into the HEC-6 model in this study. The management of potential headcuts may take the form of grade stabilization structures, set-back limits on sand and gravel mines, limitations on the depths of extraction within the floodway/floodplain, and scour countermeasures at existing and proposed river crossings. Grade control structures may be located downstream/upstream of sand and gravel mines and/or at or near bridge crossings. At-grade crossings should be reviewed for scour countermeasures.

Specific local design recommendations for grade control structures are beyond the level of detail undertaken as part of this study. However, general guidelines can be provided as to the locations of the grade controls as well as the anticipated toedown depth. The determination of toedown depths is not limited to the degradation depths in this study. The toedown depths include estimations of local scour and other scour components depending on proposed location of the structure. Recommended grade stabilization measures are presented in further detail in Section 11 of this report.

Appendix D provides the HEC-6 model input files for the updated existing conditions (Sgbase50.dat) and the full sand and gravel model (Sgm50-1.dat). Also included in the Appendix is a listing of the existing bridges on the Agua Fria River, existing grade control structures and utility crossing data.

Table 9.1. Sand and Gravel Operations within the Agua Fria River 100-year Floodplain.

KHA Historical Site No.	KHA Site Name	Location	Approximate Legal Description	Original Permit Number	Original Property Owner	Original Operator	Current Permit Number	Current Property Owner	Current Operator	KHA Document Number	Notes
1	**Broadway-1W** **Broadway-1E**	West Side of the Agua Fria Channel Just South of Broadway Road	Large portion of W 12 of NW 1/4 of Sec 27 T1N R1W [no boundary information]	FA 79-005		The Tanner Companies United Metro Division		Buckeye Irrigation Co.	Vulcan (?)	339	CAD
7	**Indian School -1S** **Indian School -1N**	Middle of the Agua Fria Channel Just North of Indian School Road West bank of the Agua Fria Channel North of Indian School Road	A portion of the W1/2 of the E1/2 of Sec 24 T2N R1W	FA 94-008		Barkley-Estes Sand & Gravel	FA94-08 renewed 7/1/99 for 5 years		CEMEX	130	CAD & profile
10	**Indian School -2S**	Middle of the Agua Fria Channel Just South of Camelback Road	A portion of the E 1/4 of Sec 24 T2N R1W & A portion of the W 1/4 of Sec 19 T2N R1E	FA 85-020 (denied) FA 86-015 (temporary) FA 87-017		Johnson-Stewart Materials			CEMEX	132, 135 (temp)	HEC-2 paper
11	**Indian School -2N**	Middle of the Agua Fria Channel Just North of Camelback Road	A portion of S1/4 of the E1/4 of Sec 13 T2N R1W & W1/2 of the SW1/4 of Section 18 T2N R1E	FA 87-017A							
13	**Camelback-1S** **Camelback-1N**	West Side of the Agua Fria Channel North of Camelback Road South of Bethany Home Road	SW 1/4 of the SW 1/4 of Sec 12 T2N R1W & A portion of the W 1/4 of Sec 13 T2N R1W & A portion of the NE 1/4 of the SW 1/4 of Sec 13 T2N R1W & A portion of the SE 1/4 of the SW 1/4 of Sec 13 T2N R1W	FA 94-020 (5-year)	Phoenix Redi-Mix Co.	Phoenix Redi-Mix Co.			Hansen	138	HEC-2 paper
17	**Camelback-2S** **Camelback-2N**	West Side of the Agua Fria Channel North & South of Bethany Home Rd	SE 1/4 of the SW 1/4 of SEC 12 T2N R1W & N 1/2 of the SW 1/4 of SEC 12 T2N R1W & W 1/2 of the NW 1/4 of SEC 12 T2N R1W & SE 1/4 of the NW 1/4 of SEC 12 T2N R1W & the E 1/2 of the NW 1/4 of Sec 13 T2N R1W	FA 94-029	Suncor Development Co.	Suncor Development Co	FA 94-029A	W. R. Tanner	W. R. Tanner	139	HEC-2 Disk from AN-West NEED COPY OF FA 94-029A Use FA 94-029 doc. until FA 94-029A doc. is obtained
14	**Camelback-3**	West Side of the Agua Fria Channel North of Camelback Road South of Bethany Home Road	NW 1/4 of the SE 1/4 of Section 13 T2N R1W	FA 85-005	Arizona State Land Department	ABC Sand & Rock Co.			ABC Sand & Rock Co.	338, 144	HEC-2 paper
15	**Camelback-4N** **Camelback-4S**	West Side of the Agua Fria Channel North of Camelback Road South of Bethany Home Road	SW 1/4 of the NE 1/4 & the W 730 feet of the NE 1/4 of the SE 1/4 & W 480 feet of the SE 1/4 of the NE 1/4 of Sec 13 T2N R1W	FA 95-048 (5-year)	Arizona State Land Department	ABC Sand & Rock Co.			ABC Sand & Rock Co.	338, 136	HEC-2 paper
16	**Camelback-5W** **Camelback-5E**	West Side of the Agua Fria Channel North of Camelback Road South of Bethany Home Road	N 1/2 of the NE 1/4 of Sec 13 T2N R1W & A portion of the SE 1/4 of the NE 1/4 of Sec 13 T2N R1W & A portion of the NE 1/4 of the SE 1/4 of Sec 13 T2N R1W	FA 95-048A (pending)	Arizona State Land Department	ABC Sand & Rock Co.			ABC Sand & Rock Co.	338	HEC-2 paper **Pending Permit**
18	**Bethany Home-1**	East Side of the Agua Fria Channel North of Bethany Home Road South of Glendale Avenue	E 1/2 of the SE 1/4 of Sec 12 T2N R1W	FA 84-008	Andrew S. Jackson	Kachina Redi-Mix		Gravel Resources of Arizona	Gravel Resources of Arizona	147	CAD
19	**Glendale-1**	Middle of the Agua Fria Channel North of Glendale Avenue South of Northern Avenue	Large portion of Sec 1 T2N R1W [no boundary information]	(Z 70-58, Z 70-104)		United Metro			United Metro	48, 70, 340	CAD
20	**Northern-1**	East Side of the Agua Fria Channel North of Northern Avenue South of Olive Avenue	Large portion of the E 1/4 of Sec 36 T3N R1W & A portion of the W 1/2 of Sec 31 T3N R1E	FA 79-016 (never approved)		WDL Engineering, Inc.		Agua Fria Industries	Kelly Lloyd/ Mountain Valley Construction	149	CAD **Pending Permit** NEED COPY OF FA 99-085 KHA question about LOMR
26	**Grand-1**	West Side of the Agua Fria Channel North of Grand Avenue to North of Greenway Road	W 1/4 of Sec 7 T3N R1E & NE 1/4 of Sec 12 T3N R1W & NE 1/4 of the SE 1/4 of Sec 12 T3N R1W	El Mirage		Arizona Sand & Rock Co., Inc.		Arizona Sand & Rock Co., Inc.	Arizona Sand & Rock Co., Inc.	340	CAD For Modeling Purposes Combined with Greenway-1
27			Large portion of the SW 1/4 of Sec 1 T3N R1W [no boundary information]							No KHA doc	
28	**Greenway-1**	East Side of the Agua Fria Channel North of Greenway Road South of Bell Road	Large portion of the W 1/2 of Sec 1 T3N R1W [no boundary information]			CALMAT Land Co.			Vulcan	No KHA doc	CAD For Modeling Purposes Combined with Grand-1
30	**Beardsley-1**	Middle of the Agua Fria Channel Just North of Beardsley Road East Side of the Agua Fria Channel Just South of Beardsley Road	A portion of the SE 1/4 of Sec 24 T4N R1W & W 1/4 of the SW 1/4 of Sec 19 T4N R1E		William A. Walker	Walker Gravel Operation		William A. Walker	Sun State Rock	342	CAD
32	**Rose Garden-1**	Middle of the Agua Fria Channel Just North of Rose Garden Lane	A portion of the SW 1/4 of the NW 1/4 of Sec 19 T4N R1E	FA 87-037 FA 87-037R	Finley Construction Corporation	Finley Construction Corporation	FA87-37 renewed on 06/29/95 for 5-years		Maricopa Ready-Mix (Salt River Sand & Rock)	68, 128	CAD ASU Site D

Table 9.1. Sand and Gravel Operations within the Agua Fria River 100-year Floodplain.

KHA Historical Site No.	KHA Site Name	Location	Approximate Legal Description	Original Permit Number	Original Property Owner	Original Operator	Current Permit Number	Current Property Owner	Current Operator	KHA Document Number	Notes
33	**Deer Valley-1S**	Middle of the Agua Fria Channel Just South of Deer Valley Road	A portion of the NW 1/4 of the NW 1/4 of Sec 19 T4N R1E	FA 88-015 FA 88-015A	Finley Construction Corporation	Finley Construction Corporation			Maricopa Ready-Mix (Salt River Sand & Rock)	140	CAD ASU Site F
34	**Deer Valley-1N**	West side of the Agua Fria Channel Just North of Deer Valley Road	SW 1/4 of the SW 1/4 of Sec 18 T4N R1E	FA 86-023						68, 151	
35	**Deer Valley-2**	West side of the Agua Fria Channel North of Deer Valley Road	NW 1/4 of the SW 1/4 of Sec 18 T4N R1E	Application (pending)	Finley Construction Corporation	Finley Construction Corporation			Maricopa Ready-Mix (Salt River Sand & Rock)	No KHA doc	CAD **Pending Application** Verbal Inquiry by Owner
36	**Pinnacle Peak-1S** **Pinnacle Peak-1N**	West side of the Agua Fria Channel North & South of Pinnacle Peak Rd	W 1/2 of the NW 1/4 of Sec18 T4N R1E & A portion of the W 1/4 of Sec 7 T4N R1E	FA 00-085 (pending)		JRW Inc. (New West Materials)			JRW Inc. (New West Materials)	No KHA doc	CAD **Pending Permit** NEED COPY OF FA 00-085
37	**Pinnacle Peak-2**	East Side of the Agua Fria Channel South of Pinnacle Peak Road	Large portion of the NE 1/4 of the NE 1/4 of Sec 18 T4N R1E [no boundary information]	FA01-012 (pending)					CEMEX	No KHA doc	CAD **Pending Permit** NEED COPY OF FA 01-012 **Existing Pit**
38	**Pinnacle Peak-3W**	East Side of the Agua Fria Channel Just North of Pinnacle Peak Road	W 1/2 of the SE 1/4 of Sec 7 T4N R1E & A portion of the W 1/2 of the SE 1/4 of the SE 1/4 of Sec 7 T4N R1E & S 1/4 of the SW 1/4 of the NE 1/4 of Sec 7 T4N R1E	FA 86-044 (Closed) FA 86-044B		Blue Circle West			CEMEX	68, 131	CAD For Modeling Purposes Combine 3W & 3E ASU Site H
39	**Pinnacle Peak-3E**		SW 1/4 of the NE 1/4 of the SE 1/4 of Sec 7 T4N R1E & the E 1/2 of the NE 1/4 of the SE 1/4 of Sec 7 T4N R1E	FA 86-044A							
44	**Pinnacle Vista-1**	West Side of the Agua Fria Channel North and South of Dynamite Road	E 1/2 of the SE 1/4 of Sec 30 & SW 1/4 of the SW 1/4 of Sec 29 & E 1/2 of the NE 1/4 of Sec 31 & W 1/2 of the NW 1/4 of Sec 32 of T5N R 1E	FA 00-105 (pending)		Chandler Redi-Mix			Chandler Redi-Mix	No KHA doc	CAD **Pending Permit** NEED COPY OF FA 00-105
45	**Dixileta-1**	East Side of the Agua Fria Channel North and South of Dixiletta	W 1/2 of the SW 1/4 of T5N R1E Sec 21 & the W 1/2 of the NW 1/4 of T5N R1E Sec 28	Pending Permit-Peoria		United Metro Materials			United Metro Materials	343	HEC-RAS Disk **Pending Permit-Peoria**
46	**Dixileta-2**	West Side of the Agua Fria Channel North of Dixiletta Road South of Lone Mountain Road	A portion of Sec 20 T5N R1E	FA00-008		Becho, Inc.	FA00-008		Chandler Redi-Mix	337	CAD & profile

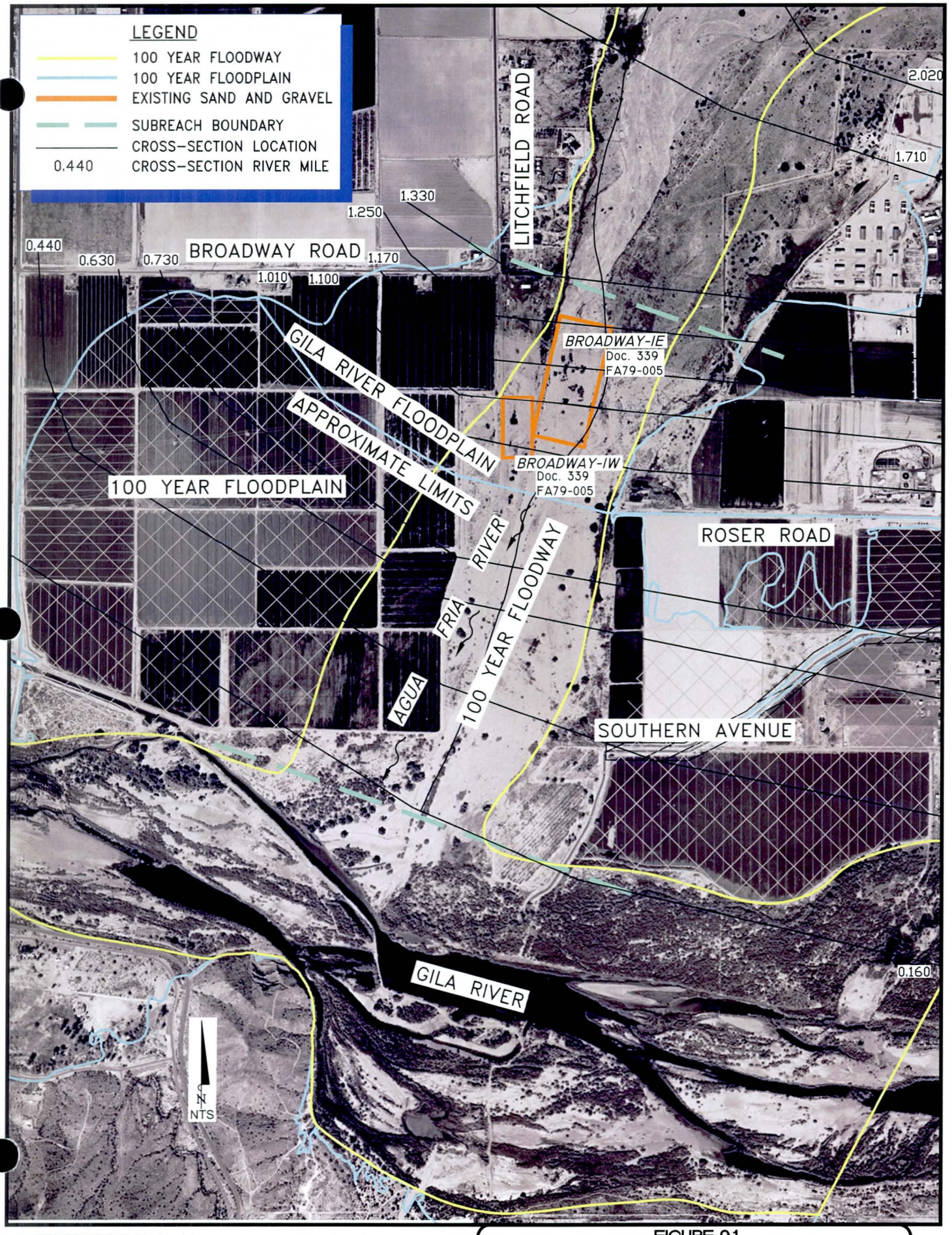


FIGURE 9.1
LOCATION OF SAND AND GRAVEL OPERATIONS
CONFLUENCE OF GILA RIVER TO BROADWAY ROAD

FIGURE 9.2
LOCATION OF CROSS-SECTIONS
BROADWAY ROAD TO MC 85 (BUCKEYE ROAD)

FIGURE 9.3
LOCATION OF CROSS-SECTIONS
BUCKEYE ROAD TO INTERSTATE 10

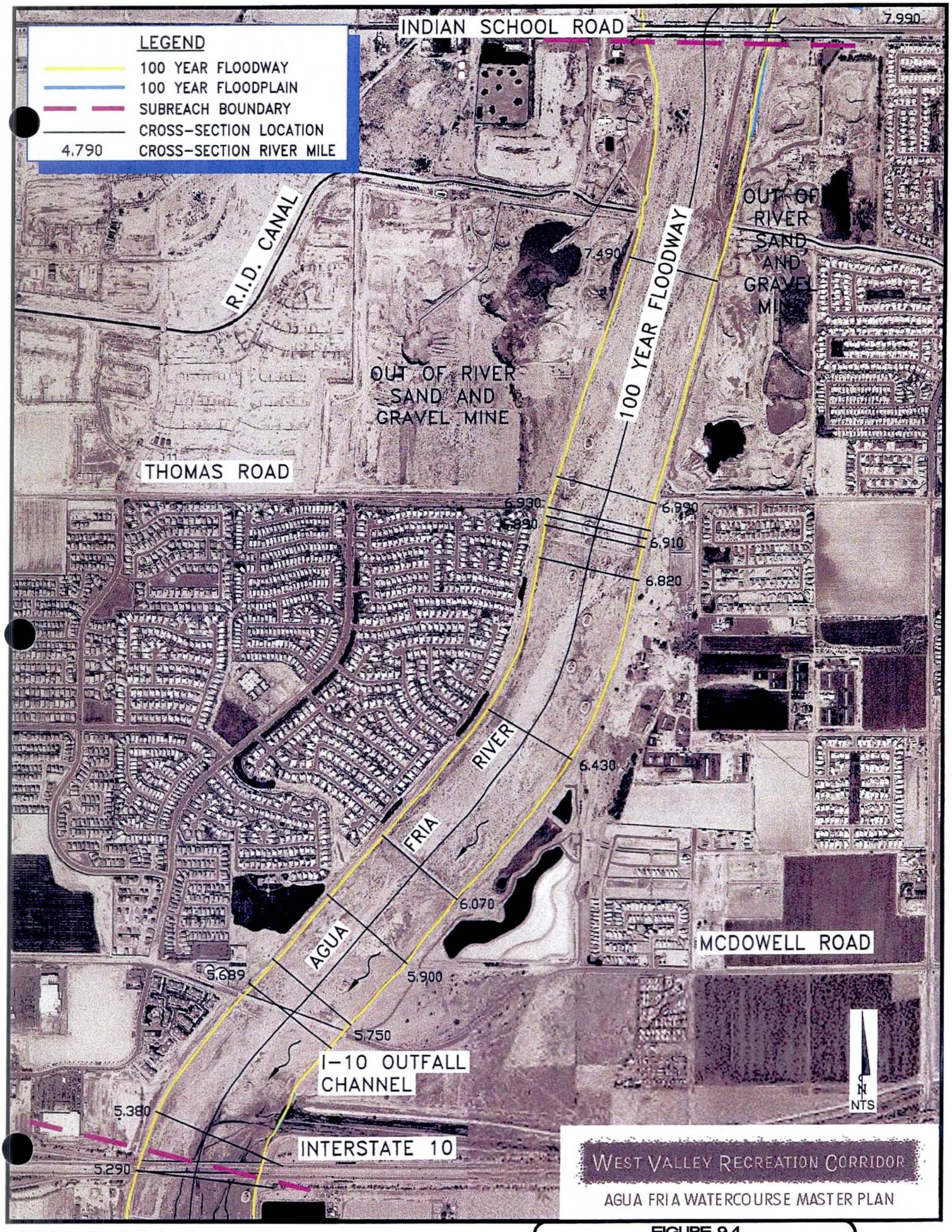


FIGURE 9.4
LOCATION OF CROSS-SECTIONS
INTERSTATE 10 TO INDIAN SCHOOL ROAD

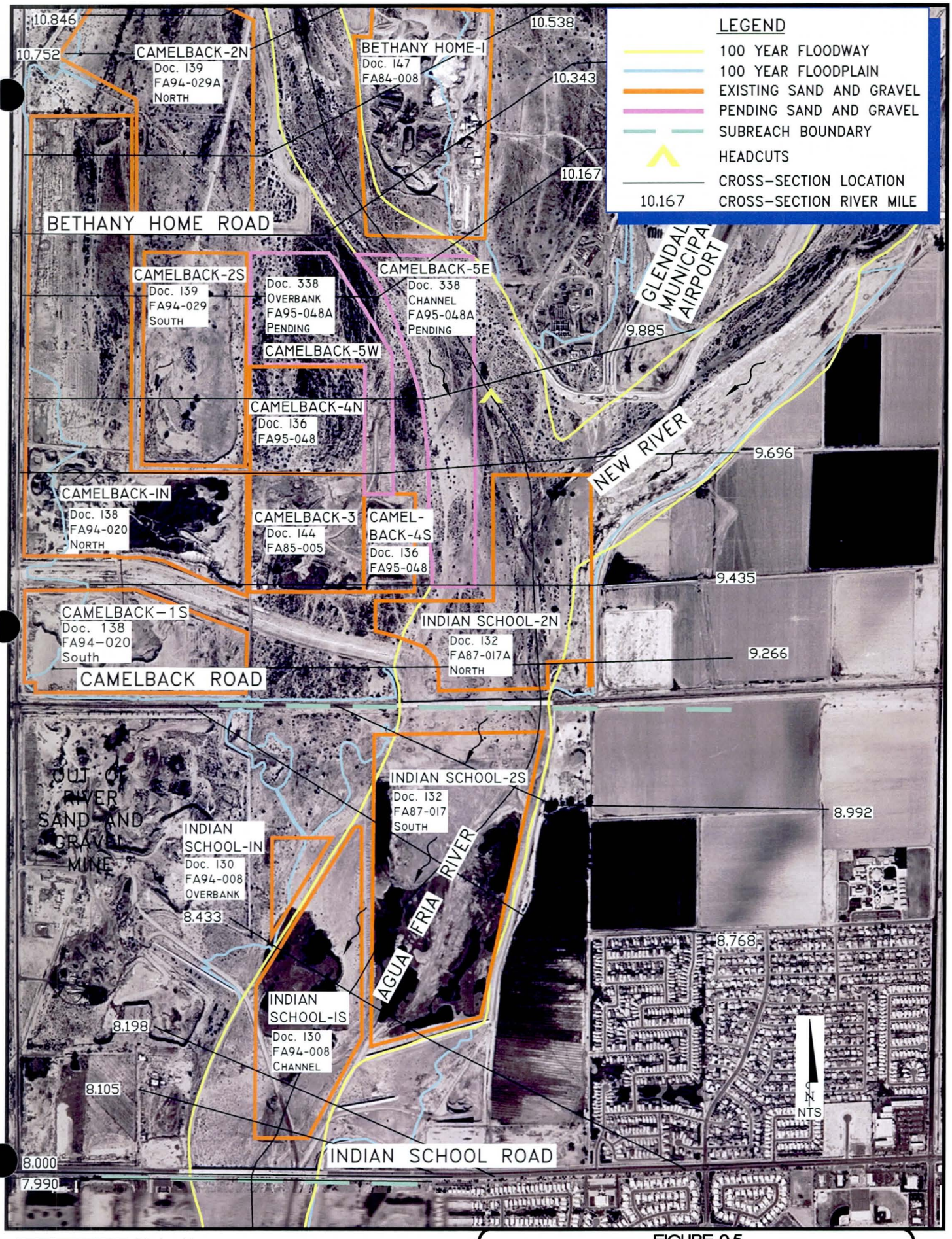


FIGURE 9.5
LOCATION OF SAND AND GRAVEL OPERATIONS
INDIAN SCHOOL ROAD TO CONFLUENCE OF NEW RIVER

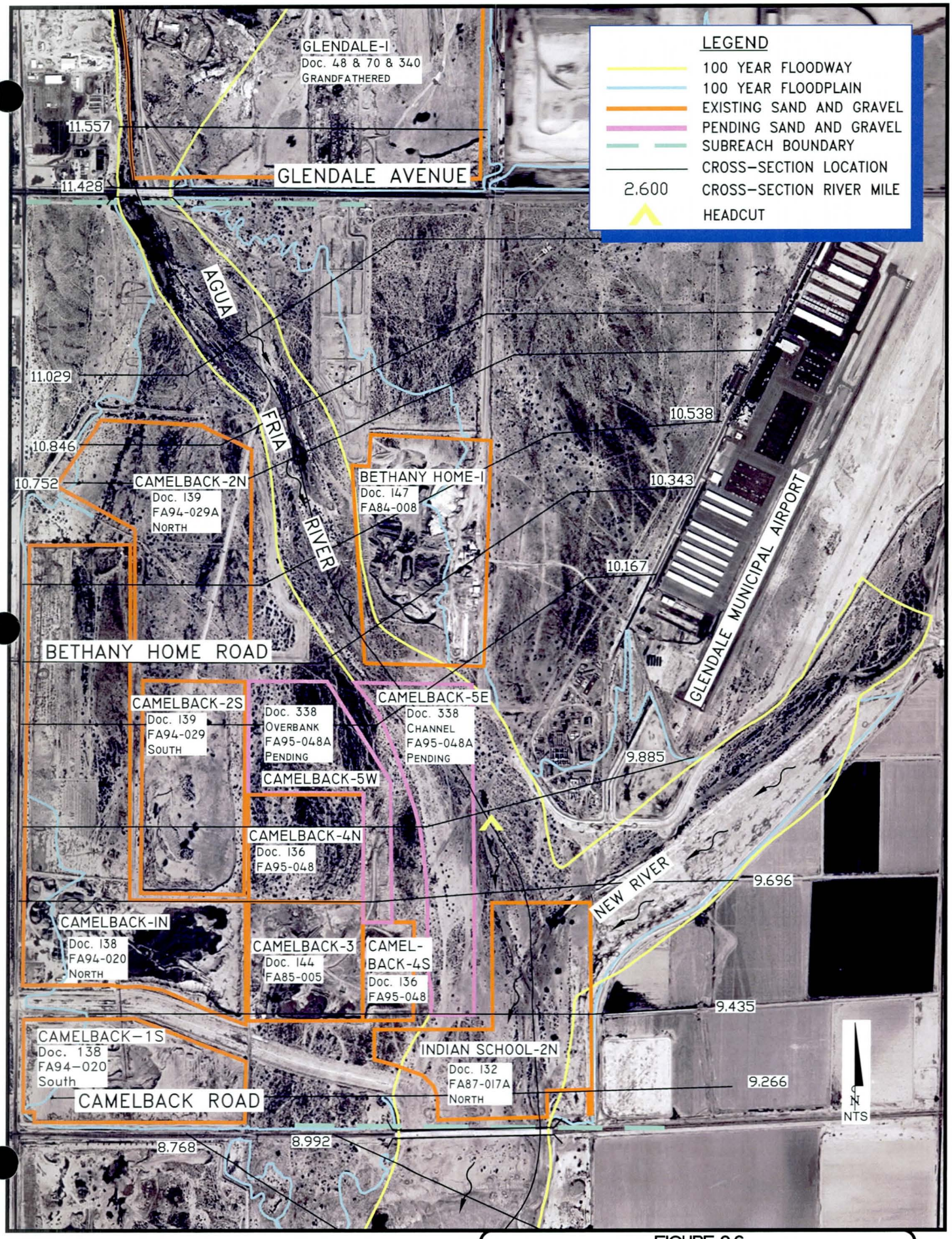


FIGURE 9.6
LOCATION OF SAND AND GRAVEL OPERATIONS
CONFLUENCE OF NEW RIVER TO GLENDALE AVENUE

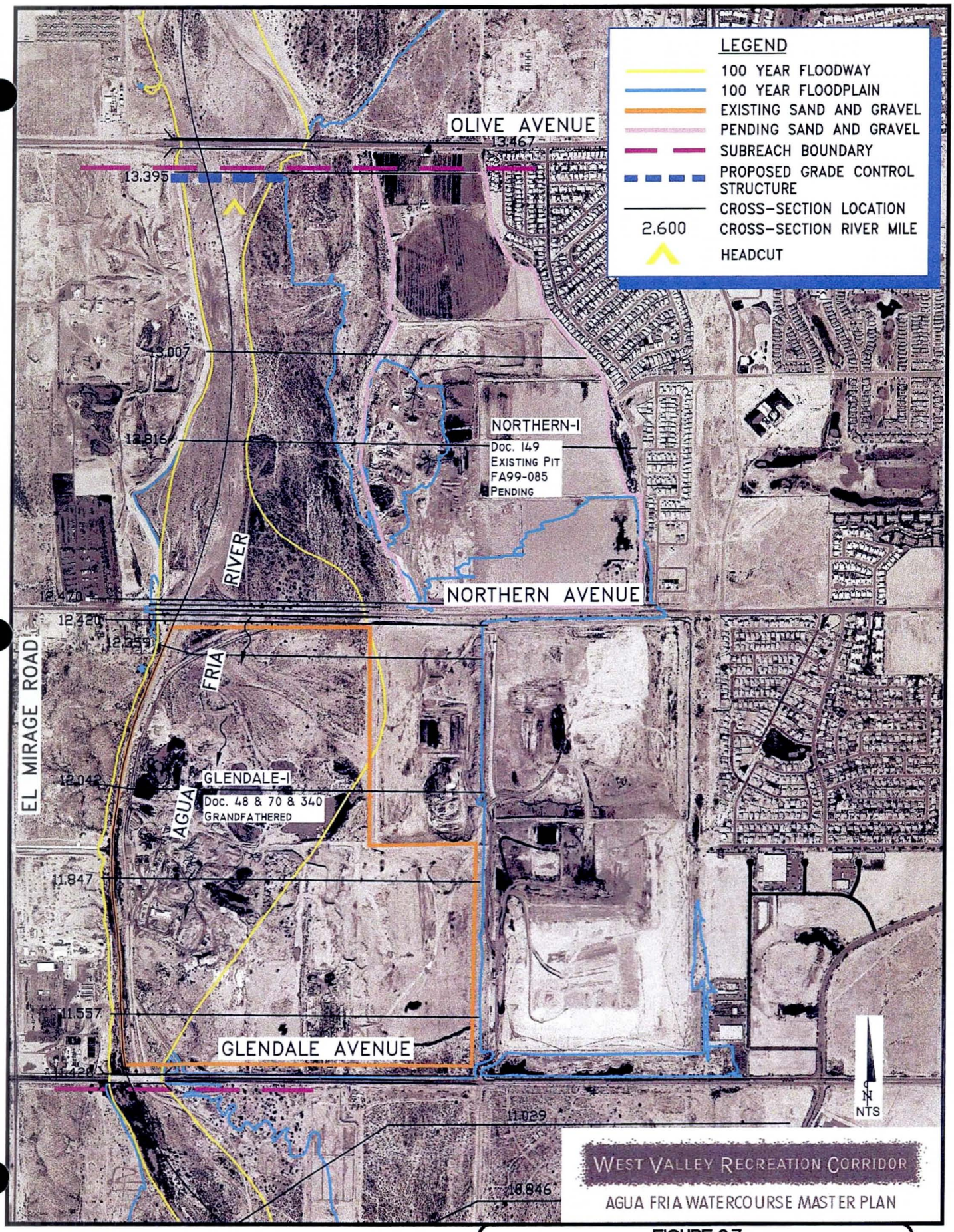


FIGURE 9.7
LOCATION OF SAND AND GRAVEL OPERATIONS
GLENDALE AVENUE TO OLIVE AVENUE

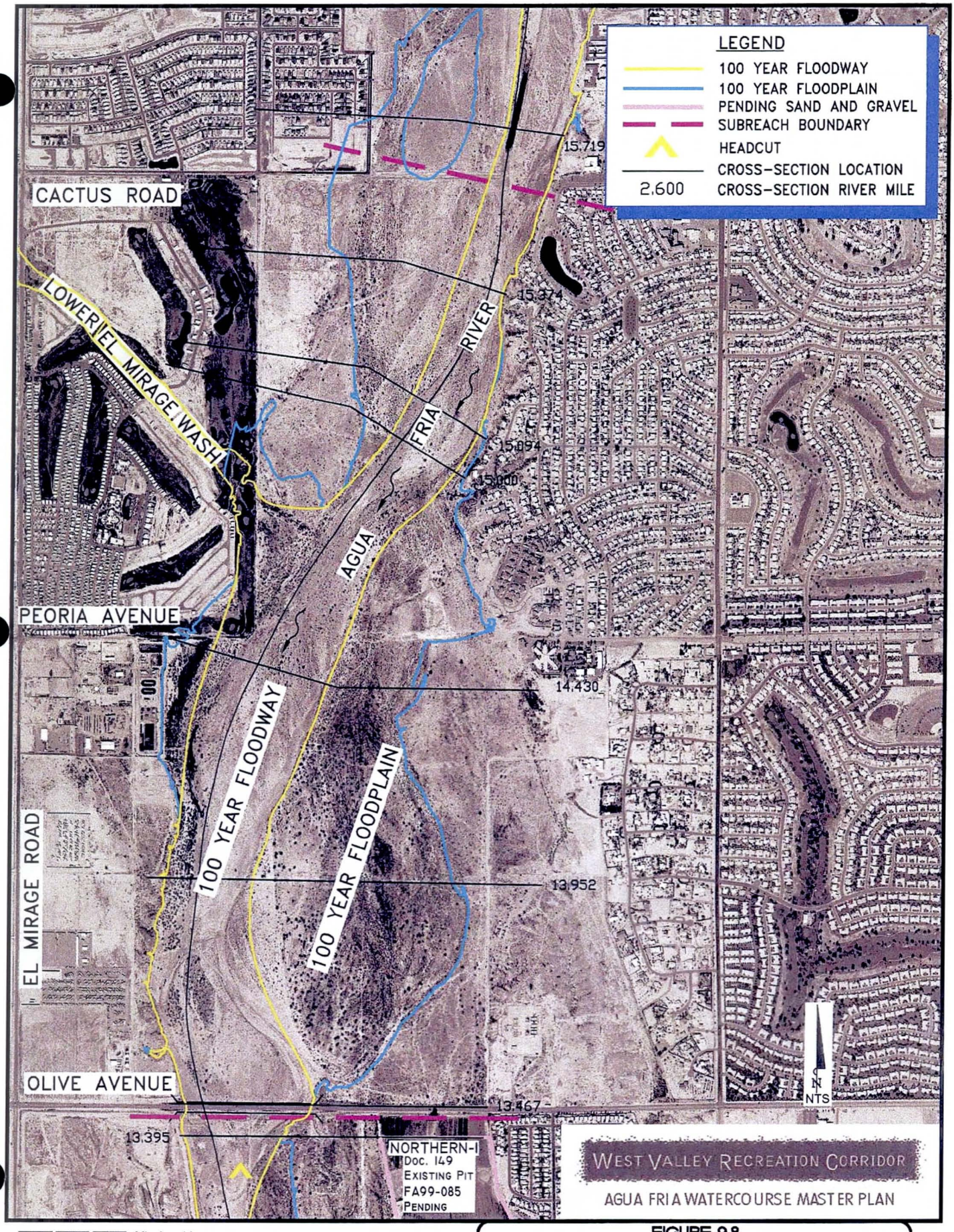


FIGURE 9.8
LOCATION OF SAND AND GRAVEL OPERATIONS
OLIVE AVENUE TO CACTUS AVENUE

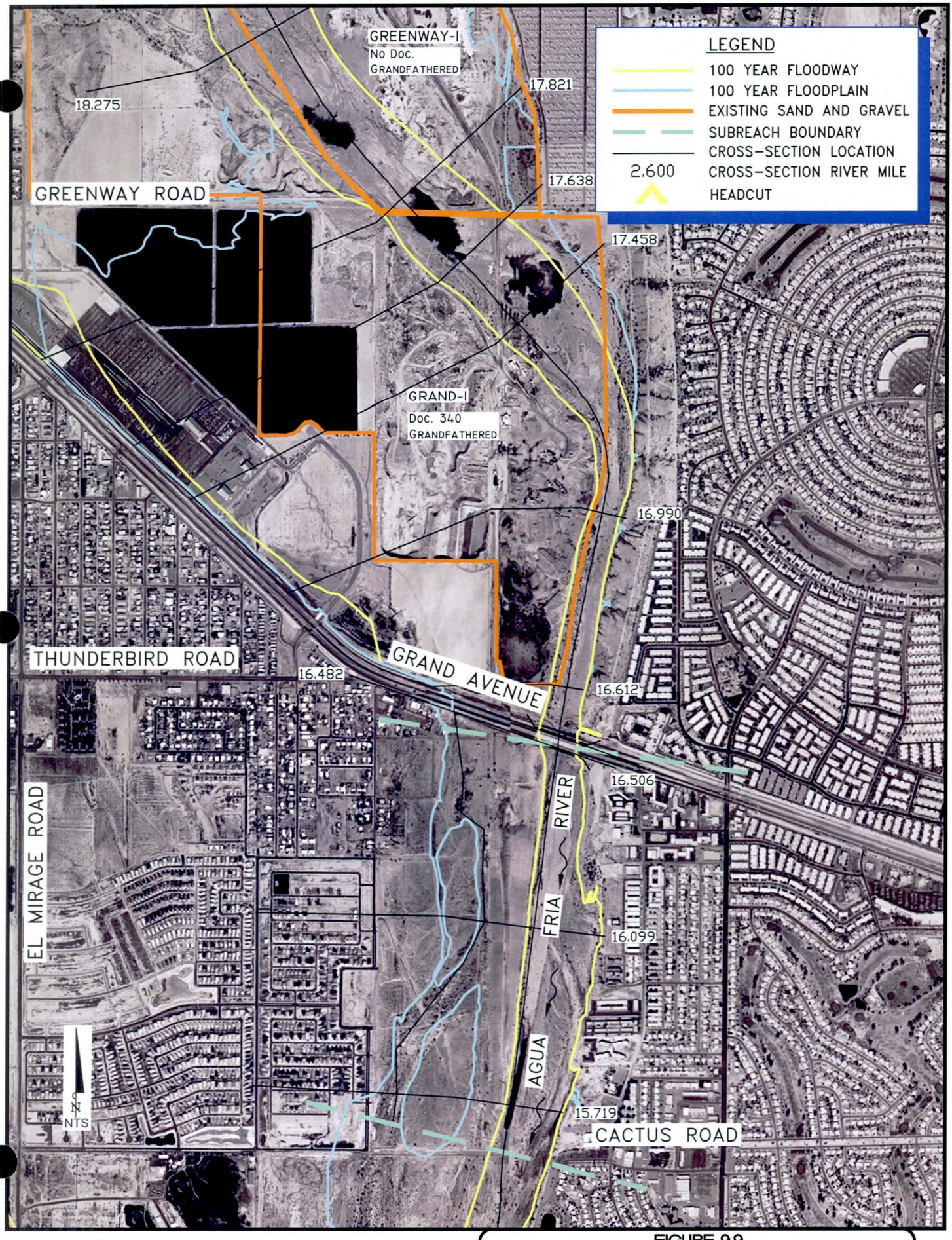


FIGURE 9.9
LOCATION OF SAND AND GRAVEL OPERATIONS
CACTUS ROAD TO GRAND AVENUE

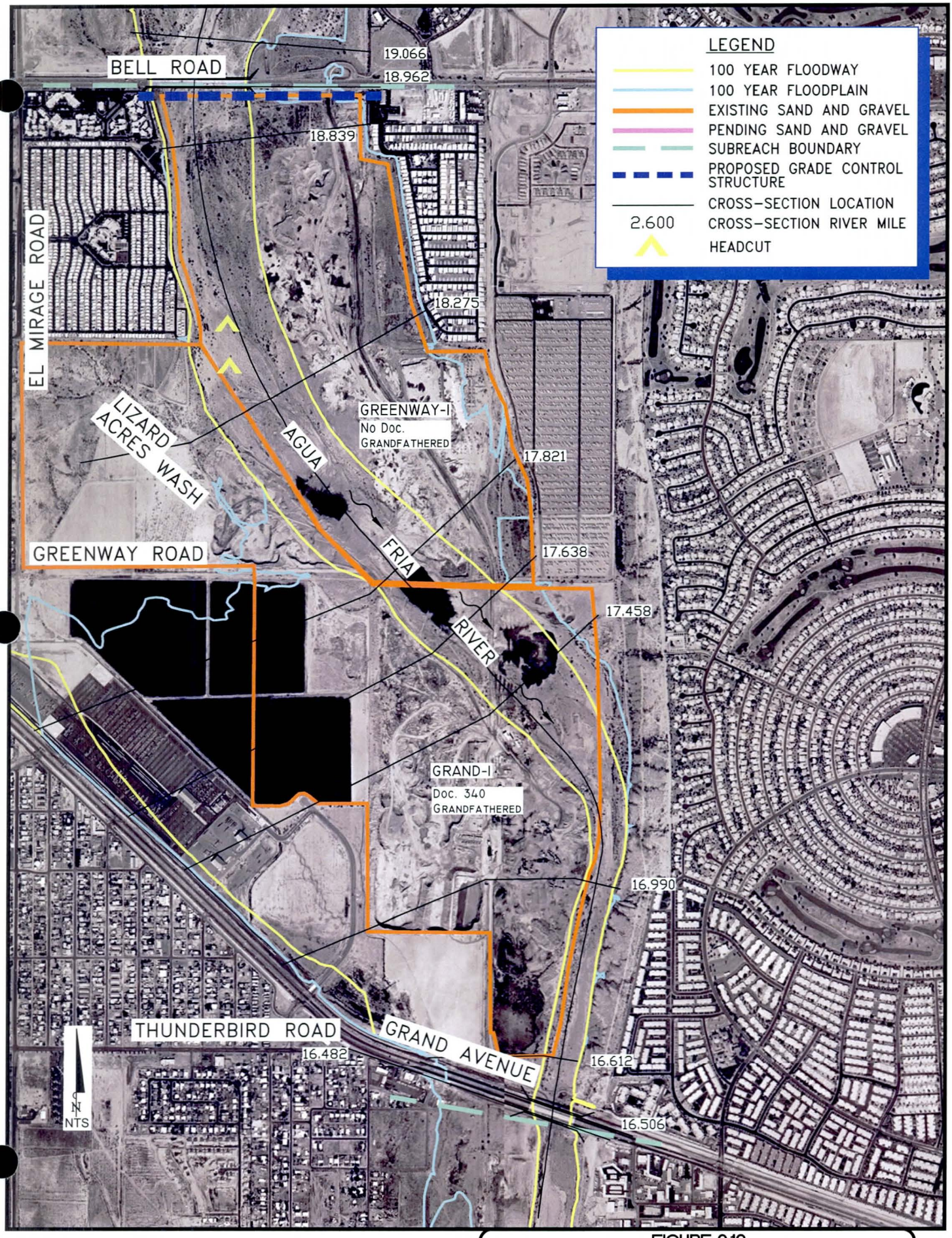


FIGURE 9.10
LOCATION OF SAND AND GRAVEL OPERATIONS
GRAND AVENUE TO BELL ROAD

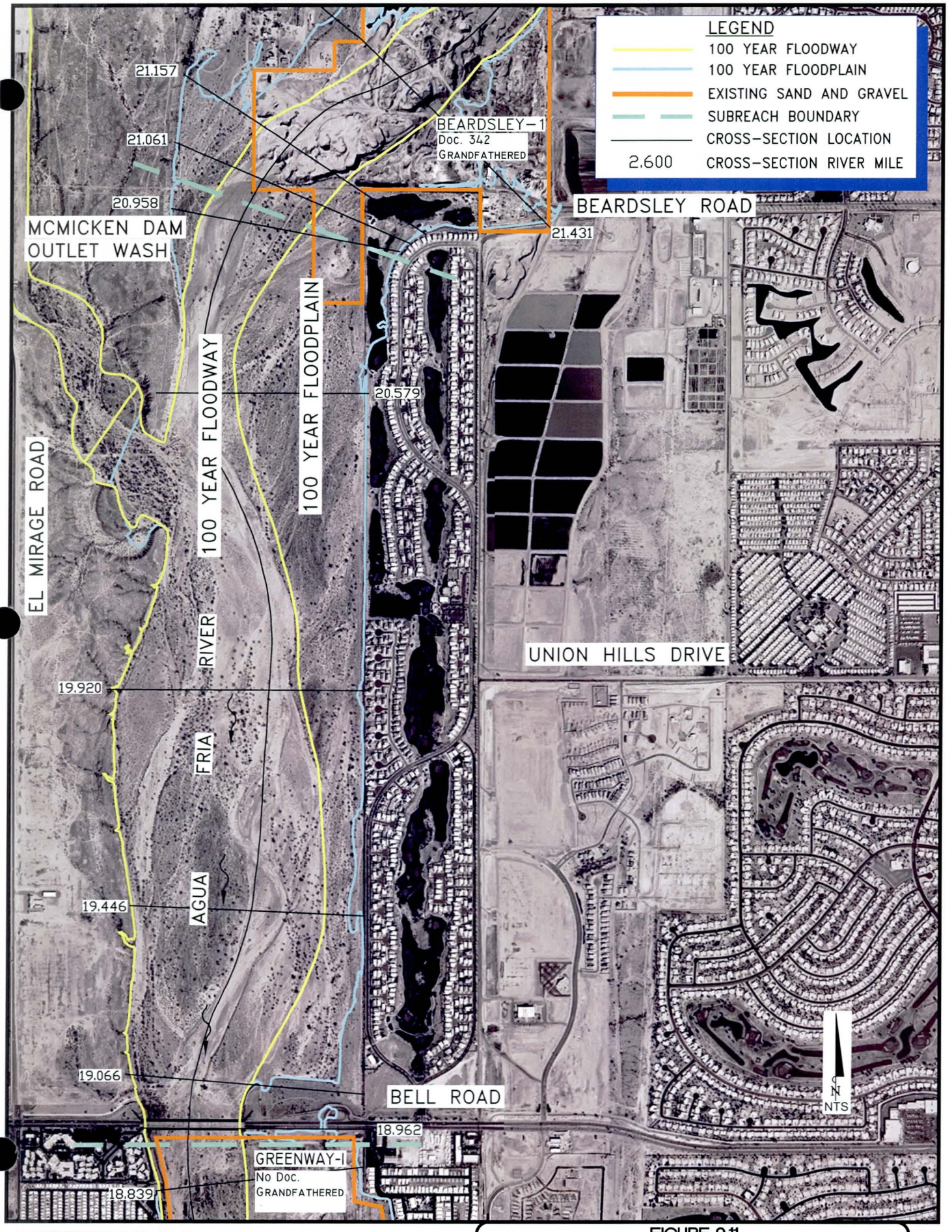


FIGURE 9.11
LOCATION OF SAND AND GRAVEL OPERATIONS
BELL ROAD TO BEARDSLEY ROAD

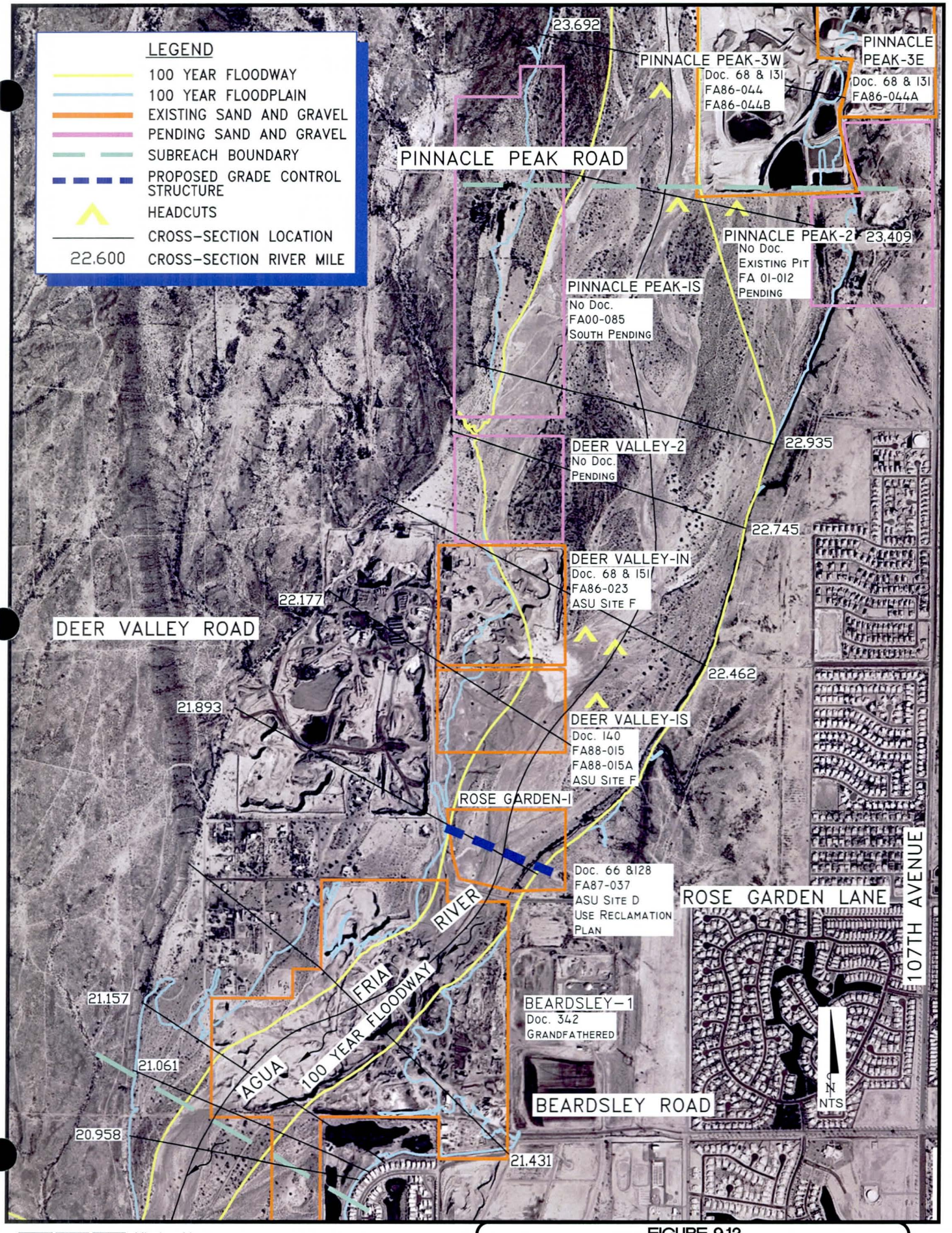


FIGURE 9.12
LOCATION OF SAND AND GRAVEL OPERATIONS
BEARDSLEY ROAD TO PINNACLE PEAK ROAD

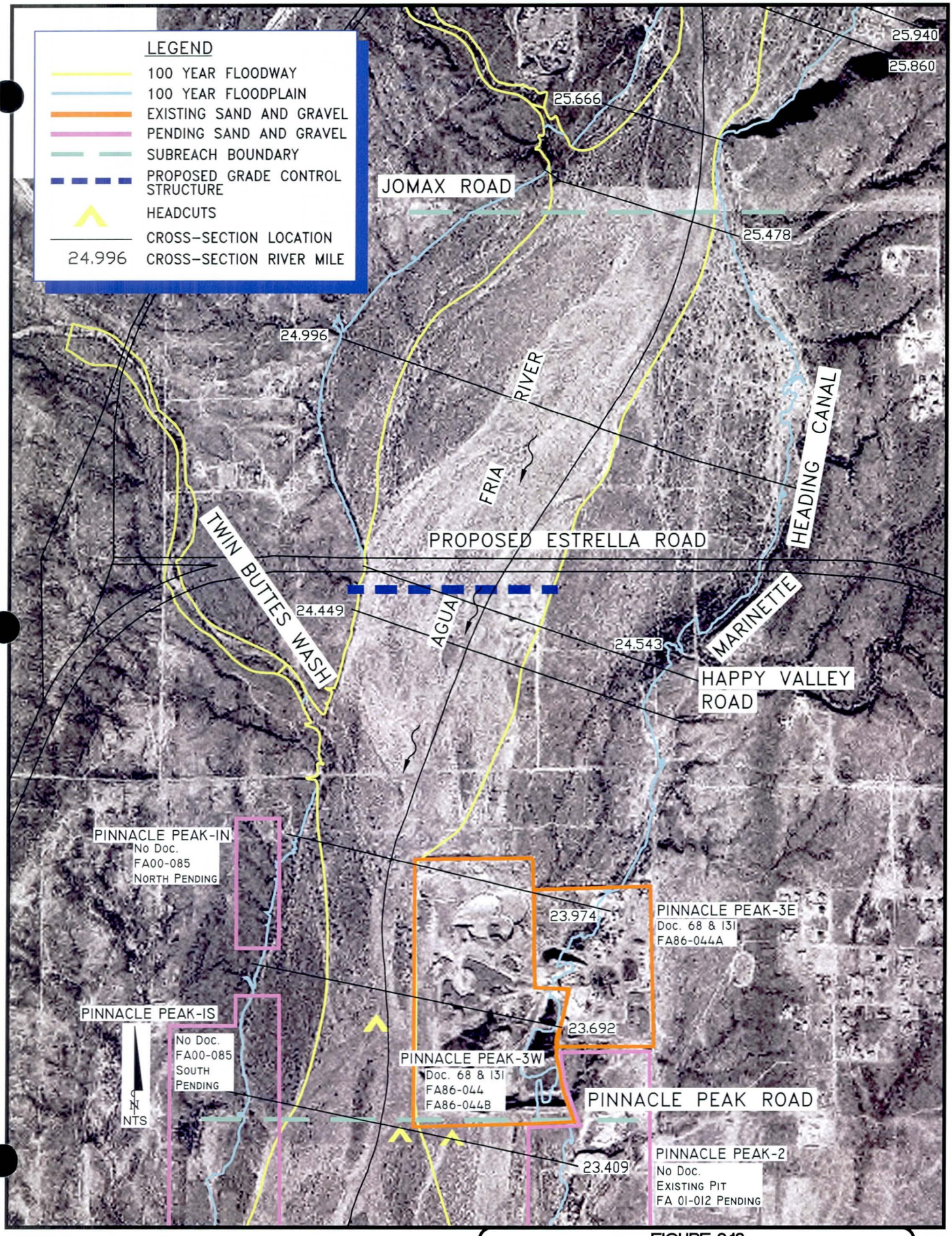
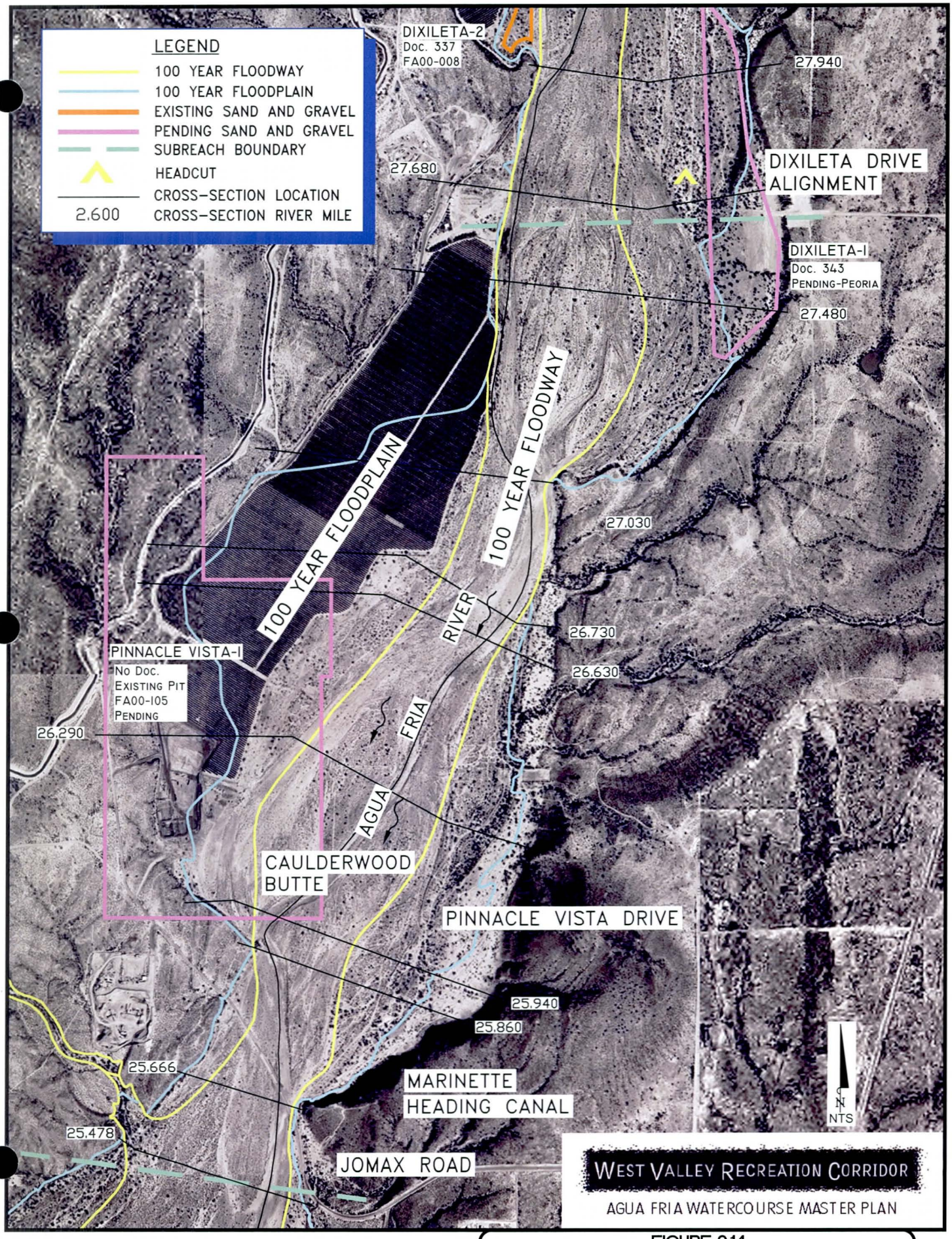


FIGURE 9.13
LOCATION OF SAND AND GRAVEL OPERATIONS
PINNACLE PEAK ROAD TO JOMAX ROAD



WEST VALLEY RECREATION CORRIDOR

AGUA FRIA WATERCOURSE MASTER PLAN

FIGURE 9.14
LOCATION OF SAND AND GRAVEL OPERATIONS
JOMAX ROAD TO DIXILETA DRIVE ALIGNMENT

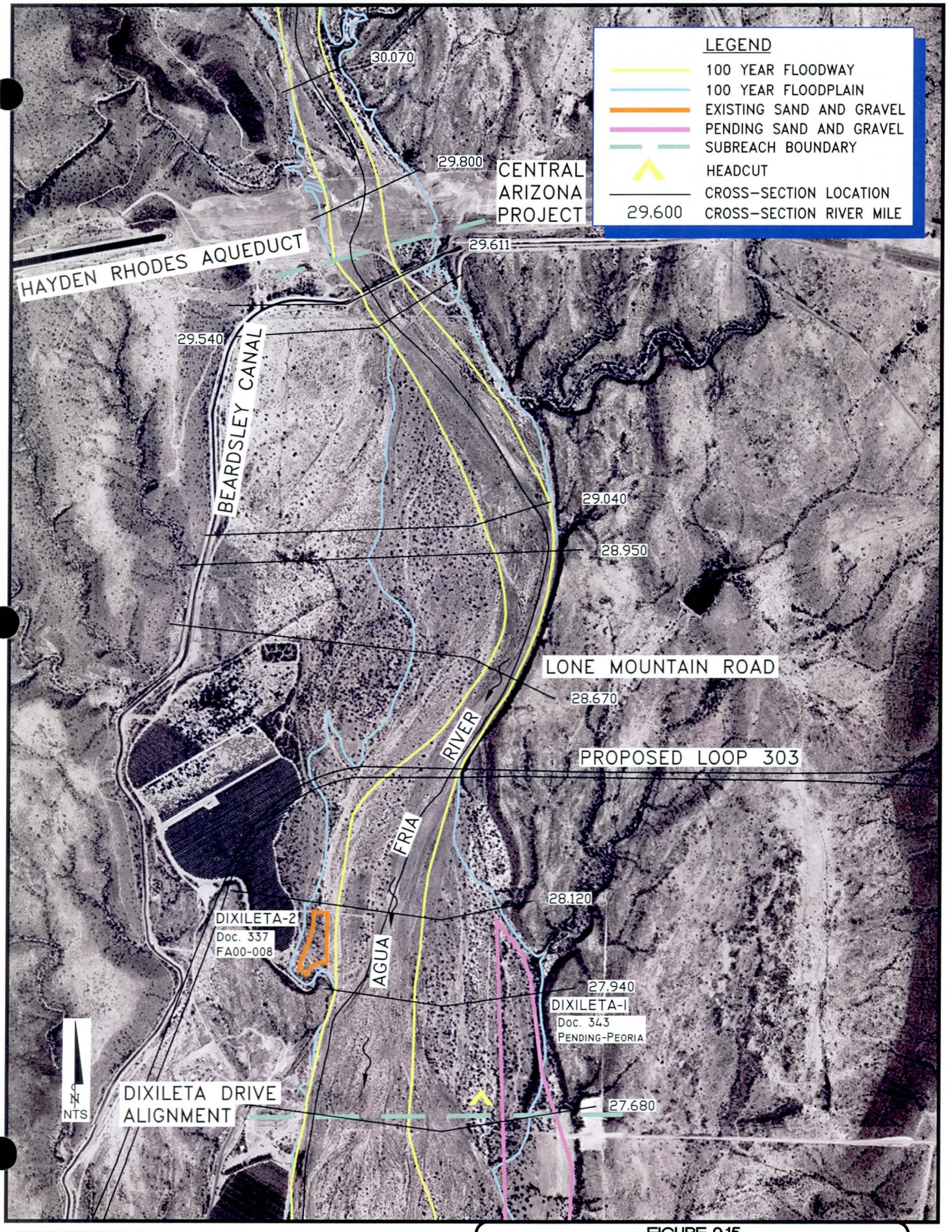


FIGURE 9.15
LOCATION OF SAND AND GRAVEL OPERATIONS
DIXILETA DRIVE ALIGNMENT TO CAP CANAL

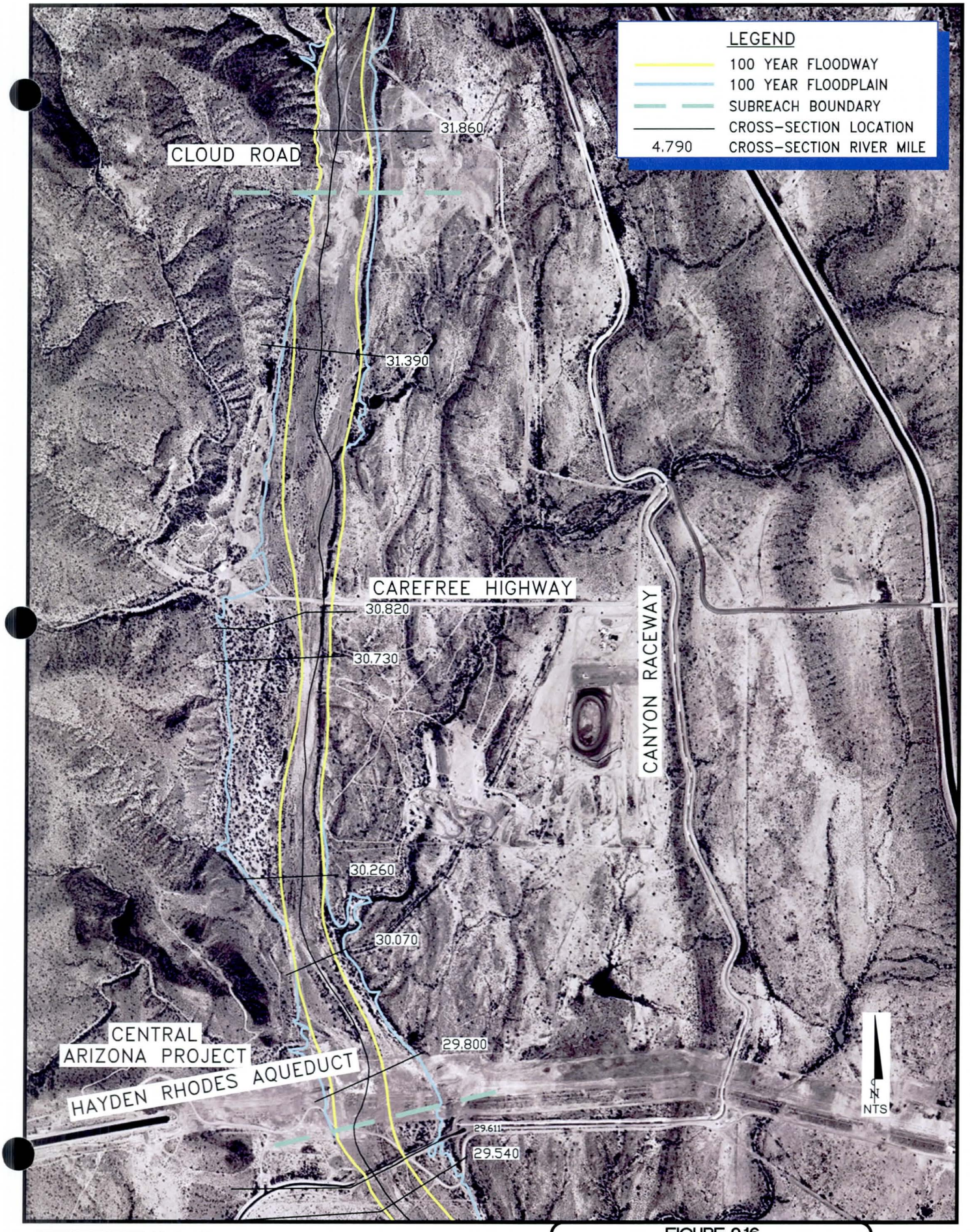


FIGURE 9.16
LOCATION OF CROSS-SECTIONS
CAP CANAL TO CLOUD ROAD

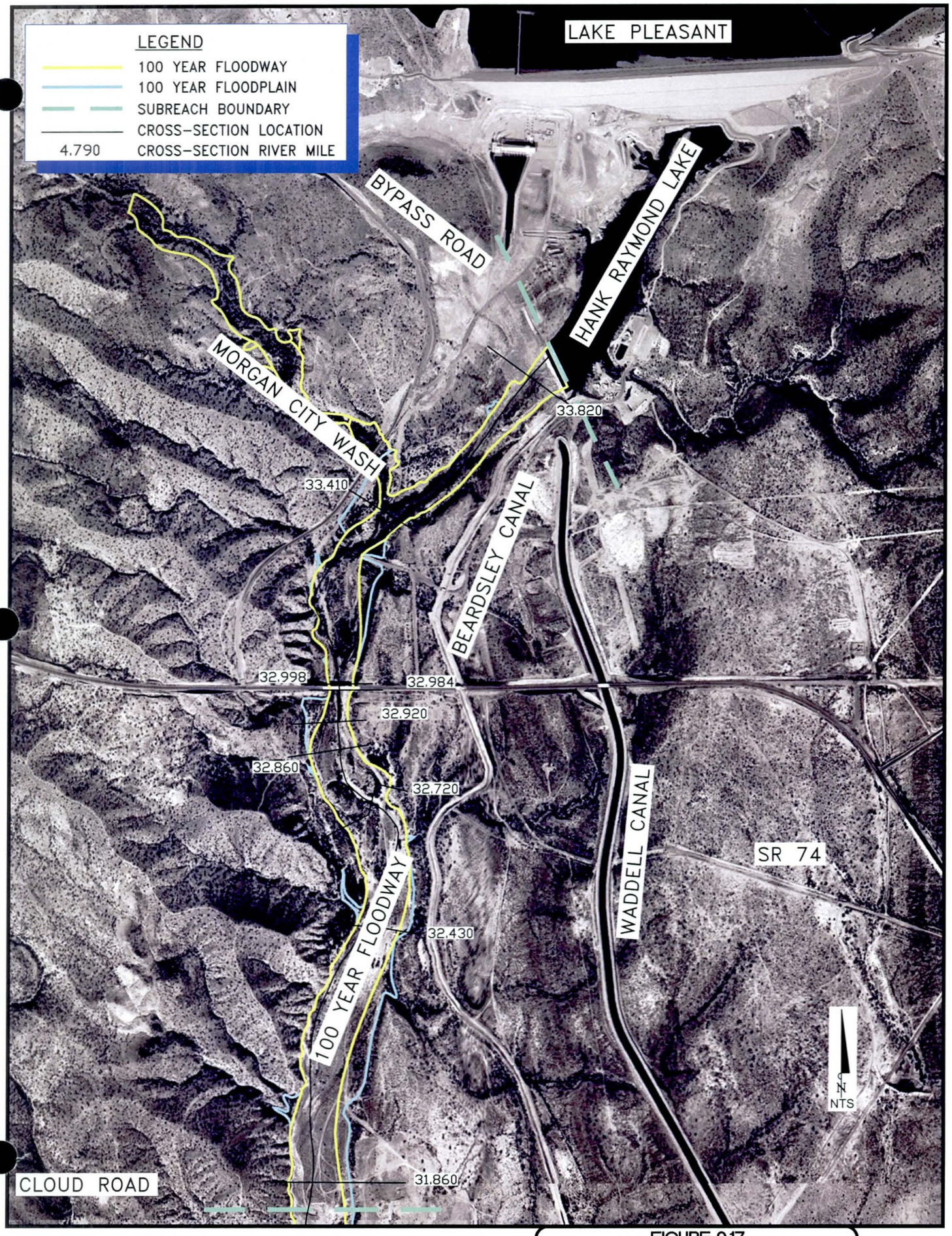


FIGURE 9.17
LOCATION OF CROSS-SECTIONS
CLOUD ROAD TO NEW WADDELL DAM

Table 9.3. Mining Limits for Sand and Gravel Mines.

Sand and Gravel Mine Location	Cross Sections (HEC-6)	Mining Limits			Moveable Bed Limits		Conveyance Limits		Notes
		Left	Right	Elevation	Left	Right	Left	Right	
Broadway	1.010	10400	10750	912	9300	10800	NA	NA	
	1.100	10050	11300	912	9200	11033	NA	NA	
	1.170	10050	10650	912	8790	11200	NA	NA	
	1.250	9920	10520	912	8400	11100	NA	NA	
Indian School	8.105	9650	10280	1000	9400	10978.6	9400	10978.6	
	8.198	9600	10500	1000	9458.7	10971	9400	11100	
	8.433	9100	10940	1000	9000	10940	9000	10597.5	
	8.768	9160	10930	1005	7000	11000	9000	11000	
	8.992	9800	11460	1005	9700	11460	9700	11460	
Camelback-Bethany	9.266	9440	15200	1014	9440	15250	9725	11700	U/S Indian School Rd Bridge
	9.435	9350	13500	1015	9548.8	11146.3	9540	11150	
	9.696	10550	15500	1018	9600	15500	9600	13500	
	9.885	10100	15050	1021	9327.8	15050	9327.8	12800	
	10.167	9660	14340	1023	9200	14340	9200	11989.1	
	10.343	8520	13750	1026	8520	13750	9750	11416	
	10.538	7870	13320	1030	7870	13320	8600	10478.1	
	10.752	10550	12660	1025	9200	12690	9200	10700	
	10.846	10680	12300	1025	7572	12370	8200	11000	
Glendale	11.557	6100	10000	1022	8000	10100.9	9000	10100.9	U/S Glendale Rd Bridge
	11.847	6000	10000	1022	6000	10113.4	9914.3	10113.4	
	12.042	7200	10000	1025	7200	10165	5900	10165	
	12.359	7200	10000	1030	6700	10200	7200	10200	
Grand and Greeway	16.612	10090	10700	1090	10090	10800	9808.2	10300	U/S Grand Ave/Santa Fe Bridge
	16.990	10100	12650	1090	9800	12650	9800	12400	
	17.458	8740	12500	1090	8740	12500	9000	11800	
	17.638	8800	12580	1105	8800	12580	9000	11100	
	17.821	8170	11800	1107	8170	11800	8600	10800	
	18.275	8010	12900	1120	8010	12900	8800	10650	
	18.839	8150	10250	1120	8150	10350	9300	10350	D/S Bell Road Bridge
Beardsley and Rose	20.958	8600	9150	1145	8600	10750	9250	10750	
Garden Lane	21.061	8800	10100	1150	8800	10100	9200	11000	
	21.157	9050	10500	1149	9377.3	10398	9300	10800	
	21.431	7600	10570	1150	9190.7	10769.5	9100	11200	
	21.893	9547	10700	1160	9558.8	10758.1	9604	12000	U/S Rose Garden Lane crossing
Deer Valley	22.177	9800	11500	1190	8850	11500	8850	11100	
	22.462	10800	12200	1170	9050.4	12200	9050	10800	
	22.745	11050	12200	1195	8910	12200	8910	11000	
Pinnacle Mines	22.935	10920	12000	1208	8492.7	12000	8400	10750	
	23.409	11160	12200	1210	8173.3	12200	8700	11160	
	23.692	7000	9700	1190	7000	11450	9670	11450	
	23.974	7400	10280	1190	7400	10388.9	9716	11200	
Pinnalce Vista -1	25.940	9950	11970	1245	8000	11970	8000	10000	
	26.290	10890	13250	1255	8200	13250	8200	10890	
	26.630	11850	14370	1260	9200	14370	9200	11850	
Dixileta-1	27.480	7030	7710	1260	7030	10080	7710	10080	
	27.680	7270	7850	1265	7270	10800	7850	10200	
	27.940	8020	8380	1265	7850	10200	8380	10300	

Table 9.4. Channel Bed Thalweg at Peak of 100-year Hydrograph. (Existing vs Sand and Gravel Models)

River Station	Base S&G Model THALWEG (ft)	Sand and Gravel Model THALWEG (ft)	Difference (ft)	Comments
33.820	1386.96	1386.96	0.00	
33.410	1387.03	1387.03	0.00	
32.998	1378.96	1378.96	0.00	Morgan City Wash
32.984	1378.42	1378.42	0.00	State Rte 74
32.920	1377.14	1377.22	0.08	
32.860	1372.80	1372.74	-0.06	
32.720	1365.12	1365.11	-0.01	
32.430	1363.83	1363.81	-0.02	
31.860	1358.46	1358.42	-0.04	
31.390	1350.51	1350.33	-0.18	
30.820	1339.05	1338.72	-0.33	
30.730	1340.63	1340.30	-0.33	
30.260	1339.52	1339.55	0.03	
30.070	1329.67	1329.76	0.09	
29.800	1330.77	1330.73	-0.04	
29.611	1326.07	1325.99	-0.08	
29.540	1325.67	1325.71	0.04	
29.040	1316.68	1316.64	-0.04	
28.950	1311.57	1311.56	-0.01	
28.670	1310.41	1310.55	0.14	
28.120	1303.84	1303.58	-0.26	
27.940	1298.80	1265.32	-33.48	
27.680	1289.88	1288.05	-1.83	
27.480	1287.85	1260.15	-27.70	
27.030	1281.88	1281.85	-0.03	
26.730	1279.91	1279.17	-0.74	
26.630	1279.15	1260.29	-18.86	
26.290	1268.66	1268.67	0.01	
25.940	1261.37	1244.99	-16.38	
25.860	1260.75	1260.73	-0.02	
25.666	1256.21	1256.17	-0.04	
25.478	1252.91	1253.21	0.30	Jomax Road
24.996	1247.67	1248.41	0.74	
24.543	1235.93	1235.83	-0.10	
24.449	1235.54	1235.04	-0.50	Happy Valley Road
23.974	1228.11	1190.26	-37.85	
23.692	1222.99	1189.98	-33.01	
23.409	1215.74	1209.82	-5.92	Pinnacle Peak Road
22.935	1211.35	1211.33	-0.02	
22.745	1203.95	1203.19	-0.76	
22.462	1198.64	1198.50	-0.14	
22.177	1194.76	1189.68	-5.08	
21.893	1186.61	1160.56	-26.05	
21.431	1182.70	1150.09	-32.61	
21.157	1177.08	1149.00	-28.08	
21.061	1176.48	1150.00	-26.48	Beardsley Road
20.958	1176.59	1176.42	-0.17	
20.579	1171.79	1171.72	-0.07	
19.920	1162.91	1162.92	0.01	Union Hills Road
19.446	1155.09	1155.26	0.17	
19.066	1148.53	1148.03	-0.50	
18.962	1146.77	1142.28	-4.49	Bell Road
18.839	1144.20	1120.22	-23.98	
18.275	1130.43	1119.90	-10.53	
17.821	1128.96	1107.24	-21.72	
17.638	1127.08	1105.01	-22.07	
17.458	1118.26	1090.00	-28.26	
16.990	1111.09	1090.00	-21.09	
16.612	1105.53	1089.99	-15.54	
16.506	1105.01	1104.89	-0.12	Grand Avenue
16.482	1104.95	1105.24	0.29	
16.099	1100.90	1100.80	-0.10	
15.719	1093.83	1093.75	-0.08	Cactus Road - El Mirage Landfill
15.374	1092.26	1092.32	0.06	
15.094	1089.99	1089.99	0.00	
15.000	1087.44	1087.53	0.09	
14.430	1079.84	1080.25	0.41	
13.952	1071.40	1071.22	-0.18	
13.467	1064.98	1064.73	-0.25	Olive Ave
13.007	1061.91	1061.85	-0.06	

River Station	Base S&G Model THALWEG (ft)	Sand and Gravel Model THALWEG (ft)	Difference (ft)	Comments
12.816	1058.70	1058.14	-0.56	
12.470	1055.72	1053.09	-2.63	
12.420	1056.49	1048.71	-7.78	
12.359	1052.35	1031.50	-20.85	
12.042	1045.73	1025.19	-20.54	
11.847	1043.83	1021.95	-21.88	
11.557	1041.22	1022.01	-19.21	
11.428	1042.75	1042.11	-0.64	Glendale Ave
11.029	1036.75	1036.36	-0.39	
10.846	1032.12	1031.62	-0.50	
10.752	1032.07	1024.04	-8.03	
10.538	1031.53	1030.15	-1.38	
10.343	1025.80	1025.91	0.11	
10.167	1023.84	1023.11	-0.73	
9.885	1020.82	1020.87	0.05	
9.696	1018.79	1017.88	-0.91	D/S Glendale Airport
9.435	1015.29	1014.71	-0.58	U/S Camelback Road
9.266	1013.76	1012.95	-0.81	
8.992	1006.91	1005.67	-1.24	
8.768	1006.27	1005.08	-1.19	
8.433	1004.93	1000.24	-4.69	
8.198	1001.97	999.96	-2.01	
8.105	1001.38	999.80	-1.58	
8.000	1001.42	1000.43	-0.99	
7.990	1000.85	999.49	-1.36	Indian School Road
7.988	1000.92	1000.45	-0.47	Grade control structure
7.490	994.81	994.89	0.08	
6.990	989.36	989.36	0.00	
6.930	989.95	989.91	-0.04	
6.910	988.40	988.59	0.19	
6.890	989.40	989.40	0.00	Grade control structure
6.888	990.24	990.24	0.00	
6.820	984.13	984.13	0.00	
6.430	981.03	981.03	0.00	
6.070	977.71	977.70	-0.01	Grade control structure
6.068	977.73	977.73	0.00	
5.900	976.00	976.00	0.00	
5.750	974.31	974.30	-0.01	
5.689	975.08	975.07	-0.01	McDowell Road
5.380	970.81	970.81	0.00	
5.290	971.12	971.17	0.05	
5.203	970.32	970.31	-0.01	Grade control structure
5.201	969.10	969.10	0.00	
5.150	963.81	963.85	0.04	
4.790	963.71	963.68	-0.03	
4.754	964.06	964.03	-0.03	
4.700	962.46	962.43	-0.03	
4.300	959.38	959.37	-0.01	
4.094	958.74	958.73	-0.01	Grade control structure
4.092	955.20	955.20	0.00	
3.767	951.66	951.68	0.02	
3.757	951.45	951.47	0.02	
3.734	951.74	951.78	0.04	
3.729	951.46	951.48	0.02	
3.430	946.34	946.34	0.00	
3.370	944.98	944.98	0.00	
3.270	945.68	945.67	-0.01	
2.800	941.60	941.60	0.00	
2.600	938.23	938.21	-0.02	
2.020	931.31	931.34	0.03	
1.710	927.92	927.92	0.00	
1.330	922.01	920.35	-1.66	
1.250	922.50	912.19	-10.31	
1.170	921.66	916.04	-5.62	
1.100	919.43	912.87	-6.56	
1.010	919.15	911.89	-7.26	
0.730	915.91	915.72	-0.19	
0.630	914.31	914.17	-0.14	
0.440	912.49	912.39	-0.10	
0.160	908.30	908.26	-0.04	Gila River confluence

Table 9.5. Channel Bed Thalweg at End of 100-Year Hydrograph (Existing vs Sand and Grave Model).

River Station	Base S&G Model THALWEG (ft)	Sand and Gravel Model THALWEG (ft)	Difference (ft)	Comments
33.820	1386.96	1386.96	0.00	
33.410	1387.06	1387.06	0.00	
32.998	1378.98	1378.98	0.00	Morgan City Wash
32.984	1378.40	1378.41	0.01	State Rte 74
32.920	1377.03	1377.11	0.08	
32.860	1372.79	1372.68	-0.11	
32.720	1365.17	1365.17	0.00	
32.430	1363.81	1363.79	-0.02	
31.860	1361.09	1361.15	0.06	
31.390	1350.41	1350.21	-0.20	
30.820	1339.12	1338.82	-0.30	
30.730	1340.47	1340.37	-0.10	
30.260	1339.35	1339.37	0.02	
30.070	1329.77	1329.81	0.04	
29.800	1330.75	1330.68	-0.07	
29.611	1325.86	1325.82	-0.04	
29.540	1325.61	1325.60	-0.01	
29.040	1316.60	1316.58	-0.02	
28.950	1311.59	1311.54	-0.05	
28.670	1310.41	1310.61	0.20	
28.120	1303.86	1303.31	-0.55	
27.940	1298.75	1265.15	-33.60	
27.680	1289.87	1287.30	-2.57	
27.480	1287.93	1287.89	-0.04	
27.030	1281.89	1282.03	0.14	
26.730	1279.95	1279.03	-0.92	
26.630	1279.06	1260.32	-18.74	
26.290	1268.65	1268.50	-0.15	
25.940	1261.34	1245.19	-16.15	
25.860	1260.78	1261.25	0.47	
25.666	1256.18	1256.11	-0.07	
25.478	1252.96	1253.20	0.24	Jomax Road
24.996	1247.51	1248.01	0.50	
24.543	1235.78	1235.49	-0.29	
24.449	1235.56	1233.91	-1.65	Happy Valley Road
23.974	1228.14	1190.73	-37.41	
23.692	1222.96	1189.98	-32.98	
23.409	1215.74	1209.64	-6.10	Pinnacle Peak Road
22.935	1211.36	1211.29	-0.07	
22.745	1203.91	1203.13	-0.78	
22.462	1198.62	1198.13	-0.49	
22.177	1194.84	1188.91	-5.93	
21.893	1186.52	1161.57	-24.95	
21.431	1182.78	1150.20	-32.58	
21.157	1177.07	1149.00	-28.07	
21.061	1176.55	1150.00	-26.55	Beardsley Road
20.958	1176.58	1176.32	-0.26	
20.579	1171.81	1171.70	-0.11	
19.920	1164.07	1164.12	0.05	Union Hills Road
19.446	1155.16	1155.23	0.07	
19.066	1148.61	1147.79	-0.82	
18.962	1146.90	1140.52	-6.38	Bell Road
18.839	1144.11	1120.37	-23.74	
18.275	1130.44	1119.72	-10.72	
17.821	1129.04	1107.50	-21.54	
17.638	1127.08	1105.02	-22.06	
17.458	1118.22	1090.00	-28.22	
16.990	1111.21	1090.00	-21.21	
16.612	1105.71	1089.98	-15.73	
16.506	1105.07	1104.83	-0.24	Grand Avenue
16.482	1104.96	1105.23	0.27	
16.099	1100.82	1100.80	-0.02	
15.719	1093.78	1093.74	-0.04	Cactus Road - El Mirage Landfill
15.374	1092.33	1092.31	-0.02	
15.094	1089.99	1090.00	0.01	
15.000	1087.42	1087.53	0.11	
14.430	1079.80	1080.00	0.20	
13.952	1071.02	1070.61	-0.41	
13.467	1065.02	1064.86	-0.16	Olive Ave
13.007	1062.01	1061.87	-0.14	

River Station	Base S&G Model THALWEG (ft)	Sand and Gravel Model THALWEG (ft)	Difference (ft)	Comments
12.816	1058.64	1057.89	-0.75	
12.470	1055.59	1052.38	-3.21	
12.420	1055.68	1046.48	-9.20	
12.359	1052.54	1032.14	-20.40	
12.042	1046.08	1025.38	-20.70	
11.847	1043.74	1021.91	-21.83	
11.557	1041.73	1022.02	-19.71	
11.428	1042.67	1041.74	-0.93	Glendale Ave
11.029	1036.66	1035.80	-0.86	
10.846	1032.28	1031.31	-0.97	
10.752	1032.10	1023.30	-8.80	
10.538	1031.42	1030.22	-1.20	
10.343	1025.90	1025.84	-0.06	
10.167	1023.87	1023.22	-0.65	
9.885	1020.78	1020.90	0.12	
9.696	1018.74	1017.72	-1.02	D/S Glendale Airport
9.435	1015.28	1014.63	-0.65	U/S Camelback Road
9.266	1013.68	1012.11	-1.57	
8.992	1006.83	1006.28	-0.55	
8.768	1006.36	1004.99	-1.37	
8.433	1004.68	1000.59	-4.09	
8.198	1002.10	999.89	-2.21	
8.105	1001.30	999.52	-1.78	
8.000	1001.24	1000.16	-1.08	
7.990	1000.99	999.79	-1.20	Indian School Road
7.988	1000.93	1000.06	-0.87	Grade control structure
7.490	994.79	994.86	0.07	
6.990	989.33	989.37	0.04	
6.930	989.73	989.74	0.01	
6.910	988.82	988.78	-0.04	
6.890	989.44	989.44	0.00	Grade control structure
6.888	989.41	989.40	-0.01	
6.820	984.13	984.13	0.00	
6.430	981.10	981.01	-0.09	
6.070	977.69	977.60	-0.09	Grade control structure
6.068	977.69	977.60	-0.09	
5.900	975.96	975.90	-0.06	
5.750	974.30	974.25	-0.05	
5.689	975.02	974.98	-0.04	McDowell Road
5.380	970.80	970.79	-0.01	
5.290	971.14	971.14	0.00	
5.203	970.01	970.01	0.00	Grade control structure
5.201	969.10	969.11	0.01	
5.150	963.79	963.85	0.06	
4.790	963.75	963.69	-0.06	
4.754	964.27	964.22	-0.05	
4.700	962.60	962.55	-0.05	
4.300	959.41	959.38	-0.03	
4.094	958.51	958.51	0.00	Grade control structure
4.092	955.20	955.20	0.00	
3.767	951.75	951.75	0.00	
3.757	951.56	951.56	0.00	
3.734	951.40	951.40	0.00	
3.729	951.52	951.53	0.01	
3.430	946.60	946.60	0.00	
3.370	945.07	945.07	0.00	
3.270	945.66	945.66	0.00	
2.800	941.61	941.60	-0.01	
2.600	938.14	938.11	-0.03	
2.020	931.35	931.37	0.02	
1.710	927.90	927.81	-0.09	
1.330	921.94	919.32	-2.62	
1.250	922.71	914.43	-8.28	
1.170	921.49	917.62	-3.87	
1.100	919.14	914.14	-5.00	
1.010	919.21	911.70	-7.51	
0.730	915.90	915.44	-0.46	
0.630	914.30	914.00	-0.30	
0.440	912.45	912.17	-0.28	
0.160	908.63	908.68	0.05	Gila River confluence

Figure 9.18. Channel Bed Thalweg Profiles at Peak of 100-Year Hydrograph.

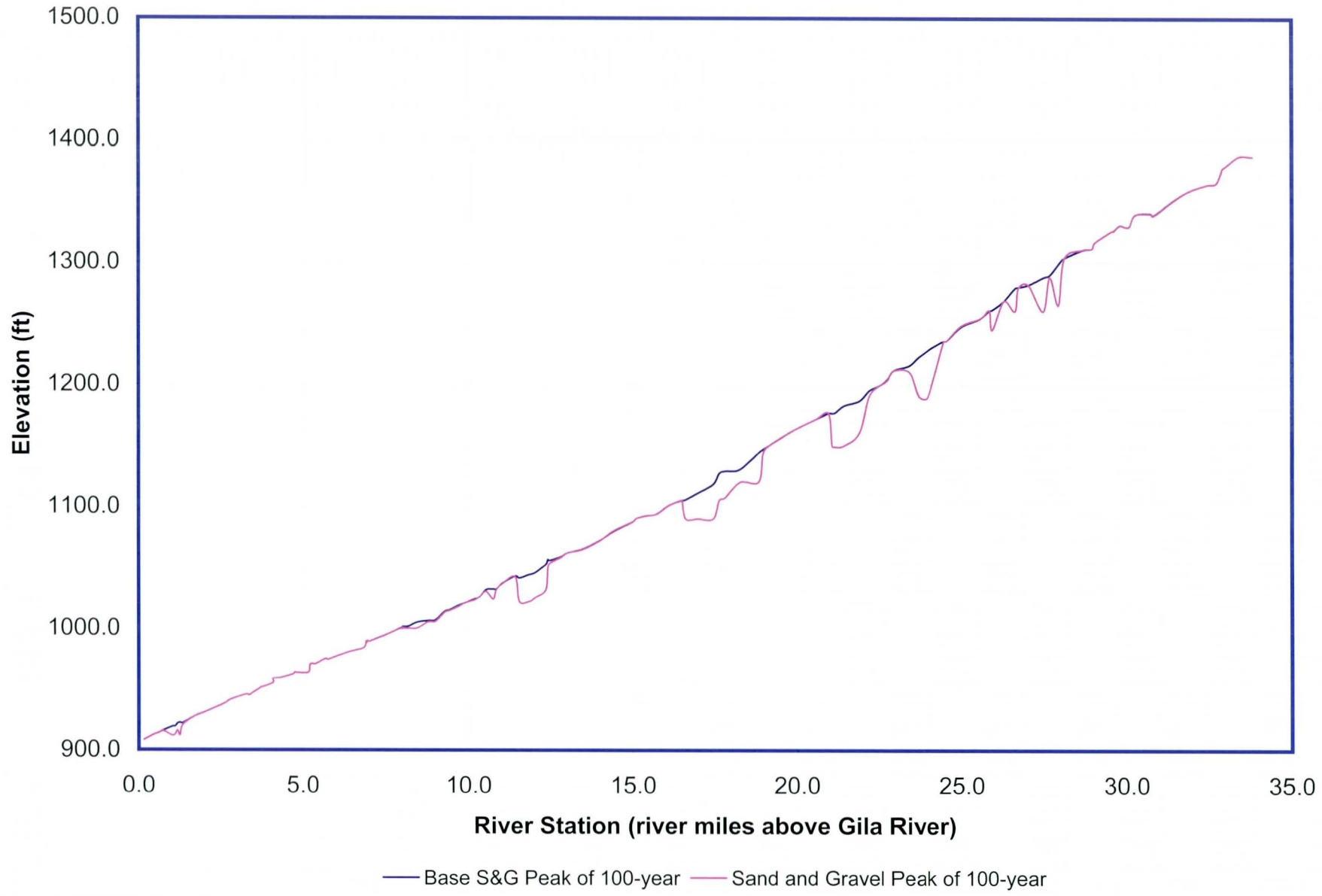
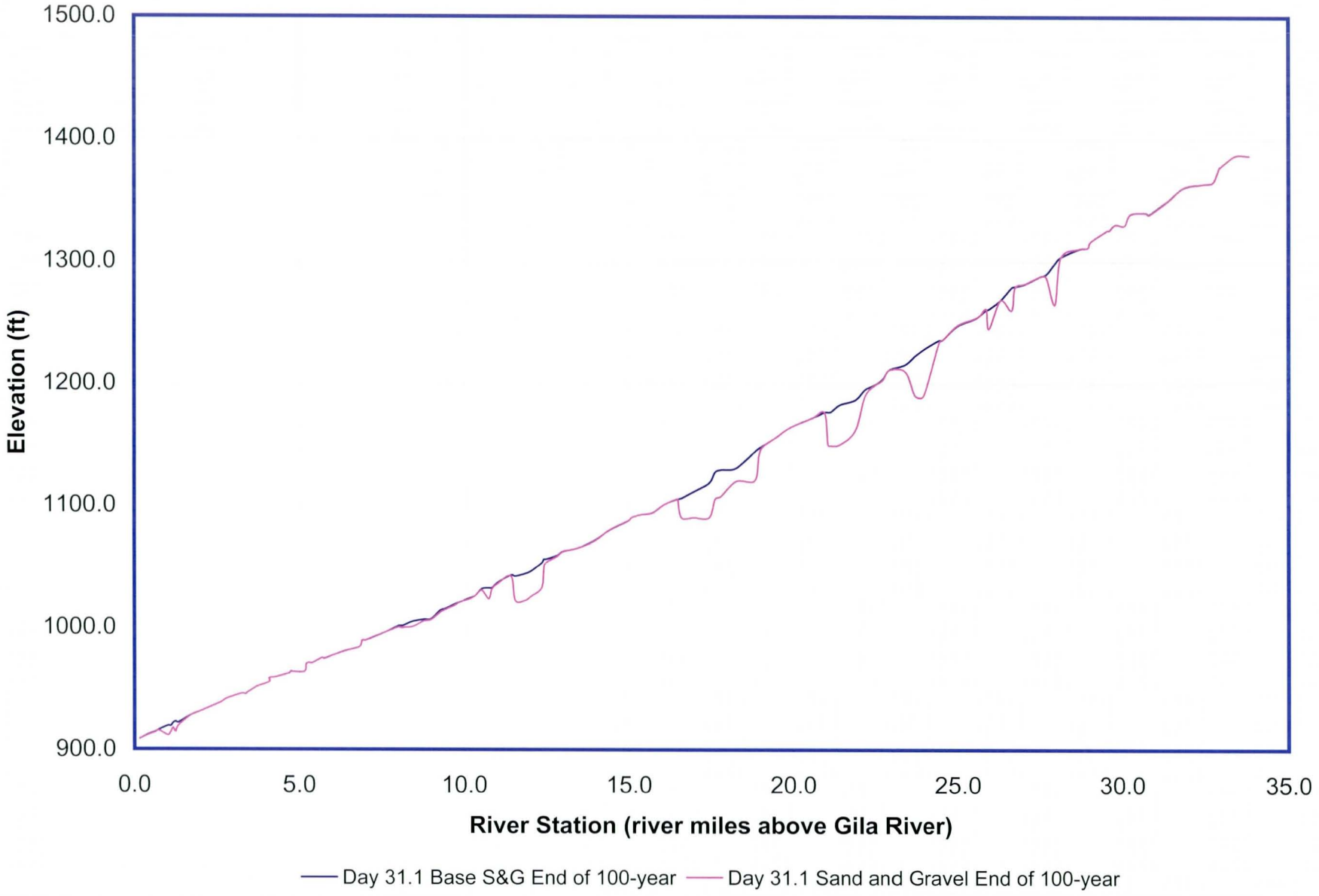


Figure 9.19. Channel Bed Thalweg Profiles at End of 100-Year Hydrograph.



SECTION 10 DEVELOPMENT OF HEC-6 FULL ENCROACHMENT SEDIMENT TREND MODEL

SEDIMENT TREND ANALYSIS REPORT
AGUA FRIA WATERCOURSE MASTER PLAN
KHA Project No. 091131004

10. DEVELOPMENT OF HEC-6 FULL ENCROACHMENT SEDIMENT TREND MODEL

This section of the report documents the development of a full encroachment sediment transport HEC-6 model and examines the effects on the bed elevation profile of the Agua Fria River of encroaching upon the river to the floodway limits defined by the effective flood insurance study (FIS).

Purpose: The purpose of developing a HEC-6 model of the Agua Fria River that encroached to the regulatory floodway limits was to examine the effects on the bed profile of a potential alternative future policy for encroachment on the river. The encroachment may take several forms including the filling of the floodplain fringe for development or the construction of low level levees located along the floodway limits that are placed to provide a measure of flood protection to sand and gravel operations within the floodplain fringe areas. The policy would potentially allow use of the floodplain and floodplain fringe and exclude extraction of sand and gravel within the regulatory floodway.

Approach: The effects of encroachment were examined with the use of the Corps of Engineers computer model HEC-6 "Scour and Deposition of Rivers and Reservoirs" (HEC-6 Fixed95). The downstream limit of the study is located at the confluence of the Agua Fria River with the Gila River. The upstream limit of the study is located just below New Waddell Dam. The length of the study is approximately 34 river miles.

The FIS for the Agua Fria River determined the regulatory floodplain and floodway limits for the 100-year event. The FIS HEC-2 computer model of the Agua Fria River formed the HEC-6 base model for the Agua Fria River for the sediment trend analysis.

KHA prepared under Technical Memorandum No. 6 (revised – August 2001) a revised existing conditions HEC-6 model and a separate sand and gravel model HEC-6 model of the Agua Fria River (see Section 9 of this report). The existing conditions HEC-6 model was based on 50% sediment inflow as a factor to account for the presence of New Waddell Dam. The study hydrograph consisted of starting with an initial flow of 30-days of 9,000 cfs flow in the river followed by the 100-year hydrograph. The existing conditions HEC-6 model is titled "SGBase50.dat".

The "SGBase50.dat" input file/model was used to prepare the encroached "floodway" model of the Agua Fria River. The encroached floodway model input file is titled "Ench.dat".

The encroachment routine of HEC-6 computer program was used to examine the effects on the river bed elevations of encroaching to the regulatory floodway. HEC-6 allows several methods of encroachment at a river cross section. The encroachment method is specified in an HEC-6 model by using the X3 record. The method used to specify the encroachment was to directly input the left and right FIS encroachment stations on the X3 record for each cross section in the "Ench.dat" file. Once this was completed, the moveable bed limits (specified on the HD record) for each cross section were examined to check that the moveable limits either matched the FIS floodway limits or were within the floodway. Once this step was completed, the computer model was executed and the results evaluated in the form of prepared tables and charts.

Interpretation: Several tables and figures have been prepared and are used to visually and graphically summarize the results of the sediment trend analysis evaluation of the effect of encroachment.

Table 10.1 is a summary of the floodway encroachment stations (from the FIS HEC-2 model) and the moveable bed limits by cross section in the encroachment model.

Table 10.2 and Figure 10.1 provide a summary table and figure, respectively, of the channel bed thalweg during the flood hydrology. Table 10.3 and Figure 10.2 provide a summary table and figure, respectively, of the channel bed elevation change during the flood hydrology. Examination of the tables and figure indicate that the average bed change during the flood event ranges between zero to plus or minus 3 feet from the Gila River confluence upstream to river station 31+00. Upstream of river station 31+00 the bed change elevation decreases by as much as 6 feet (at station 31.90) at the end of the hydrology simulation.

Table 10.4 and Figure 10.3 provide a summary table and figure, respectively, of a comparison of the riverbed elevation for existing conditions (SGBase50.dat) versus encroachment conditions at the peak of the 100-year hydrograph. Table 10.5 and Figure 10.4 provide a summary table and figure, respectively, of a comparison of the river bed elevation for existing conditions versus encroachment conditions at the end of the 100-year hydrograph.

The results of the encroachment model (summarized in Tables 10.2 and 10.3 and Figures 10.1 and 10.2) indicates that the 30-days of 9,000 flow in the Agua Fria River has more of a channel forming function on the river bed profile than the subsequent 100-year hydrology event. The maximum range of deposition and scour are nearly attained with the 30-days of 9,000 cfs flow in the river with little to minor additional contribution of deposition or scour attributable to the 100-year event. The maximum degradation occurs within the river reach from station 31+00 to station 32.40 (see Figure 10.2). This may or may not occur to the extent at all locations within this reach of the Agua Fria River due to the shallow presence of bedrock. The degradation seen within this reach may also reflect the "narrower" floodway limits compared to the floodway limits of other downstream reaches of the river. The relative flow velocity within this reach is greater than the downstream reaches therefore allowing higher sediment transport capacity.

An examination of Figure 10.3 and Figure 10.4 indicates that the river bed profile of the encroached floodway model relatively mirrors the behavior of, with minor exceptions, the existing conditions river bed profile at the peak and at the end of the 100-year flood. This could be attributable to the river floodplain hydraulics and the floodway hydraulics being nearly the same at many cross sections in the river. That is the Agua Fria River has a wide floodplain in the upper reaches of the river. Encroachment using the FIS floodway limits causes slight changes in the river hydraulics. In the lower reach of the river where the Corps of Engineers levees are located, the floodplain and floodway limits are the same and hence the river bed profile for both the existing condition and encroachment conditions are nearly the same. Note that neither model includes additional sand and gravel mining other than what is reflected in the cross section geometry in the FIS HEC-2 model.

As a separate computer model run ("Enchplus.dat"), KHA examined the impacts on the river bed profile of incorporating an additional 15 days of 9,000 cfs flow at the end of the

100-year flood hydrology. KHA wanted to examine if the riverbed profile continued with the same behavior exhibited with the 30-day 9,000 cfs with the 100-year flood. The results appeared to indicate that there was a slight recovery of the river bed profile in reaches of the river where degradation occurred. These reaches showed a slight aggradation between the passage of the 100-year flood and the additional 15 days of 9,000 cfs. At the upstream reach of the river degradation depths appeared to stabilize at the maximum attributable to the 100-year flood. No further analysis or presentation of the results of this model is provided in this report.

Conclusions: The results of the HEC-6 encroachment model indicate that the Agua Fria River may be encroached to the FIS floodway limits without significant impacts on sediment transport above those demonstrated under existing conditions. Encroachment, however, should be examined in more detail on a reach by reach basis of the river. Encroachment may not be warranted to the limits of the FIS floodway in the upper reach (upstream of river station 31+00) of the river due to the predicted depths of degradation and the close proximity of important existing or proposed infrastructure.

The findings of Technical Memorandum No. 7, previous Technical Memorandums, and the Lateral Migration Report for the Agua Fria River by JEFuller Hydrology and Geomorphology indicate that there may still be a need, on a case by case basis, for stabilization of the river bed profile and/or bank stabilization. Riverbed stabilization may take the form of grade control structures. These may be located downstream/upstream of sand and gravel mines and/or at or near bridge crossings. At-grade crossings should be reviewed for scour countermeasures. General guidelines can be provided as to the locations of the grade controls as well as the anticipated toedown depth. The determination of toedown depths is not limited to the degradation depths in this study. The toedown depths include estimations of local scour and other scour components depending on proposed location of the structure. Section 11 summarizes the study of the effects of grade control structures on the river bed profiles for the encroachment conditions.

Table 10.1 Enchroachment Stations and Moveable Bed Limits by Cross Section - Encroachment Model.

HEC-6 Record	Cross Section							
X1	0.16	52	9720	10184	0	0	0	
X3				9300	920	11600	920	
HD	0.16	10	9300	11600				
X1	0.44	44	9798	10420	1510	1465	1485	
X3				8970	923	11640	923	
HD	0.44	10	8970	11640				
X1	0.63	36	9888	10209	1055	985	1010	
X3				8970	926	11440	926	
HD	0.63	10	8970	11440				
X1	0.73	39	9917	10162	510	490	500	
X3				8980	927	11280	927	
HD	0.73	10	8980	11280				
X1	1.01	35	9682	10471	1380	1375	1375	
X3				9300	930	11250	930	
HD	1.01	10	9300	11250		912	10400	10750
X1	1.1	37	9719	10678	500	470	490	
X3				9450	931	11220	931	
HD	1.1	10	9450	11220		912	10050	11300
X1	1.17	25	9917	10654	560	490	540	
X3				9400	932	11020	932	
HD	1.17	10	9400	11020				
X1	1.25	24	9974	10742	480	490	485	
X3				9200	933	10700	933	
HD	1.25	10	9200	10700				
X1	1.33	32	9911	10456	485	500	495	
X3				8853	935	10470	935	
HD	1.33	10	8853	10456				
X1	1.71	44	9091	10284.4	2000	2585	2480	
X3				8350	940	10285	940	
HD	1.71	10	9091	10284.4				
X1	2.02	31	8839.4	10077.3	890	2065	1965	
X3				8410	942	10071.1	942	
HD	2.02	10	8410	10070				
X1	2.6	26	9437	10850	2700	2945	3320	
X3				9300	950	11144.3	950	
HD	2.6	10	9437	10850				
X1	2.8	19	9200	11222	1250	655	1000	
X3				9160	952	11209.3	952	
HD	2.8	10	9160	10850				
X1	3.27	17	9692.6	11130.5	2800	1995	2505	
X3				9692	955	11120.3	955	
HD	3.27	10	9692	11120.3				
X1	3.37	17	9716.5	10970.3	585	460	510	
X3				9750	955	10952.4	955	
HD	3.37	10	9750	10952.4				
X1	3.43	12	9758.5	10873.4	925	795	850	
X3				9700	956	10856.9	956	
HD	3.43	10	9700	10856.9				
X1	3.729	6	9420	10603	1575	1585	1580	
X3				9422.4	962	10596.3	962	
HD	3.729	10	9422.4	10596.3				
X1	3.734	63	9400.9	10599.3	25	25	25	
X3				9407.8	962	10592.8	962	
HD	3.734	10	9407.8	10592.8				
X1	3.757	7	9425	10555	120	120	120	
X3				9436.8	962	10547.4	962	
HD	3.757	10	9436.8	10547.4				
X1	3.767	92	9428.1	10572	50	50	50	
X3				9441.2	962	10559.1	962	
HD	3.767	10	9441.2	10559.1				
X1	4.092	7	9440	10578	1760	1750	1755	
X3				9454.5	965	10566.5	965	
HD	4.092	0	9454.5	10566.5				
X1	4.094	7	9440	10578	10	10	10	
X3				9458.1	965	10563.7	965	
HD	4.094	0	9458.1	10563.7				
X1	4.3	7	9458	10594	1040	1040	1040	
X3				9467.6	970	10580.8	970	
HD	4.3	10	9480	10570				
X1	4.7	9	9451	10579	2205	2065	2135	
X3				9460.5	970	10567.9	970	
HD	4.7	10	9460.5	10567.9				
X1	4.754	53	9402.5	10572.3	150	310	225	
X3				9438.5	970	10562.4	970	
HD	4.754	10	9438.5	10562.4				
X1	4.79	6	9440	10562.4	357	187	277	
X3				9458.38	970	10573.63	970	
HD	4.79	10	9458.381	573.63				
X1	5.15	9	9291	10713	1780	1960	1873	
X3				9306.95	975	10695.61	975	
HD	5.15	10	9306.95	10590				
X1	5.201	9	9291	10713	180	360	270	
X3				9304.89	975	10696.92	975	
HD	5.201	0	9304.891	696.92				
X1	5.203	9	9291	10713	10	10	10	
X3				9306.07	975	10695.56	975	
HD	5.203	0	9306.071	695.56				
X1	5.29	82	9250.8	10672.4	505	675	585	
X3				9267.73	980	10653.67	980	
HD	5.29	10	9267.731	653.67				
X1	5.38	20	9266	10656	305	645	465	
X3				9351.35	980	10643.74	980	
HD	5.38	10	9351.351	643.74				
X1	5.689	42	9371.3	10552.8	1320	1740	1620	
X3				9385.82	985	10538.28	985	
HD	5.689	10	9385.821	538.28				
X1	5.75	22	9426	10579	370	370	370	
X3				9452.74	985	10571.99	985	
HD	5.75	10	9452.741	571.99				
X1	5.9	17	9429	10561	945	950	950	
X3				9439.5	985	10552.01	985	
HD	5.9	10	9439.51	552.01				
X1	6.068	15	9416	10545	907	897	902	
X3				9424.2	990	10536.34	990	
HD	6.068	0	9424.21	536.34				
X1	6.07	15	9416	10545	8	8	8	
X3				9424.2	990	10536.34	990	
HD	6.07	0	9424.21	536.34				
X1	6.43	20	9452	10537	2045	1850	1945	
X3				9461.07	995	10527.6	995	
HD	6.43	10	9461.07	10527.6				
X1	6.82	17	9444	10573	2145	1820	1980	
X3				9457.95	995	10564.05	995	
HD	6.82	10	9457.951	564.05				
X1	6.888	16	9439	10577	357	357	357	
X3				9454.42	1000	10564.82	1000	
HD	6.888	0	9454.421	564.82				
X1	6.89	16	9439	10577	8	8	8	
X3				9454.42	1000	10564.82	1000	
HD	6.89	0	9454.421	564.82				
X1	6.91	17	9430	10579	105	115	110	
X3				9443.21	1000	10568	1000	
HD	6.91	10	9443.21	10568				
X1	6.93	17	9413	10573	105	105	105	
X3				9432.07	1000	10564.01	1000	
HD	6.93	10	9432.071	564.01				
X1	6.99	19	9400	10559	315	355	335	
X3				9419.31	1000	10549.14	1000	
HD	6.99	10	9419.311	549.14				
X1	7.49	13	9509	10525	2645	2610	2595	
X3				9517.21	1005	10497.13	1005	
HD	7.49	10	9517.211	497.13				
X1	7.988	37	9293	10732	2805	2480	2625	
X3				9318	1010	10703.6	1010	
HD	7.988	0	9318	10703.6				
X1	7.99	37	9293	10732	10	10	10.5	
X3				9318	1010	10703.6	1010	
HD	7.99	0	9318	10703.6				
X1	8	85	9235.5	10725	50	50	50	
X3				9249.4	1010	10711.1	1010	
HD	8	10	9249.4	10711.1				

HEC-6 Record	Cross Section							
X1	8.105	91	9493.9	10978.6	405	745	522.59	
X3				9470	1010	10970.7	1010	
HD	8.105	10	9470	10970.7				
X1	8.198	92	9458.7	10971	420	620	490.43	
X3				9470.38	1010	10963.8	1010	
HD	8.198	10	9470.38	10963.8				
X1	8.433	87	9583.1	10597.5	1155	1365	1241.36	
X3				9009.5	1015	10975	1015	
HD	8.433	10	9009.5	10597.5				
X1	8.768	73	9584.7	10102.8	1735	1765	1764.77	
X3				8182.6	1020	11105	1020	
HD	8.768	10	8182.6	11000				
X1	8.992	92	9819.1	11458.9	1230	1000	1185	
X3				9300	1025	11465	1025	
HD	8.992	10	9700	11458.9				
X1	9.266	93	9725.9	11607.3	1539	889	1430.62	
X3				9439.6	1026	11620	1026	
HD	9.266	10	9440	11620				
X1	9.435	83	9548.8	11146.3	875	915	889.44	
X3				8158	1030	11141.8	1030	
HD	9.435	10	9548.8	11141.8				
X1	9.696	91	9602.6	10996.2	1430	1330	1383.24	
X3				9570	1030	11080	1030	
HD	9.696	10	9600	11080				
X1	9.885	91	9327.8	10706.6	1090	825	996.4	
X3				9327.8	1035	10725	1035	
HD	9.885	10	9327.8	10706.6				
X1	10.167	91	9412.5	10272.2	1820	1135	1491.12	
X3				9380	1035	10380	1035	
HD	10.167	10	9380	10380				
X1	10.343	78	9782.1	10288.8	910	695	923.51	
X3				9750	1040	11416	1040	
HD	10.343	10	9750	11416				
X1	10.538	87	9573.5	10478.1	925	985	1033.23	
X3				9514.6	1045	10480	1045	
HD	10.538	10	9573.5	10478.1				
X1	10.752	90	9651.8	10329.8	1070	1140	1124.93	
X3				9335	1045	10327.3	1045	
HD	10.752	10	9335	10327.3				
X1	10.846	91	9756.4	10308.2	510	480	500.68	
X3				8865	1045	10310	1045	
HD	10.846	10	8865	10310				
X1	11.029	95	9513.1	10404.2	1035	865	963.3	
X3				9240	1050	10467	1050	
HD	11.029	10	9240	10467				
X1	11.428	94	9814.2	10227.2	1960	2335	2160	
X3				9625.4	1053	10191.9	1053	
HD	11.428	10	9625.4	10191.9				
X1	11.557	95	9881.6	10100.9	675	675	677.68	
X3				8970	1058	10101	1058	
HD	11.557	10	8970	10100.9				
X1	11.847	95	9914.3	10113.4	1530	1530	1531.67	
X3				7310	1065	10173	1065	
HD	11.847	10	7310	10113.4				
X1	12.042	62	9903.4	10070	990	1050	1028.61	
X3				6350	1070	10165	1070	
HD	12.042	10	7200	10165				
X1	12.359	73	9691.6	10061	1520	1680	1672.99	
X3				7600	1070	10100	1070	
HD	12.359	10	7600	10100				
X1	12.42	90	9014.1	10111.3	380	270	302.47	
X3				7850	1070	10200	1070	
HD	12.42	10	7850	10150				
X1	12.47	89	9382.2	10296.2	230	240	255	
X3				7298.5	1070	11052.3	1070	
HD	12.47	10	7500	10296.2				
X1	12.816	94	9781.2	10376.3	1780	1850	1859.04	
X3				8483.3	1070	10488	1070	
HD	12.816	10	8483.3	10375				
X1	13.007	94	9767.1	10186.1	1000	1030	1006.76	
X3				8750	1075	10239	1075	
HD	13.007	10	8800	10186				
X1	13.467	89	8693.6	10286.7	2400.4	2425.4	2429.7	
X3				8783	1080	10203.4	1080	
HD	13.467	10	8783	10203.4				
X1	13.952	93	9432.8	10076.3	2525	2585	2566.36	
X3				9400	1085	10384	1085	
HD	13.952	10	9400	10384				
X1	14.43	95	9171.4	10301.1	2175	2625	2523.57	
X3				7800	1095	10520	1095	
HD	14.43	10	8800	10301.1				
X1	15	93	9346.3	10081.6	2700	3130	3009.7	
X3				9290	1105	10130	1105	
HD	15	10	9346.3	10130				
X1	15.094	93	9336	10125.1	495	495	496.49	
X3				9234.4	1105	11152	1105	
HD	15.094	10	9336	10400				
X1	15.374	92	9832.4	10085.5	1650	1260	1478.26	
X3				9822	1110	10390	1110	
HD	15.374	10	9832.4	10390				
X1	15.719	91	9885.3	10059.7	1950	1635	1824.01	
X3				9385.2	1115	10150	1115	
HD	15.719	10	9390	10055				
X1	16.099	92	9804	10081.1	2010	2005	2002.13	
X3				9400	1115	10082	1115	
HD	16.099	10	9400	10082				
X1	16.482	90	9781.9	10219.8	1980	2160	2026.23	
X3				9787.92	1125	10241.84	1125	
HD	16.482	10	9787.82	10220				
X1	16.506	72	9768	10245.4	125	125	126.72	
X3				9777.2	1125	10238.7	1125	
HD	16.506	10	9777.2	10238.7				
X1	16.612	84	9808.2	10161.2	627	342	581	
X3				9799	1125	10186.3	1125	
HD	16.612	10	10090	10186.3				
X1	16.99	82	9810	10135.4	1990	1985	1993	
X3				9792.31	1130	10135.9	1130	
HD	16.99	10	9800	10135.9				
X1	17.458	92	9370.6	10225.3	3035	1705	2468.67	
X3				9280	1135	10250	1135	
HD	17.458	10	9280	10250				
X1	17.638	89	9774.7	10288.4	955	895	949.45	
X3				9285	1140	10360	1140	
HD	17.638	10	9285	10360				
X1	17.821	92	9764.8	10227.7	950	970	964.24	
X3				8350	1145	10270	1145	
HD	17.821	10	8350	10270				
X1	18.275	93	9752.1	10210.5	2170	2440	2398.82	
X3				8750	1145	10670	1145	
HD	18.275	10	8750	10670				
X1	18.839	92	9787.8	10337	2635	3185	2882.75	
X3				9250	1160	10350	1160	
HD	18.839	10	9250	10350				
X1	18.962	74	9840	10223.7	540	700	644.97	
X3				9440	1156	10483.8	1156	
HD	18.962	10	9440	10480				
X1	19.066	93	9885.7	10349.1	485	580	551.29	
X3				9350	1160	10778	1160	
HD	19.066	10	9350	10398				
X1	19.446	91	9592.8	10078.6	1840	2400	2473.39	
X3				9170	1170	11361	1170	
HD	19.446	10	9174.8	10915.1				
X1	19.92	92	9744.6	10129.1	2510	2450	2499.03	
X3				9660	1175	11778	1175	
HD	19.92	10	9744.6	11130.2				
X1	20.579	90	9825.6	10324.2	3420	3400	3482.23	
X3				9660	1185	10329.5	1185	
HD	20.579	10	9705.1	10324.2				

HEC-6 Record	Cross Section							
X1	20.958	90	9787.3	10383.8	1815	2044	2006.06	
X3				8780	1190	10383.9	1190	
HD	20.958	10	8780	10383.9				
X1	21.061	91	9850	10325.4	340	655	542.53	
X3				9200	1190	10350	1190	
HD	21.061	10	9200	10100				
X1	21.157	94	9377.3	10376.3	340	630	509.07	
X3				9274.8	1195	10400	1195	
HD	21.157	10	9377.3	10398				
X1	21.431	75	9467.9	10343.5	1205	1490	1443.17	
X3				9350	1195	10322.7	1195	
HD	21.431	10	9350	10322.7				
X1	21.893	93	9558.8	10146.5	2525	2070	2442.15	
X3				9546	1200	10680	1200	
HD	21.893	10	9558.8	10680				
X1	22.177	89	9909.7	10533.6	1425	1520	1500.23	
X3				8765.7	1205	10533.7	1205	
HD	22.177	10	8850	10533.7				
X1	22.462	77	9887.4	10318.9	1530	1400	1478.14	
X3				9046.89	1210	11760	1210	
HD	22.462	10	9050.4	11760				
X1	22.745	92	9797.7	10147.8	1520	1270	1491.33	
X3				8914.99	1215	12094	1215	
HD	22.745	10	8914.99	12094				
X1	22.935	94	9530.2	10351.6	2480	2125	2490.47	
X3				8484.93	1220	11640	1220	
HD	22.935	10	8492.7	11640				
X1	23.409	93	9675.2	10060.2	2450	2360	2505.26	
X3				9550	1230	10970	1230	
HD	23.409	10	9550	10970				
X1	23.692	92	9869.5	10339.2	1460	1455	1492.88	
X3				9650	1235	10675	1235	
HD	23.692	10	9650	10675				
X1	23.974	94	9716.2	10115.2	1420	1470	1489.37	
X3				9716	1240	10825	1240	
HD	23.974	10	9716	10388.9				
X1	24.449	92	9496.2	10169.3	2380	2560	2506.65	
X3				9350.53	1245	11319	1245	
HD	24.449	10	9350.53	11143.3				
X1	24.543	91	9646.7	10243.6	495	495	500.5	
X3				9340	1245	11419	1245	
HD	24.543	10	9340	11413.5				
X1	24.996	90	9774	10632.3	2320	2330	2388.18	
X3				9776.35	1255	12290	1255	
HD	24.996	10	9776.35	11205.1				
X1	25.478	93	9750.7	10127.1	2600	2485	2546.34	
X3				9750	1265	11715	1265	
HD	25.478	10	9750.7	10598.2				
X1	25.666	66	9842.4	10115.1	1035	975	995.18	
X3				9830	1270	10810	1270	
HD	25.666	10	9854.2	10388				
X1	25.86	25	9940	10200	1575	1565	1585	
X3				9150	1275	10201	1275	
HD	25.86	10	9150	10200				
X1	25.94	22	9945	10117	450	420	430	
X3				9080	1275	10280	1275	
HD	25.94	10	9080	10280				
X1	26.29	26	9696	10120	1640	1875	1810	
X3				9380	1285	11060	1285	
HD	26.29	10	9380	11060				
X1	26.63	22	9792	10187	1800	1840	1840	
X3				9780	1290	10770	1290	
HD	26.63	10	9780	10770				
X1	26.73	31	9898	10125	460	470	490	
X3				9870	1290	10850	1290	
HD	26.73	10	9870	10850				
X1	27.03	23	9922	10079	1660	1020	1590	
X3				9704	1295	10500	1295	
HD	27.03	10	9704	10500				
X1	27.48	36	9894	10087	2860	2160	2390	
X3				8500	1305	10130	1305	
HD	27.48	10	8500	10080				
X1	27.68	35	9853	10078	1260	1040	1040	
X3				8930	1305	10101	1305	
HD	27.68	10	8930	10101				
X1	27.94	24	9944	10187	1370	1415	1405	
X3				9320	1310	10203	1310	
HD	27.94	10	9320	10200				
X1	28.12	27	9906	10076	990	960	950	
X3				9600	1315	10570	1315	
HD	28.12	10	9600	10570				
X1	28.67	37	9964	10192	2785	2925	2885	
X3				9950	1325	10300	1325	
HD	28.67	10	9950	10300				
X1	28.95	34	9946	10353	1550	940	1465	
X3				9946	1330	10600	1330	
HD	28.95	10	9946	10600				
X1	29.04	34	9828	10239	550	330	510	
X3				9827	1330	10630	1330	
HD	29.04	10	9827	10630				
X1	29.54	30	9846	10150	2750	2235	2640	
X3				9620	1340	10135.89	1340	
HD	29.54	10	96201	135.89				
X1	29.611	31	9791	10094	315	315	375	
X3				9620	1340	10110	1340	
HD	29.611	10	9620	10110				
X1	29.8	16	9882	10205	980	1025	1025	
X3				9820	1345	10460	1345	
HD	29.8	10	9882	10460				
X1	30.07	17	9925	10098	1425	1440	1420	
X3				9780	1350	10276.81	1350	
HD	30.07	10	97801	276.81				
X1	30.26	12	9749	10135	870	1090	1005	
X3				9748	1350	10260	1350	
HD	30.26	10	9748	10250				
X1	30.73	14	9881	10075	2455	2470	2460	
X3				9864	1360	10180	1360	
HD	30.73	10	9864	10180				
X1	30.82	12	9924	10201	500	370	500	
X3				9901.06	1360	10280	1360	
HD	30.82	10	9901.06	10280				
X1	31.39	17	9792	10080	2900	3165	2970	
X3				9550	1370	10320	1370	
HD	31.39	10	9550	10320				
X1	31.86	10	9894	10261	2550	2485	2505	
X3				9680	1375	10262	1375	
HD	31.86	10	9680	10262				
X1	32.43	14	9852	10112	2885	2970	2980	
X3				9600	1385	10102.34	1385	
HD	32.43	10	96001	102.34				
X1	32.72	28	9879	10150	1725	1145	1535	
X3				9617	1385	10453	1385	
HD	32.72	10	9617	10453				
X1	32.86	12	9928	10155	680	990	760	
X3				9807	1390	10332	1390	
HD	32.86	10	9807	10200				
X1	32.92	9	9891	10143	290	370	310	
X3				9876.07	1390	10180	1390	
HD	32.92	10	9890	10180				
X1	32.984	33	9962	10011	338	358	343	
X3				9824	1395	10082	1395	
HD	32.984	0	0	0				
X1	32.998	9	9962	10108	72	72	72	
X3				9842.69	1395	10108.06	1395	
HD	32.998	10	9851	10108				
X1	33.41	12	9944	10366	1880	2270	2170	
X3				9966.91	1405	10280.32	1405	
HD	33.41	10	9966.911	280.32				
X1	33.82	20	9861	10068	2165	2220	2175	
X3				9708	1405	10061.27	1405	
HD	33.82	10	97081	61.27				

Table 10.2. Thalweg Elevation During Flood Hydrology - Encroachment Conditions.

Hydro Day	1.00	5.00	10.00	15.00	20.00	25.00	30.00	30.06	30.15	30.20	30.27	30.32	30.37	30.42	30.47	30.54	30.61	30.75	31.09	31.10
SECTION NUMBER	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)	THALWEG (ft)
33.820	1387.27	1387.19	1387.12	1387.06	1387.01	1386.97	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.92	1386.92	1386.92	1386.92	1386.93	1386.93	1386.93
33.410	1386.89	1386.94	1386.98	1387.00	1387.01	1387.02	1387.02	1387.02	1387.03	1387.03	1387.02	1387.01	1387.01	1387.01	1387.01	1387.01	1387.03	1387.03	1387.03	1387.03
32.998	1379.79	1379.49	1379.28	1379.11	1378.99	1378.92	1378.85	1378.85	1378.89	1378.86	1378.81	1378.81	1378.80	1378.80	1378.79	1378.79	1378.81	1378.83	1378.86	1378.86
32.984	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.40	1378.41	1378.48	1378.42	1378.51	1378.42	1378.57	1378.41	1378.41	1378.40	1378.40	1378.42
32.920	1380.24	1377.80	1377.43	1377.07	1376.91	1376.69	1376.52	1376.52	1376.49	1376.53	1376.50	1376.54	1376.53	1376.56	1376.49	1376.55	1376.50	1376.48	1376.46	1376.45
32.860	1374.35	1373.65	1373.38	1372.73	1372.55	1372.24	1372.05	1372.03	1372.01	1371.99	1371.99	1371.99	1372.00	1372.01	1372.02	1372.02	1372.02	1372.02	1372.02	1372.02
32.720	1363.95	1364.42	1364.71	1364.92	1364.99	1365.03	1365.06	1365.06	1365.06	1365.06	1365.05	1365.02	1365.02	1365.02	1365.01	1365.01	1365.02	1365.03	1365.04	1365.04
32.430	1363.76	1363.34	1362.53	1362.51	1360.91	1359.93	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.97	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98
31.860	1363.77	1362.83	1360.47	1359.38	1358.44	1357.98	1357.63	1357.63	1357.63	1357.63	1357.63	1357.64	1357.63	1357.63	1357.60	1357.58	1357.57	1357.56	1357.54	1357.54
31.390	1354.65	1352.73	1351.47	1350.24	1349.73	1348.93	1348.41	1348.40	1348.38	1348.37	1348.35	1348.33	1348.33	1348.33	1348.33	1348.32	1348.31	1348.30	1348.28	1348.28
30.820	1344.89	1343.45	1343.00	1341.99	1341.84	1341.48	1340.91	1340.91	1340.91	1340.91	1340.89	1340.87	1340.82	1340.75	1340.69	1340.67	1340.66	1340.65	1340.62	1340.62
30.730	1344.09	1343.99	1342.83	1341.90	1341.82	1341.46	1340.78	1340.78	1340.78	1340.77	1340.69	1340.58	1340.38	1340.18	1340.08	1340.03	1340.03	1340.05	1340.09	1340.09
30.260	1338.99	1339.18	1339.20	1339.17	1339.04	1338.92	1338.79	1338.79	1338.79	1338.79	1338.81	1338.83	1338.87	1338.90	1338.92	1338.90	1338.85	1338.81	1338.76	1338.75
30.070	1333.82	1333.35	1333.19	1333.16	1333.00	1332.88	1332.77	1332.77	1332.77	1332.76	1332.76	1332.76	1332.77	1332.78	1332.78	1332.79	1332.81	1332.83	1332.82	1332.82
29.800	1328.33	1329.01	1329.04	1328.94	1328.86	1328.71	1328.50	1328.50	1328.50	1328.50	1328.49	1328.50	1328.50	1328.51	1328.51	1328.51	1328.53	1328.54	1328.57	1328.57
29.611	1327.88	1327.31	1326.76	1326.49	1326.29	1326.00	1325.42	1325.42	1325.42	1325.42	1325.41	1325.41	1325.41	1325.42	1325.43	1325.44	1325.43	1325.42	1325.40	1325.40
29.540	1326.89	1327.04	1326.93	1326.75	1326.61	1326.17	1325.53	1325.52	1325.49	1325.49	1325.48	1325.47	1325.47	1325.47	1325.47	1325.46	1325.47	1325.47	1325.47	1325.47
29.040	1317.21	1317.20	1317.23	1317.25	1317.20	1317.14	1316.80	1316.80	1316.79	1316.79	1316.82	1316.84	1316.86	1316.87	1316.89	1316.89	1316.87	1316.83	1316.81	1316.81
28.950	1311.60	1311.70	1311.73	1311.75	1311.70	1311.64	1311.50	1311.50	1311.53	1311.49	1311.49	1311.50	1311.51	1311.52	1311.51	1311.50	1311.49	1311.53	1311.55	1311.55
28.670	1311.56	1311.54	1311.48	1311.37	1310.98	1310.94	1310.91	1310.91	1310.90	1310.90	1310.90	1310.89	1310.88	1310.86	1310.85	1310.84	1310.84	1310.83	1310.81	1310.81
28.120	1304.57	1304.18	1304.13	1303.59	1303.44	1303.16	1303.08	1303.08	1303.08	1303.08	1303.06	1303.05	1303.02	1302.99	1302.96	1302.93	1302.93	1302.94	1302.95	1302.95
27.940	1299.11	1299.14	1298.58	1298.11	1297.86	1297.53	1297.37	1297.37	1297.37	1297.37	1297.36	1297.36	1297.35	1297.35	1297.36	1297.36	1297.36	1297.36	1297.36	1297.36
27.680	1294.69	1293.94	1293.36	1292.99	1292.59	1292.36	1292.13	1292.13	1292.12	1292.12	1292.12	1292.11	1292.11	1292.11	1292.12	1292.13	1292.11	1292.10	1292.09	1292.08
27.480	1291.17	1290.14	1289.80	1289.75	1289.47	1289.35	1289.10	1289.09	1289.08	1289.08	1289.08	1289.08	1289.07	1289.08	1289.08	1289.07	1289.06	1289.05	1289.04	1289.03
27.030	1281.52	1282.29	1282.32	1282.17	1282.11	1282.14	1282.08	1282.08	1282.08	1282.07	1282.05	1282.03	1282.00	1281.97	1281.96	1281.95	1281.96	1281.97	1282.00	1282.01
26.730	1280.07	1280.51	1280.45	1280.18	1280.09	1280.02	1279.92	1279.92	1279.92	1279.92	1279.90	1279.88	1279.87	1279.87	1279.87	1279.87	1279.88	1279.89	1279.90	1279.90
26.630	1279.46	1279.74	1279.66	1279.39	1279.24	1278.97	1278.77	1278.77	1278.77	1278.77	1278.77	1278.75	1278.72	1278.68	1278.65	1278.62	1278.62	1278.62	1278.61	1278.61
26.290	1271.51	1271.32	1270.64	1269.63	1269.10	1268.79	1268.54	1268.53	1268.53	1268.52	1268.53	1268.54	1268.54	1268.54	1268.55	1268.54	1268.52	1268.50	1268.48	1268.48
25.940	1262.56	1262.17	1261.87	1261.63	1261.04	1260.63	1260.29	1260.29	1260.28	1260.28	1260.29	1260.31	1260.33	1260.35	1260.37	1260.38	1260.32	1260.28	1260.23	1260.23
25.860	1260.18	1260.63	1261.14	1261.40	1261.10	1260.79	1260.52	1260.52	1260.51	1260.50	1260.50	1260.51	1260.53	1260.55	1260.55	1260.54	1260.56	1260.59	1260.57	1260.57
25.666	1255.89	1256.18	1256.80	1257.23	1257.18	1257.01	1256.78	1256.78	1256.78	1256.77	1256.72	1256.66	1256.56	1256.48	1256.43	1256.46	1256.53	1256.57	1256.62	1256.63
25.478	1253.99	1253.94	1254.20	1254.56	1254.73	1254.64	1254.49	1254.49	1254.48	1254.48	1254.47	1254.46	1254.46	1254.45	1254.44	1254.43	1254.42	1254.43	1254.43	1254.43
24.996	1246.47	1246.89	1247.42	1247.88	1248.37	1248.49	1248.35	1248.34	1248.34	1248.35	1248.37	1248.39	1248.42	1248.44	1248.46	1248.47	1248.47	1248.46	1248.42	1248.42
24.543	1235.69	1235.89	1236.07	1236.18	1236.29	1236.51	1236.64	1236.64	1236.64	1236.63	1236.60	1236.59	1236.58	1236.57	1236.56	1236.55	1236.53	1236.54	1236.57	1236.57
24.449	1235.05	1235.21	1235.36	1235.45	1235.54	1235.69	1235.81	1235.81	1235.82	1235.82	1235.84	1235.87	1235.89	1235.92	1235.94	1235.96	1235.96	1235.94	1235.89	1235.89
23.974	1227.54	1227.85	1228.28	1228.49	1228.65	1228.79	1228.85	1228.85	1228.85	1228.85	1228.84	1228.82	1228.78	1228.75	1228.73	1228.72	1228.73	1228.74	1228.77	1228.77
23.692	1223.79	1223.77	1223.67	1223.52	1223.42	1223.36	1223.30	1223.30	1223.30	1223.30	1223.32	1223.33	1223.34	1223.35	1223.35	1223.36	1223.33	1223.31	1223.29	1223.29
23.409	1216.28	1215.72	1215.70	1215.80	1215.95	1216.17	1216.40	1216.40	1216.41	1216.41	1216.38	1216.35	1216.30	1216.26	1216.23	1216.21	1216.23	1216.26	1216.31	1216.31
22.935	1209.30	1210.12	1210.79	1211.21	1211.51	1211.69	1211.86	1211.86	1211.87	1211.87	1211.89	1211.92	1211.95	1211.98	1212.01	1212.02	1212.02	1212.02	1212.02	1212.02
22.745	1205.94	1205.61	1205.35	1205.28	1205.28	1205.27	1205.27	1205.27	1205.27	1205.27	1205.26	1205.26	1205.25	1205.25	1205.24	1205.24	1205.25	1205.25	1205.26	1205.26
22.462	1200.29	1200.45	1200.57	1200.60	1200.62	1200.65	1200.68	1200.68	1200.68	1200.68	1200.67	1200.67	1200.68	1200.68	1200.67	1200.67	1200.66	1200.64	1200.60	1200.59
22.177	1195.97	1195.96	1195.53	1194.91	1194.65	1194.62	1194.61	1194.61	1194.61	1194.61	1194.62	1194.63	1194.63	1194.63	1194.63	1194.63	1194.63	1194.65	1194.67	1194.67
21.893	1187.22	1186.36	1185.97	1186.15	1186.25	1186.32	1186.43	1186.43	1186.43	1186.43	1186.42	1186.41	1186.40	1186.38	1186.38	1186.37	1186.38	1186.35	1186.30	1186.30
21.431	1181.19	1182.08	1182.55	1182.92	1182.97	1182.93	1182.98	1182.98	1182.98	1182.98	1182.99	1182.99	1183.00	1183.01	1183.02	1183.02	1183.01	1183.06	1183.15	1183.16
21.157	1176.82	1177.13	1177.38	1177.11	1177.12	1177.10	1177.13	1177.13	1177.12	1177.13	1177.16	1177.20	1177.24	1177.28	1177.30	1177.31	1177.30	1177.27	1177.23	1177.23
21.061	1176.55	1176.59	1176.68	1176.77	1176.65	1176.74	1176.75	1176.75	1176.73	1176.73	1176.65	1176.58	1176.54	1176.52	1176.51	1176.52	1176.50	1176.59	1176.73	1176.73
20.958	1176.63	1176.66	1176.75	1176.71	1176.71	1176.67	1176.68	1176.68	1176.69	1176.69	1176.70	1176.71	1176.71	1176.71	1176.73	1176.74	1176.75	1176.74	1176.73	1176.73
20.579	1171.90	1171.95	1172.00	1171.97	1171.97	1171.95	1171.94	1171.94	1171.94	1171.94	1171.93	1171.92	1171.91	1171.90	1171.89	1171.89	1171.90	1171.90	1171.90	1171.90
19.920	1162.50	1162.42	1162.41	1162.37	1162.29	1162.22	1162.14	1162.14	1162.14	1162.14	1162.14	1162.15	1162.15	1162.16	1162.16	1162.16	1162.16	1162.16	1162.16	1162.16
19.446	1155.92	1155.99	1156.08	1156.13	1156.16	1156.18	1156.20	1156.20	1156.20	1156.20	1156.19	1156.18	1156.16	1156.15	1156.14	1156.14	1156.14	1156.14	1156.15	1156.15
19.066	1149.25	1149.03	1149.02	1149.00	1148.97	1148.96	1148.94	1148.94	1148.94	1148.94	1148.94	1148.95	1148.96	1148.97	1148.97	1148.95	1148.94	1148.94	1148.95	1148.95
18.962	1146.32	1146.48	1146.56	1146.60	1146.60	1146.61	1146.61	1146.61	1146.61	1146.61	1146.63	1146.65	1146.66	1146.69	1146.70	1146.70	1146.70	1146.68	1146.63	1146.63
18.839	1144.56	1144.31	1144.28	1144.26	1144.23	1144.21	1144.20	1144.20	1144.20	1144.20	1144.19	1144.17	1144.14	1144.09	1144.06	1144.06	1144.07	1144.08	1144.09	1144.09
18.275	1130.15	1130.21	1130.32	1130.40	1130.44	1130.46	1130.47	1130.47	1130.47	1130.48	1130.48	1130.50	1130.52	1130.55	1130.57	1130.57	1130.57	1130.55	1130.53	1130.53
17.821	1130.04	1129.95	1129.69	1129.64	1129.55	1129.46	1129.36	1129.36	1129.36	1129.36	1129.33	1129.30	1129.22	1129.19	1129.16	1129.16	1129.18	1129.22	1129.30	1129.30
17.638	1128.99	1127.77	1127.55	1127.47	1127.37	1127.38	1127.39	1127.39	1127.40	1127.39	1127.38	1127.38	1127.45	1127.45	1127.42	1127.41	1127.43	1127.43	1127.43	1127.43
17.458	1117.00	1117.46	1117.74	1117.91	1118.04	1118.14	1118.22	1118.23	1118.22	1118.23	1118.29	1118.34	1118.42	1118.50	1118.56	1118.57	1118.54	1118.50	1118.41	1118.41
16.990	1110.86	1110.91	1111.03	1111.13	1111.20	1111.27	1111.31	1111.31	1111.31	1111.30	1111.22	1111.17	1111.13	1111.11	1111.11	1111.11	1111.16	1111.21	1111.30	1111.30
16.612	1108.72	1108.19	1107.85	1106.70	1106.36	1106.00	1105.71	1105.70	1105.70	1105.71	1105.68	1105.56	1105.34	1105.18	1105.15	1105.24	1105.24	1105.29	1105.40	1105.40
16.506	1105.04	1104.96	1104.66	1104.80	1104.81	1104.79	1104.77	1104.77	1104.77	1104.77	1104.82	1104.80	1104.84	1104.88	1104.91	1104.95	1104.93	1104.93	1104.91	1104.91
16.482	1105.01	1104.70	1104.70	1104.73	1104.77	1104.78	1104.80	1104.80	1104.81	1104.81	1104.84	1104.83	1104.79	1104.78	1104.79	1104.80	1104.79	1104.79	1104.79	1104.79
16.099	1100.91	1100.78	1100.82	1100.84	1100.86	1100.90	1100.91	1100.91	1100.90	1100.90	1100.94	1100.98	1101.02	1101.02	1101.01	1100.99	1100.96	1100.92	1100.88	1100.88
15.719	1093.90	1093.74	1093.82	1093.90	1093.90	1093.91	1093.92	1093.92	1093.92	1093.92	1093.92	1093.92	1093.93	1093.93	1093.93	1093.94	1093.96	1093.93	1093.88	1093.88
15.374	1093.41	1093.10	1092.52	1092.52	1092.44	1092.42	1092.44	1092.44	1092.45	1092.43	1092.40	1092.40	1092.39	1092.38	1092.35	1092.31	1092.31	1092.36	1092.41	1092.41
15.094	1090.20	1090.31	1090.30	1090.28	1090.13	1090.02	1089.99	1089.98	1090.00	1089.99	1089.99	1089.99	1089.99	1090.00	1090.01	1090.01	1090.05	1090.04	1090.00	1090.00
15.000	1088.77	1088.76	1088.50	1088.24	1087.83	1087.41	1087.43	1087.43	1087.43	1087.43	1087.42	1087.42	1087.42	1087.41	1087.41	1087.41	1087.41	1087.42	1087.42	1087.42
14.430	1083.11	1082.70	1081.84	1081.21	1080.92	1080.61	1080.43	1080.43	1080.42	1080.42	1080.42	1080.40	1080.39	1080.38	1080.37	1080.37	1080.36	1080.36	1080.35	1080.35
13.952	1072.70	1072.17	1071.97	1071.98	1071.98	1071.98	1071.91	1071.91	1071.90	1071.90	1071.89	1071.85	1071.77	1071.64	1071.53	1071.48	1071.47	1071.47	1071.47	1071.47
13.467	1064.46	1064.78	1065.13	1065.25	1065.30	1065.18	1064.95	1064.95	1064.95	1064.95	1064.96	1065.00	1065.08	1065.19	1065.28	1065.31	1065.29	1065.23	1065.12	1065.12
13.007	1061.93	1061.93	1061.98	1062.07	1062.10	1062.10	1062.07	1062.07	1062.07	1062.07	1061.99	1061.96	1061.93	1061.90	1061.88	1061.88	1061.88	1061.96	1062.09	1062.10
12.816	1057.66	1058.20	1058.71	1058.93	1059.06	1059.06	1059.00	1059.00	1059.00	1059.00	1058.98	1058.91	1058.80	1058.71	1058.66	1058.65	1058.68	1058.70	1058.75	1058.75
12.470	1055.38	1055.59	1055.66	1055.70	1055.71	1055.66	1055.61	1055.60	1055.59	1055.61	1055.72	1055.83	1055.97	1056.10	1056.19	1056.23	1056.19	1056.06	1055.77	1055.76
12.420	1055.71	1056.47	1056.49	1056.54	1056.49	1056.44	1056.37	1056.37	1056.30	1056.33	1056.39	1056.44	1056.49	1056.56	1056.63	1056.75	1056.81	1056.04	1055.76	1055.76
12.359	1051.74	1052.31	1052.45	1052.49	1052.49	1052.45	1052.39	1052.39	1052.41	1052.41	1052.39	1052.39	1052.37	1052.36	1052.36	1052.36	1052.38	1052.61	1052.66	1052.66
12.042	1048.28	1046.77	1046.34	1046.20	1046.06	1045.93	1045.81	1045.81	1045.81	1045.80	1045.78	1045.78	1045.78	1045.78	1045.77	1045.75	1045.74	1045.99	1046.13	1046.14
11.847	1044.77	1044.83	1044.64	1044.57	1044.53	1044.42	1044.38	1044.38	1044.39	1044.36	1044.34	1044.30	1044.25	1044.21	1044.17	1044.14	1044.12	1044.22	1044.33	1044.33
11.557	1041.45	1040.68	1040.79	1041.00	1041.24	1041.43	1041.53	1041.53	1041.58	1041.57	1041.49	1041.44	1041.38	1041.32	1041.30	1041.30	1041.30	1041.54	1041.93	1041.94
11.428	1041.34	1041.45	1041.76	1042.12	1042.43	1042.67	1042.84	1042.85	1042.85	1042.86	1042.85	1042.83	1042.79	1042.74	1042.71	1042.69	1042.69	1042.70	1042.80	1042.80
11.029	1034.78	1035.56	1035.76	1036.02	1036.31	1036.47	1036.62	1036.62	1036.62	1036.63	1036.69	1036.75	1036.81	1036.84	1036.86	1036.87	1036.85	1036.80	1036.72	1036.72
10.846	1031.56	1031.62	1031.71	1031.86	1032.03	1032.11	1032.22	1032.22	1032.23	1032.22	1032.18	1032.15	1032.13	1032.11	1032.08	1032.06	1032.08	1032.16	1032.30	1032.30
10.752	1031.31	1031.50	1031.64	1031.78	1031.95	1032.04	1032.15	1032.15	1032.15	1032.15	1032.12	1032.11	1032.09	1032.06	1032.04	1032.03	1032.03	1032.05	1032.11	1032.12
10.538	1031.22	1031.18	1031.20	1031.23	1031.30	1031.35	1031.42	1031.42	1031.41	1031.42	1031.47	1031.51	1031.56	1031.60	1031.62	1031.64	1031.63	1031.57	1031.46	1031.46
10.343	1026.35	1025.66	1025.70	1025.74	1025.80	1025.85	1025.90	1025.90	1025.91	1025.90	1025.87	1025.85	1025.83	1025.81	1025.80	1025.79	1025.79	1025.84	1025.93	1025.93
10.167	1023.39	1023.46	1023.54	1023.61	1023.71	1023.82	1023.87	1023.87	1023.88	1023.88	1023.88	1023.89	1023.89	1023.89	1023.89	1023.90	1023.91	1023.91	1023.91	1023.91
9.885	1021.01	1020.77	1020.67	1020.69	1020.70	1020.73	1020.76	1020.76	1020.76	1020.76	1020.76	1020.77	1020.79	1020.81	1020.82	1020.82	1020.81	1020.79	1020.75	1020.75
9.696	1018.66	1018.70	1018.72	1018.75	1018.77	1018.81	1018.84	1018.84	1018.83	1018.83	1018.82	1018.82	1018.83	1018.84	1018.84	1018.82	1018.80	1018.78	1018.77	1018.77
9.435	1015.27	1015.44	1015.49	1015.48	1015.42	1015.42	1015.42	1015.42	1015.42	1015.41	1015.38	1015.35	1015.31	1015.29	1015.28	1015.29	1015.29	1015.29	1015.31	1015.31
9.266	1013.85	1014.13	1014.12	1014.01	1013.87	1013.81	1013.78	1013.78	1013.78	1013.77	1013.77	1013.76	1013.75	1013.75	1013.75	1013.74	1013.73	1013.71	1013.67	1013.67
8.992	1008.05	1007.82	1007.56	1007.24	1007.02	1006.94	1006.84	1006.84	1006.84	1006.86	1006.88	1006.89	1006.89	1006.89	1006.89	1006.90	1006.91	1006.86	1006.80	1006.80
8.768	1007.92	1006.81	1006.62	1006.48	1006.40	1006.34	1006.33	1006.33	1006.33	1006.31	1006.27	1006.23	1006.18	1006.14	1006.11	1006.08	1006.06	1006.10	1006.19	1006.19
8.433	1004.93	1004.91	1004.91	1004.95	1005.00	1005.02	1005.05	1005.05	1005.05	1005.04	1004.99	1004.96	1004.94	1004.92	1004.91	1004.91	1004.90	1004.91	1004.94	1004.94
8.198	1001.49	1001.46	1001.55	1001.77	1001.99	1002.10	1002.17	1002.17	1002.17	1002.18	1002.19	1002.20	1002.19	1002.17	1002.16	1002.15	1002.13	1002.14	1002.15	1002.15
8.105	1000.23	1000.31	1000.52	1000.74	1000.96	1001.09	1001.15	1001.15	1001.15	1001.17	1001.26	1001.33	1001.41	1001.45	1001.46	1001.43	1001.40	1001.36	1001.31	1001.31
8.000	999.96	1000.45	1000.69	1000.91	1001.12	1001.26	1001.32	1001.32	1001.32	1001.34	1001.45	1001.52	1001.60	1001.63	1001.60	1001.56	1001.50	1001.43	1001.39	1001.39
7.990	999.64	1000.13	1000.39	1000.63	1000.84	1000.99	1001.05	1001.05	1001.05	1001.03	1001.07	1001.08	1001.09	1001.07	1001.16	1001.06	1001.14	1001.14	1001.12	1001.13
7.988	999.30	999.90	1000.26	1000.53	1000.77	1000.94	1001.01	1001.01	1001.01	1001.01	1001.02	1001.02	1001.02	1001.02	1001.04	1001.04	1001.04	1001.05	1001.05	1001.05
7.490	995.23	995.13	994.97	994.91	994.91	994.92	994.93	994.93	994.93	994.93	994.90	994.89	994.85	994.83	994.81	994.82	994.82	994.82	994.82	994.82
6.990	989.81	989.39	989.36	989.37	989.39	989.40	989.41	989.41	989.41	989.40	989.36	989.29	989.23	989.17	989.15	989.15	989.14	989.15	989.18	989.18
6.930	989.93	989.78	989.74	989.76	989.77	989.76	989.76	989.76	989.76	989.78	989.80	989.76	989.76	989.74	989.79	989.76	989.68	989.66	989.68	989.68
6.910	989.08	988.91	988.86	988.85	988.86	988.87	988.89	988.90	988.90	988.77	988.18	988.23	988.00	987.81	987.77	987.86	988.16	988.44	988.71	988.71
6.890	989.41	989.42	989.41	989.42	989.42	989.41	989.41	989.41	989.40	989.52	989.63	989.64	989.81	989.73	989.85	989.79	989.42	989.40	989.42	989.43
6.888	989.44	989.46	989.43	989.46	989.46	989.43	989.43	989.43	989.40	989.44	989.58	989.56	989.72	989.59	989.84	989.57	989.41	989.40	989.42	989.41
6.820	984.51	984.14	984.14	984.15	984.15	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16	984.16
6.430	981.21	981.23	981.07	981.02	981.04	981.12	981.18	981.18	981.19	981.19	981.21	981.24	981.26	981.29	981.26	981.27	981.29	981.28	981.25	981.25
6.070	977.02	977.43	977.56	977.60	977.67	977.73	977.77	977.77	977.77	977.77	977.76	977.75	977.75	977.76	977.76	977.76	977.76	977.77	977.77	977.77
6.068	977.00	977.47	977.58	977.63	977.68	977.73	977.78	977.78	977.78	977.78	977.78	977.77	977.76	977.76	977.77	977.77	977.77	977.77	977.77	977.77
5.900	975.40	975.67	975.84	975.92	975.98	976.03	976.06	976.06	976.06	976.06	976.05	976.04	976.03	976.02	976.01	976.01	976.01	976.01	976.01	976.01
5.750	973.75	974.05	974.22	974.32	974.39	974.43	974.44	974.44	974.45	974.44	974.40	974.37	974.33	974.31	974.29	974.30	974.31	974.33	974.33	974.33
5.689	974.18	974.70	974.92	975.03	975.10	975.14	975.16	975.16	975.16	975.15	975.14	975.12	975.09	975.06	975.04	975.04	975.04	975.05	975.04	975.04
5.380	971.06	970.70	970.72	970.77	970.79	970.83	970.83	970.83	970.83	970.83	970.84	970.83	970.83	970.82	970.81	970.81	970.80	970.79	970.81	970.81
5.290	971.31	971.10	971.12	971.14	971.16	971.19	971.19	971.19	971.19	971.18	971.12	971.11	971.10	971.10	971.10	971.10	971.10	971.11	971.15	971.15
5.203	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.10	970.00	970.17	970.00	970.26	970.00	970.01	970.00	970.00	970.01
5.201	969.15	969.19	969.15	969.20	969.20	969.15	969.15	969.15	969.10	969.24	969.10	969.55	969.10	969.67	969.11	969.60	969.11	969.11	969.14	969.10
5.150	967.21	965.79	963.41	962.93	962.79	962.78	962.78	962.78	962.78	962.78	962.79	962.84	962.86	962.92	962.88	962.81	962.82	962.81	962.80	962.81
4.790	960.96	961.81	963.16	963.26	963.44	963.63	963.67	963.67	963.68	963.69	963.82	963.85	963.97	963.96	964.05	964.11	964.13	964.07	963.95	963.94
4.754	962.01	962.85	963.64	963.81	963.97	964.14	964.20	964.20	964.20	964.19	964.17	964.19	964.22	964.25	964.28	964.32	964.37	964.41	964.41	964.41
4.700	959.63	960.90	961.88	962.17	962.36	962.58	962.64	962.64	962.64	962.64	962.63	962.63	962.65	962.69	962.71	962.74	962.77	962.77	962.75	962.75
4.300	957.66	958.31	959.04	959.36	959.52	959.72	959.77	959.77	959.77	959.76	959.66	959.58	959.48	959.40	959.36	959.36	959.37	959.42	959.50	959.51
4.094	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.58	958.50	958.63	958.50	958.69	958.50	958.51	958.50	958.50	958.51
4.092	955.21	955.22	955.21	955.22	955.22	955.21	955.21	955.21	955.20	955.23	955.20	955.32	955.20	955.35	955.20	955.33	955.20	955.20	955.21	955.20
3.767	952.02	951.12	951.02	951.07	951.17	951.66	951.92	951.92	951.94	951.92	951.98	951.94	952.02	951.96	952.04	952.02	952.15	952.09	952.00	952.00
3.757	952.09	950.97	950.91	950.99	951.13	951.58	951.81	951.82	951.81	951.81	951.80	951.80	951.79	951.82	951.82	951.89	951.96	951.85	951.80	951.80
3.734	951.81	951.02	950.94	951.02	951.11	951.61	951.85	951.85	951.85	951.91	952.02	952.10	952.14	952.16	952.13	952.12	952.12	951.88	951.63	951.63
3.729	951.59	950.99	950.95	951.03	951.12	951.44	951.69	951.69	951.70	951.70	951.73	951.76	951.80	951.82	951.82	951.84	951.86	951.88	951.79	951.79
3.430	946.08	946.03	946.18	946.33	946.45	946.37	946.48	946.48	946.48	946.49	946.50	946.51	946.53	946.55	946.56	946.57	946.59	946.66	946.84	946.84
3.370	944.42	944.65	944.86	945.06	945.18	945.08	945.15	945.16	945.16	945.15	945.06	944.99	944.91	944.88	944.87	944.90	944.94	945.04	945.15	945.15
3.270	944.67	945.09	945.31	945.46	945.54	945.70	945.75	945.75	945.75	945.75	945.76	945.78	945.79	945.80	945.80	945.80	945.79	945.79	945.78	945.78
2.800	942.03	941.98	941.83	941.58	941.46	941.46	941.45	941.45	941.45	941.46	941.50	941.54	941.61	941.66	941.68	941.68	941.66	941.63	941.59	941.59
2.600	939.52	939.14	938.76	938.43	938.25	938.22	938.15	938.15	938.15	938.15	938.13	938.10	938.07	938.05	938.04	938.03	938.03	938.04	938.03	938.03
2.020	932.47	932.17	931.98	931.84	931.58	931.43	931.31	931.30	931.30	931.30	931.31	931.32	931.33	931.34	931.35	931.35	931.35	931.36	931.37	931.37
1.710	928.54	928.79	928.63	928.41	928.20	928.10	927.99	927.98	927.98	927.98	928.00	928.02	928.03	928.05	928.05	928.06	928.06	928.03	927.99	927.99
1.330	924.79	923.87	923.45	923.14	922.84	922.42	922.29	922.29	922.29	922.26	922.17	922.10	922.00	921.91	921.83	921.78	921.76	921.80	921.89	921.89
1.250	924.72	924.45	924.14	923.88	923.63	923.30	923.09	923.09	923.09	923.02	922.65	922.64	922.62	922.60	922.60	922.62	922.64	922.73	922.84	922.85
1.170	923.53	923.21	922.91	922.66	922.43	922.17	921.93	921.93	921.93	921.95	922.05	921.93	921.84	921.76	921.73	921.75	921.76	921.75	921.73	921.73
1.020	922.80	922.76	922.47	922.25	922.05	921.81	921.60	921.60	921.60	921.62	921.76	921.83	921.86	921.91	921.90	921.90	921.87	921.79	921.67	921.67
1.010	921.12	920.93	920.62	920.41	920.23	920.04	919.90	919.89	919.89	919.89	919.90	919.92	919.94	919.95	919.95	919.94	919.94	919.93	919.93	919.93
0.730	916.97	916.82	916.68	916.58	916.47	916.37	916.25	916.25	916.25	916.24	916.22	916.21	916.21	916.21	916.22	916.21	916.21	916.23	916.23	916.23
0.630	915.34	914.88	914.83	914.76	914.65	914.54	914.46	914.46	914.46	914.47	914.48	914.48	914.48	914.46	914.46	914.45	914.46	914.46	914.47	914.47
0.440	912.78	912.75	912.75	912.75	912.75	912.75	912.74	912.74	912.74	912.75	912.76	912.76	912.77	912.77	912.78	912.78	912.77	912.76	912.70	912.70
0.160	909.26	909.11	909.08	909.05	909.05	909.02	908.98	908.98	908.98	908.94	908.86	908.75	908.65	908.59	908.59	908.62	908.67	908.73	908.88	908.89

Figure 10.1. Thalweg Elevation During Flood Hydrology - Encroachment Conditions.

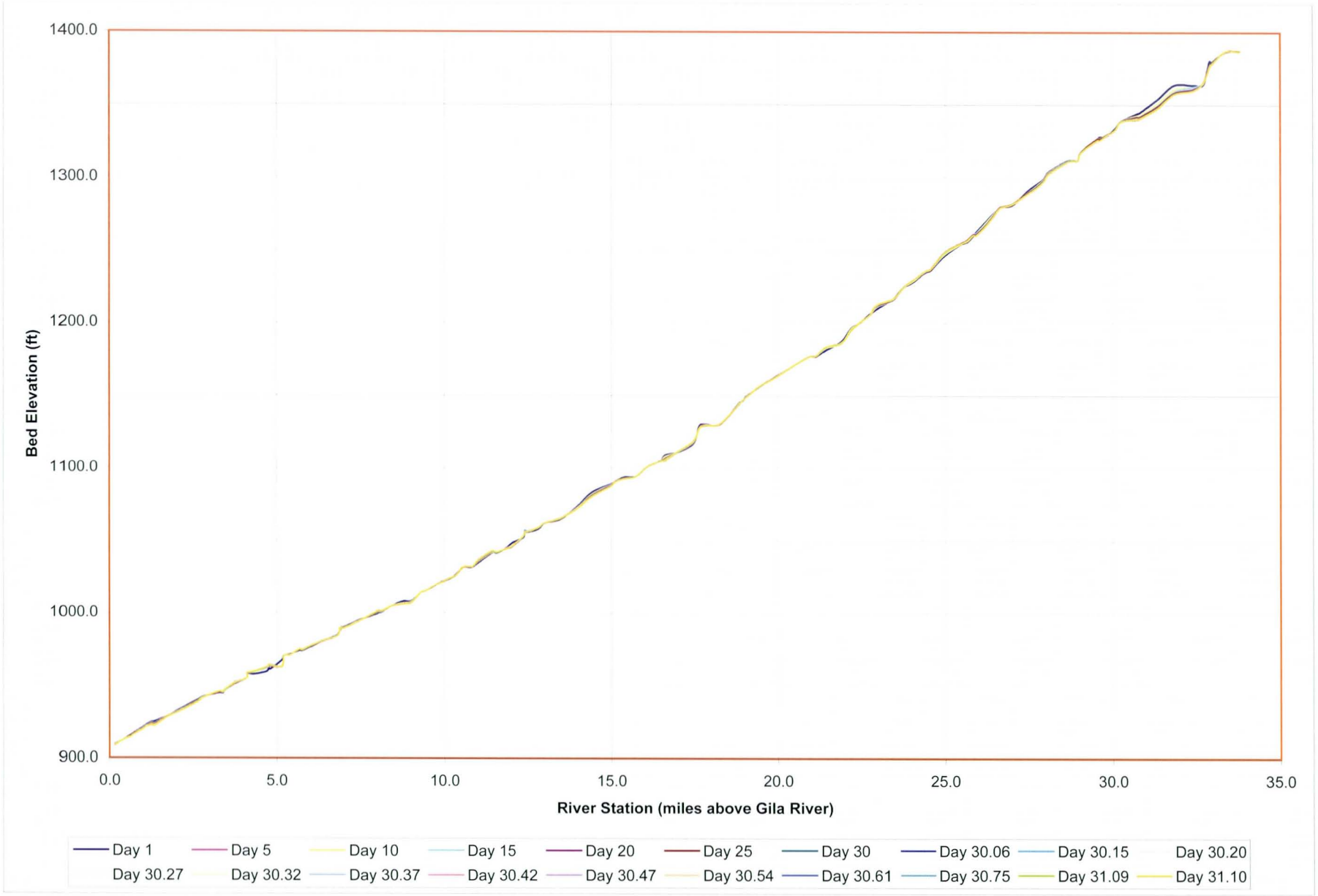


Figure 10.2. Bed Elevation Change During Flood Hydrology - Encroachment Conditions.

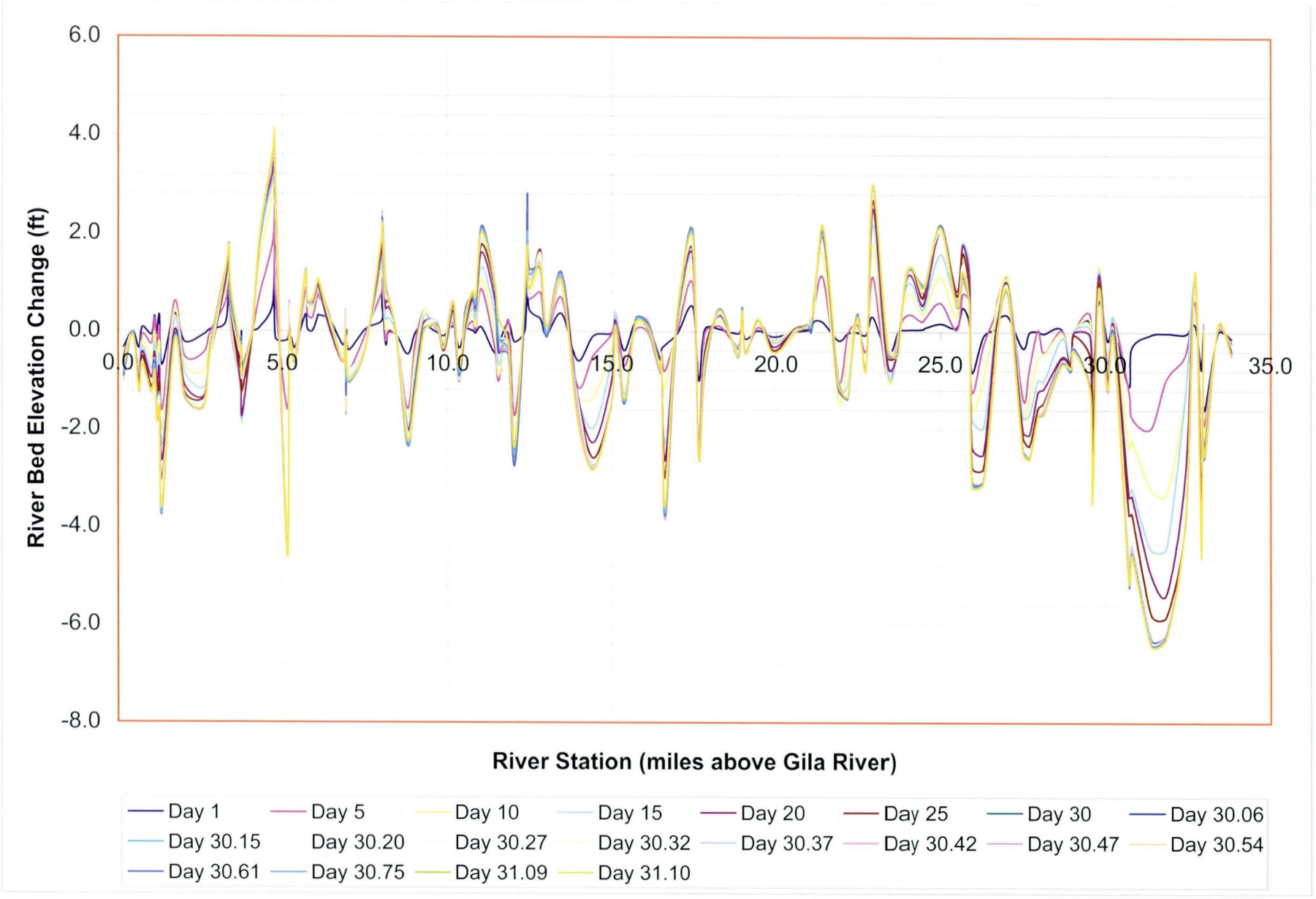


Figure 10.3. Channel Bed Thalweg at Peak of 100-Year Hydrograph (Existing vs Floodway).

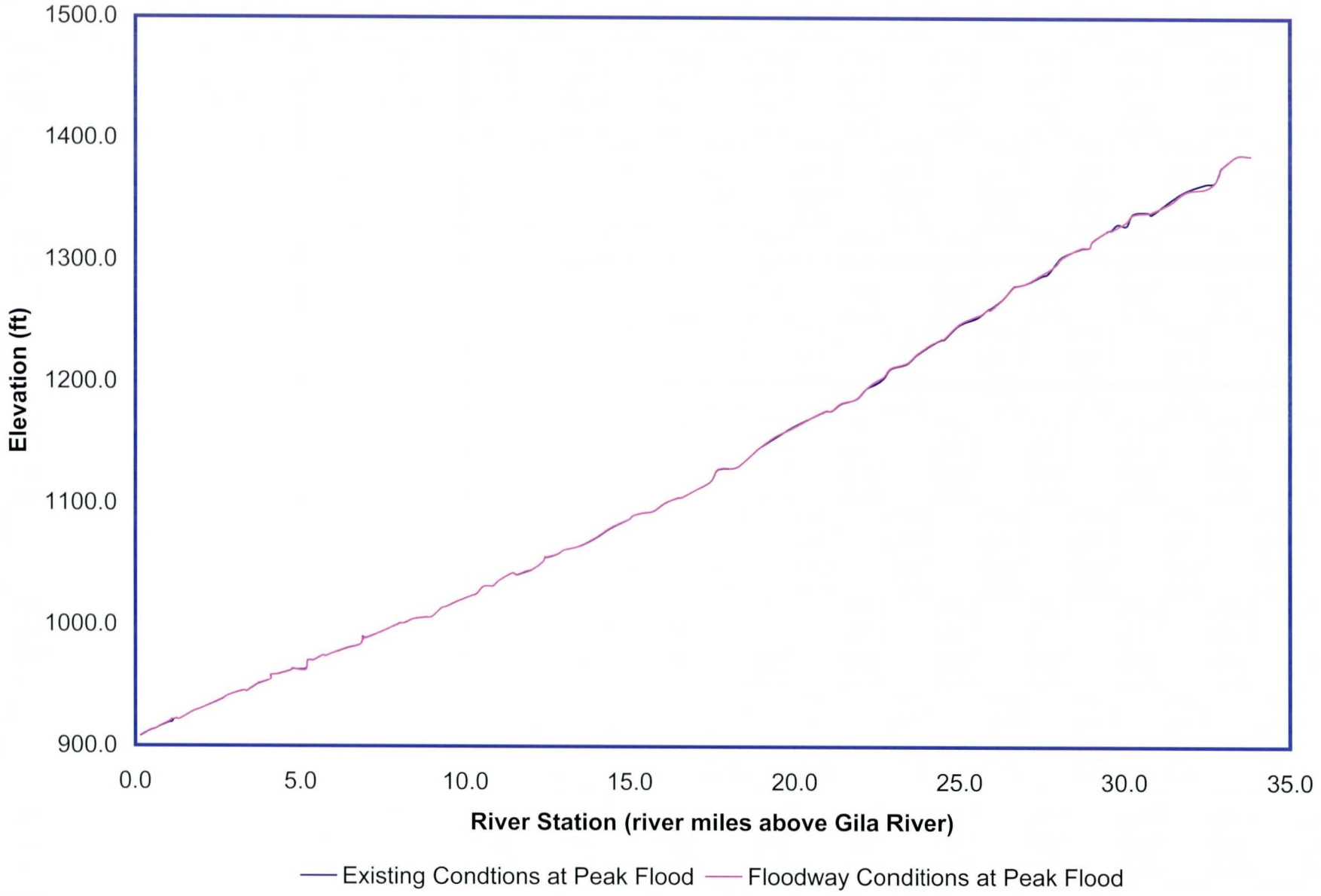


Table 10.3. Bed Elevation Change During Flood Hydrology - Encroachment Conditions.

Hydro Day	1.00	5.00	10.00	15.00	20.00	25.00	30.00	30.06	30.15	30.20
SECTION NUMBER	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)
33.820	-0.13	-0.21	-0.28	-0.34	-0.39	-0.43	-0.47	-0.47	-0.47	-0.47
33.410	-0.01	0.04	0.08	0.10	0.11	0.12	0.12	0.12	0.13	0.13
32.998	-1.61	-1.91	-2.12	-2.29	-2.41	-2.48	-2.55	-2.55	-2.51	-2.54
32.984	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
32.920	-0.76	-3.20	-3.57	-3.93	-4.09	-4.31	-4.48	-4.48	-4.51	-4.47
32.860	-0.55	-1.25	-1.52	-2.17	-2.35	-2.66	-2.85	-2.87	-2.89	-2.91
32.720	0.15	0.62	0.91	1.12	1.19	1.23	1.26	1.26	1.26	1.26
32.430	-0.04	-0.46	-1.27	-1.29	-2.89	-3.87	-3.82	-3.82	-3.82	-3.82
31.860	-0.02	-0.96	-3.32	-4.41	-5.36	-5.81	-6.16	-6.16	-6.16	-6.16
31.390	-0.05	-1.97	-3.23	-4.46	-4.97	-5.77	-6.29	-6.30	-6.32	-6.33
30.820	-0.31	-1.75	-2.20	-3.21	-3.36	-3.72	-4.29	-4.29	-4.29	-4.29
30.730	-1.11	-1.21	-2.37	-3.30	-3.38	-3.74	-4.42	-4.42	-4.42	-4.43
30.260	0.09	0.28	0.30	0.27	0.14	0.02	-0.11	-0.11	-0.11	-0.11
30.070	-0.18	-0.65	-0.81	-0.84	-1.00	-1.12	-1.23	-1.23	-1.23	-1.24
29.800	0.63	1.31	1.34	1.24	1.16	1.01	0.80	0.80	0.80	0.80
29.611	-1.02	-1.59	-2.14	-2.41	-2.61	-2.90	-3.48	-3.48	-3.48	-3.48
29.540	0.19	0.34	0.23	0.05	-0.09	-0.53	-1.17	-1.18	-1.21	-1.21
29.040	0.01	0.00	0.03	0.05	0.00	-0.06	-0.40	-0.40	-0.41	-0.41
28.950	-0.70	-0.60	-0.57	-0.55	-0.60	-0.66	-0.80	-0.80	-0.77	-0.81
28.670	0.06	0.04	-0.02	-0.13	-0.52	-0.56	-0.59	-0.59	-0.60	-0.60
28.120	-0.03	-0.42	-0.47	-1.01	-1.16	-1.44	-1.52	-1.52	-1.52	-1.52
27.940	0.01	0.04	-0.52	-0.99	-1.24	-1.57	-1.73	-1.73	-1.73	-1.73
27.680	-0.01	-0.76	-1.34	-1.71	-2.11	-2.34	-2.57	-2.57	-2.58	-2.58
27.480	-0.33	-1.36	-1.70	-1.75	-2.03	-2.15	-2.40	-2.41	-2.42	-2.42
27.030	0.32	1.09	1.12	0.97	0.91	0.94	0.88	0.88	0.88	0.87
26.730	0.27	0.71	0.65	0.38	0.29	0.22	0.12	0.12	0.12	0.12
26.630	0.06	0.34	0.26	-0.01	-0.16	-0.43	-0.63	-0.63	-0.63	-0.63
26.290	-0.09	-0.28	-0.96	-1.97	-2.50	-2.81	-3.06	-3.07	-3.07	-3.08
25.940	-0.84	-1.23	-1.53	-1.77	-2.36	-2.77	-3.11	-3.11	-3.12	-3.12
25.860	0.18	0.63	1.14	1.40	1.10	0.79	0.52	0.52	0.51	0.50
25.666	0.49	0.78	1.40	1.83	1.78	1.61	1.38	1.38	1.38	1.37
25.478	0.09	0.04	0.30	0.66	0.83	0.74	0.59	0.59	0.58	0.58
24.996	0.17	0.59	1.12	1.58	2.07	2.19	2.05	2.04	2.04	2.05
24.543	0.09	0.29	0.47	0.58	0.69	0.91	1.04	1.04	1.04	1.03
24.449	0.05	0.21	0.36	0.45	0.54	0.69	0.81	0.81	0.82	0.82
23.974	0.04	0.35	0.78	0.99	1.15	1.29	1.35	1.35	1.35	1.35
23.692	-0.01	-0.03	-0.13	-0.28	-0.38	-0.44	-0.50	-0.50	-0.50	-0.50
23.409	-0.42	-0.98	-1.00	-0.90	-0.75	-0.53	-0.30	-0.30	-0.29	-0.29
22.935	0.30	1.12	1.79	2.21	2.51	2.69	2.86	2.86	2.87	2.87
22.745	-0.06	-0.39	-0.65	-0.72	-0.72	-0.73	-0.73	-0.73	-0.73	-0.73
22.462	-0.01	0.15	0.27	0.30	0.32	0.35	0.38	0.38	0.38	0.38
22.177	-0.03	-0.04	-0.47	-1.09	-1.35	-1.38	-1.39	-1.39	-1.39	-1.39
21.893	-0.18	-1.04	-1.43	-1.25	-1.15	-1.08	-0.97	-0.97	-0.97	-0.97
21.431	0.19	1.08	1.55	1.92	1.97	1.93	1.98	1.98	1.98	1.98
21.157	0.22	0.53	0.78	0.51	0.52	0.50	0.53	0.53	0.52	0.53
21.061	0.05	0.09	0.18	0.27	0.15	0.24	0.25	0.25	0.23	0.23
20.958	0.03	0.06	0.15	0.11	0.11	0.07	0.08	0.08	0.09	0.09
20.579	0.00	0.05	0.10	0.07	0.07	0.05	0.04	0.04	0.04	0.04
19.920	-0.10	-0.18	-0.19	-0.23	-0.31	-0.38	-0.46	-0.46	-0.46	-0.46
19.446	0.02	0.09	0.18	0.23	0.26	0.28	0.30	0.30	0.30	0.30
19.066	-0.15	-0.37	-0.38	-0.40	-0.43	-0.44	-0.46	-0.46	-0.46	-0.46
18.962	0.12	0.28	0.36	0.40	0.40	0.41	0.41	0.41	0.41	0.41
18.839	-0.04	-0.29	-0.32	-0.34	-0.37	-0.39	-0.40	-0.40	-0.40	-0.40
18.275	0.05	0.11	0.22	0.30	0.34	0.36	0.37	0.37	0.37	0.38
17.821	0.04	-0.05	-0.31	-0.36	-0.45	-0.54	-0.64	-0.64	-0.64	-0.64
17.638	-1.01	-2.23	-2.45	-2.53	-2.63	-2.62	-2.61	-2.61	-2.60	-2.61
17.458	0.50	0.96	1.24	1.41	1.54	1.64	1.72	1.73	1.72	1.73
16.990	-0.04	0.01	0.13	0.23	0.30	0.37	0.41	0.41	0.41	0.40
16.612	-0.28	-0.81	-1.15	-2.30	-2.64	-3.00	-3.29	-3.30	-3.30	-3.29
16.506	-0.36	-0.44	-0.74	-0.60	-0.59	-0.61	-0.63	-0.63	-0.63	-0.63
16.482	-0.59	-0.90	-0.90	-0.87	-0.83	-0.82	-0.80	-0.80	-0.79	-0.79
16.099	0.11	-0.02	0.02	0.04	0.06	0.10	0.11	0.11	0.10	0.10
15.719	0.20	0.04	0.12	0.20	0.20	0.21	0.22	0.22	0.22	0.22
15.374	-0.39	-0.70	-1.28	-1.28	-1.36	-1.38	-1.36	-1.36	-1.35	-1.37
15.094	0.30	0.41	0.40	0.38	0.23	0.12	0.09	0.08	0.10	0.09
15.000	-0.03	-0.04	-0.30	-0.56	-0.97	-1.39	-1.37	-1.37	-1.37	-1.37
14.430	-0.09	-0.50	-1.36	-1.99	-2.28	-2.59	-2.77	-2.77	-2.78	-2.78
13.952	-0.60	-1.13	-1.33	-1.32	-1.32	-1.32	-1.39	-1.39	-1.40	-1.40
13.467	0.36	0.68	1.03	1.15	1.20	1.08	0.85	0.85	0.85	0.85
13.007	-0.07	-0.07	-0.02	0.07	0.10	0.10	0.07	0.07	0.07	0.07
12.816	0.26	0.80	1.31	1.53	1.66	1.66	1.60	1.60	1.60	1.60
12.470	0.48	0.69	0.76	0.80	0.81	0.76	0.71	0.70	0.69	0.71
12.420	1.71	2.47	2.49	2.54	2.49	2.44	2.37	2.37	2.30	2.33
12.359	0.04	0.61	0.75	0.79	0.79	0.75	0.69	0.69	0.71	0.71
12.042	-0.22	-1.73	-2.16	-2.30	-2.44	-2.57	-2.69	-2.69	-2.69	-2.70
11.847	0.17	0.23	0.04	-0.03	-0.07	-0.18	-0.22	-0.22	-0.21	-0.24
11.557	-0.25	-1.02	-0.91	-0.70	-0.46	-0.27	-0.17	-0.17	-0.12	-0.13
11.428	-0.46	-0.35	-0.04	0.32	0.63	0.87	1.04	1.05	1.05	1.06
11.029	0.08	0.86	1.06	1.32	1.61	1.77	1.92	1.92	1.92	1.93
10.846	-0.04	0.02	0.11	0.26	0.43	0.51	0.62	0.62	0.63	0.62
10.752	0.01	0.20	0.34	0.48	0.65	0.74	0.85	0.85	0.85	0.85
10.538	0.02	-0.02	0.00	0.03	0.10	0.15	0.22	0.22	0.21	0.22
10.343	-0.35	-1.04	-1.00	-0.96	-0.90	-0.85	-0.80	-0.80	-0.79	-0.80
10.167	0.09	0.16	0.24	0.31	0.41	0.52	0.57	0.57	0.58	0.58
9.885	-0.09	-0.33	-0.43	-0.41	-0.40	-0.37	-0.34	-0.34	-0.34	-0.34
9.696	-0.04	0.00	0.02	0.05	0.07	0.11	0.14	0.14	0.13	0.13
9.435	0.07	0.24	0.29	0.28	0.22	0.22	0.22	0.22	0.22	0.21
9.266	0.15	0.43	0.42	0.31	0.17	0.11	0.08	0.08	0.08	0.07
8.992	-0.05	-0.28	-0.54	-0.86	-1.08	-1.16	-1.26	-1.26	-1.26	-1.24
8.768	-0.48	-1.59	-1.78	-1.92	-2.00	-2.06	-2.07	-2.07	-2.07	-2.09
8.433	-0.07	-0.09	-0.09	-0.05	0.00	0.02	0.05	0.05	0.05	0.04
8.198	-0.01	-0.04	0.05	0.27	0.49	0.60	0.67	0.67	0.67	0.68
8.105	-0.27	-0.19	0.02	0.24	0.46	0.59	0.65	0.65	0.65	0.67
8.000	0.76	1.25	1.49	1.71	1.92	2.06	2.12	2.12	2.12	2.14
7.990	0.54	1.03	1.29	1.53	1.74	1.89	1.95	1.95	1.95	1.93
7.988	0.20	0.80	1.16	1.43	1.67	1.84	1.91	1.91	1.91	1.91
7.490	0.03	-0.07	-0.23	-0.29	-0.29	-0.28	-0.27	-0.27	-0.27	-0.27
6.990	-0.39	-0.81	-0.84	-0.83	-0.81	-0.80	-0.79	-0.79	-0.79	-0.80
6.930	0.03	-0.12	-0.16	-0.14	-0.13	-0.14	-0.14	-0.14	-0.14	-0.12
6.910	-0.42	-0.59	-0.64	-0.65	-0.64	-0.63	-0.61	-0.60	-0.60	-0.73
6.890	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.12
6.888	0.04	0.06	0.03	0.06	0.06	0.03	0.03	0.03	0.00	0.04
6.820	-0.29	-0.66	-0.66	-0.65	-0.65	-0.64	-0.64	-0.64	-0.64	-0.64
6.430	0.21	0.23	0.07	0.02	0.04	0.12	0.18	0.18	0.19	0.19
6.070	0.32	0.73	0.86	0.90	0.97	1.03	1.07	1.07	1.07	1.07
6.068	0.30	0.77	0.88	0.93	0.98	1.03	1.08	1.08	1.08	1.08
5.900	0.00	0.27	0.44	0.52	0.58	0.63	0.66	0.66	0.66	0.66
5.750	0.05	0.35	0.52	0.62	0.69	0.73	0.74	0.74	0.75	0.74
5.689	0.33	0.85	1.07	1.18	1.25	1.29	1.31	1.31	1.31	1.30
5.380	-0.34	-0.70	-0.68	-0.63	-0.61	-0.57	-0.57	-0.57	-0.57	-0.57
5.290	-0.19	-0.40	-0.38	-0.36	-0.34	-0.31	-0.31	-0.31	-0.31	-0.32
5.203	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.201	0.05	0.09	0.05	0.10	0.10	0.05	0.05	0.05	0.00	0.14
5.150	-0.19	-1.61	-3.99	-4.47	-4.61	-4.62	-4.62	-4.62	-4.62	-4.62
4.790	-0.14	0.71	2.06	2.16	2.34	2.53	2.57	2.57	2.58	2.59
4.754	1.71	2.55	3.34	3.51	3.67	3.84	3.90	3.90	3.90	3.89
4.700	0.53	1.80	2.78	3.07	3.26	3.48	3.54	3.54	3.54	3.54
4.300	0.06	0.71	1.44	1.76	1.92	2.12	2.17	2.17	2.17	2.16
4.094	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.092	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.03
3.767	-0.88	-1.78	-1.88	-1.83	-1.73	-1.24	-0.98	-0.98	-0.96	-0.98
3.757	-0.01	-1.13	-1.19	-1.11	-0.97	-0.52	-0.29	-0.28	-0.30	-0.29
3.734	-0.49	-1.28	-1.36	-1.28	-1.19	-0.69	-0.45	-0.45	-0.45	-0.39
3.729	-0.61	-1.21	-1.25	-1.17	-1.08	-0.76	-0.51	-0.51	-0.50	-0.50
3.430	0.08	0.03	0.18	0.33	0.45	0.37	0.48	0.48	0.48	0.49
3.370	1.02	1.25	1.46	1.66	1.78	1.68	1.75	1.76	1.76	1.75
3.270	0.17	0.59	0.81	0.96	1.04	1.20	1.25	1.25	1.25	1.25
2.800	0.03	-0.02	-0.17	-0.42	-0.54	-0.54	-0.55	-0.55	-0.55	-0.54
2.600	-0.08	-0.46	-0.84	-1.17	-1.35	-1.38	-1.45	-1.45	-1.45	-1.45
2.020	-0.23	-0.53	-0.72	-0.86	-1.12	-1.27	-1.39	-1.40	-1.40	-1.40
1.710	0.34	0.59	0.43	0.21	0.00	-0.10	-0.21	-0.22	-0.22	-0.22
1.330	-0.71	-1.63	-2.05	-2.36	-2.66	-3.08	-3.21	-3.21	-3.21	-3.24
1.250	0.32	0.05	-0.26	-0.52	-0.77	-1.10	-1.31	-1.31	-1.31	-1.38
1.170	-0.07	-0.39	-0.69	-0.94	-1.17	-1.43	-1.67	-1.67	-1.67	-1.65
1.100	0.30	0.26	-0.03	-0.25	-0.45	-0.69	-0.90	-0.90	-0.90	-0.88
1.010	-0.08	-0.27	-0.58	-0.79	-0.97	-1.16	-1.30	-1.31	-1.31	-1.31
0.730	0.07	-0.08	-0.22	-0.32	-0.43	-0.53	-0.65	-0.65	-0.65	-0.66
0.630	-0.36	-0.82	-0.87	-0.94	-1.05	-1.16	-1.24	-1.24	-1.24	-1.23
0.440	-0.02	-0.05	-0.05	-0.05	-0.05	-0.05	-0.06	-0.06	-0.06	-0.05
0.160	-0.34	-0.49	-0.52	-0.55	-0.55	-0.58	-0.62	-0.62	-0.62	-0.66

Hydro Day	30.27	30.32	30.37	30.42	30.47	30.54	30.61	30.75	31.09	31.10
SECTION NUMBER	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)
33.820	-0.47	-0.47	-0.47	-0.48	-0.48	-0.48	-0.48	-0.47	-0.47	-0.47
33.410	0.12	0.11	0.11	0.11	0.11	0.11	0.13	0.13	0.13	0.13
32.998	-2.59	-2.59	-2.60	-2.60	-2.61	-2.61	-2.59	-2.57	-2.54	-2.54
32.984	0.08	0.02	0.11	0.02	0.17	0.01	0.01	0.00	0.00	0.02
32.920	-4.50	-4.46	-4.47	-4.44	-4.51	-4.45	-4.50	-4.52	-4.54	-4.55
32.860	-2.91	-2.91	-2.90	-2.89	-2.88	-2.88	-2.88	-2.88	-2.88	-2.88
32.720	1.25	1.22	1.22	1.22	1.21	1.21	1.22	1.23	1.24	1.24
32.430	-3.82	-3.82	-3.83	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82
31.860	-6.16	-6.16	-6.16	-6.16	-6.19	-6.21	-6.22	-6.24	-6.25	-6.25
31.390	-6.35	-6.37	-6.37	-6.37	-6.37	-6.38	-6.39	-6.40	-6.42	-6.42
30.820	-4.31	-4.33	-4.38	-4.45	-4.51	-4.53	-4.54	-4.55	-4.58	-4.58
30.730	-4.51	-4.62	-4.82	-5.02	-5.12	-5.17	-5.17	-5.15	-5.11	-5.11
30.260	-0.09	-0.07	-0.03	0.00	0.02	0.00	-0.05	-0.09	-0.14	-0.15
30.070	-1.24	-1.24	-1.23	-1.22	-1.22	-1.21	-1.19	-1.17	-1.18	-1.18
29.800	0.79	0.80	0.80	0.81	0.81	0.81	0.83	0.84	0.87	0.87
29.611	-3.49	-3.49	-3.49	-3.48	-3.47	-3.46	-3.47	-3.48	-3.50	-3.50
29.540	-1.22	-1.23	-1.23	-1.23	-1.23	-1.24	-1.23	-1.23	-1.23	-1.23
29.040	-0.38	-0.36	-0.34	-0.33	-0.31	-0.31	-0.33	-0.37	-0.39	-0.39
28.950	-0.81	-0.80	-0.79	-0.78	-0.79	-0.80	-0.81	-0.77	-0.75	-0.75
28.670	-0.60	-0.61	-0.62	-0.64	-0.65	-0.66	-0.66	-0.67	-0.69	-0.69
28.120	-1.54	-1.55	-1.58	-1.61	-1.64	-1.67	-1.67	-1.66	-1.65	-1.65
27.940	-1.74	-1.74	-1.75	-1.75	-1.74	-1.74	-1.74	-1.74	-1.74	-1.74
27.680	-2.58	-2.59	-2.59	-2.59	-2.58	-2.57	-2.59	-2.60	-2.61	-2.62
27.480	-2.42	-2.42	-2.43	-2.42	-2.42	-2.43	-2.44	-2.45	-2.46	-2.47
27.030	0.85	0.83	0.80	0.77	0.76	0.75	0.76	0.77	0.80	0.81
26.730	0.10	0.08	0.07	0.07	0.07	0.07	0.08	0.09	0.10	0.10
26.630	-0.63	-0.65	-0.68	-0.72	-0.75	-0.78	-0.78	-0.78	-0.79	-0.79
26.290	-3.07	-3.06	-3.06	-3.06	-3.05	-3.06	-3.08	-3.10	-3.12	-3.12
25.940	-3.11	-3.09	-3.07	-3.05	-3.03	-3.02	-3.08	-3.12	-3.17	-3.17
25.860	0.50	0.51	0.53	0.55	0.55	0.54	0.56	0.59	0.57	0.57
25.666	1.32	1.26	1.16	1.08	1.03	1.06	1.13	1.17	1.22	1.23
25.478	0.57	0.56	0.56	0.55	0.54	0.53	0.52	0.53	0.53	0.53
24.996	2.07	2.09	2.12	2.14	2.16	2.17	2.17	2.16	2.12	2.12
24.543	1.00	0.99	0.98	0.97	0.96	0.95	0.93	0.94	0.97	0.97
24.449	0.84	0.87	0.89	0.92	0.94	0.96	0.96	0.94	0.89	0.89
23.974	1.34	1.32	1.28	1.25	1.23	1.22	1.23	1.24	1.27	1.27
23.692	-0.48	-0.47	-0.46	-0.45	-0.45	-0.44	-0.47	-0.49	-0.51	-0.51
23.409	-0.32	-0.35	-0.40	-0.44	-0.47	-0.49	-0.47	-0.44	-0.39	-0.39
22.935	2.89	2.92	2.95	2.98	3.01	3.02	3.02	3.02	3.02	3.02
22.745	-0.74	-0.74	-0.75	-0.75	-0.76	-0.76	-0.75	-0.75	-0.74	-0.74
22.462	0.37	0.37	0.38	0.38	0.37	0.37	0.36	0.34	0.30	0.29
22.177	-1.38	-1.37	-1.37	-1.37	-1.37	-1.37	-1.37	-1.35	-1.33	-1.33
21.893	-0.98	-0.99	-1.00	-1.02	-1.02	-1.03	-1.02	-1.05	-1.10	-1.10
21.431	1.99	1.99	2.00	2.01	2.02	2.02	2.01	2.06	2.15	2.16
21.157	0.56	0.60	0.64	0.68	0.70	0.71	0.70	0.67	0.63	0.63
21.061	0.15	0.08	0.04	0.02	0.01	0.02	0.00	0.09	0.23	0.23
20.958	0.10	0.11	0.11	0.11	0.13	0.14	0.15	0.14	0.13	0.13
20.579	0.03	0.02	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00
19.920	-0.46	-0.45	-0.45	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44
19.446	0.29	0.28	0.26	0.25	0.24	0.24	0.24	0.24	0.25	0.25
19.066	-0.46	-0.45	-0.44	-0.43	-0.43	-0.45	-0.46	-0.46	-0.45	-0.45
18.962	0.43	0.45	0.46	0.49	0.50	0.50	0.50	0.48	0.43	0.43
18.839	-0.41	-0.43	-0.46	-0.51	-0.54	-0.54	-0.53	-0.52	-0.51	-0.51
18.275	0.38	0.40	0.42	0.45	0.47	0.47	0.47	0.45	0.43	0.43
17.821	-0.67	-0.70	-0.78	-0.81	-0.84	-0.84	-0.82	-0.78	-0.70	-0.70
17.638	-2.62	-2.62	-2.55	-2.55	-2.58	-2.59	-2.57	-2.57	-2.57	-2.57
17.458	1.79	1.84	1.92	2.00	2.06	2.07	2.04	2.00	1.91	1.91
16.990	0.32	0.27	0.23	0.21	0.21	0.21	0.26	0.31	0.40	0.40
16.612	-3.32	-3.44	-3.66	-3.82	-3.85	-3.76	-3.76	-3.71	-3.60	-3.60
16.506	-0.58	-0.60	-0.56	-0.52	-0.49	-0.45	-0.47	-0.47	-0.49	-0.49
16.482	-0.76	-0.77	-0.81	-0.82	-0.81	-0.80	-0.81	-0.81	-0.81	-0.81
16.099	0.14	0.18	0.22	0.22	0.21	0.19	0.16	0.12	0.08	0.08
15.719	0.22	0.22	0.23	0.23	0.23	0.24	0.26	0.23	0.18	0.18
15.374	-1.40	-1.40	-1.41	-1.42	-1.45	-1.49	-1.49	-1.44	-1.39	-1.39
15.094	0.09	0.09	0.09	0.10	0.11	0.11	0.15	0.14	0.10	0.10
15.000	-1.38	-1.38	-1.38	-1.39	-1.39	-1.39	-1.39	-1.38	-1.38	-1.38
14.430	-2.78	-2.80	-2.81	-2.82	-2.83	-2.83	-2.84	-2.84	-2.85	-2.85
13.952	-1.41	-1.45	-1.53	-1.66	-1.77	-1.82	-1.83	-1.83	-1.83	-1.83
13.467	0.86	0.90	0.98	1.09	1.18	1.21	1.19	1.13	1.02	1.02
13.007	-0.01	-0.04	-0.07	-0.10	-0.12	-0.12	-0.12	-0.04	0.09	0.10
12.816	1.58	1.51	1.40	1.31	1.26	1.25	1.28	1.30	1.35	1.35
12.470	0.82	0.93	1.07	1.20	1.29	1.33	1.29	1.16	0.87	0.86
12.420	2.39	2.44	2.49	2.56	2.63	2.75	2.81	2.04	1.76	1.76
12.359	0.69	0.69	0.67	0.66	0.66	0.66	0.68	0.91	0.96	0.96
12.042	-2.72	-2.72	-2.72	-2.72	-2.73	-2.75	-2.76	-2.51	-2.37	-2.36
11.847	-0.26	-0.30	-0.35	-0.39	-0.43	-0.46	-0.48	-0.38	-0.27	-0.27
11.557	-0.21	-0.26	-0.32	-0.38	-0.40	-0.40	-0.40	-0.16	0.23	0.24
11.428	1.05	1.03	0.99	0.94	0.91	0.89	0.89	0.90	1.00	1.00
11.029	1.99	2.05	2.11	2.14	2.16	2.17	2.15	2.10	2.02	2.02
10.846	0.58	0.55	0.53	0.51	0.48	0.46	0.48	0.56	0.70	0.70
10.752	0.82	0.81	0.79	0.76	0.74	0.73	0.73	0.75	0.81	0.82
10.538	0.27	0.31	0.36	0.40	0.42	0.44	0.43	0.37	0.26	0.26
10.343	-0.83	-0.85	-0.87	-0.89	-0.90	-0.91	-0.91	-0.86	-0.77	-0.77
10.167	0.58	0.59	0.59	0.59	0.59	0.60	0.61	0.61	0.61	0.61
9.885	-0.34	-0.33	-0.31	-0.29	-0.28	-0.28	-0.29	-0.31	-0.35	-0.35
9.696	0.12	0.12	0.13	0.14	0.14	0.12	0.10	0.08	0.07	0.07
9.435	0.18	0.15	0.11	0.09	0.08	0.09	0.09	0.09	0.11	0.11
9.266	0.07	0.06	0.05	0.05	0.05	0.04	0.03	0.01	-0.03	-0.03
8.992	-1.22	-1.21	-1.21	-1.21	-1.21	-1.20	-1.19	-1.24	-1.30	-1.30
8.768	-2.13	-2.17	-2.22	-2.26	-2.29	-2.32	-2.34	-2.30	-2.21	-2.21
8.433	-0.01	-0.04	-0.06	-0.08	-0.09	-0.09	-0.10	-0.09	-0.06	-0.06
8.198	0.69	0.70	0.69	0.67	0.66	0.65	0.63	0.64	0.65	0.65
8.105	0.76	0.83	0.91	0.95	0.96	0.93	0.90	0.86	0.81	0.81
8.000	2.25	2.32	2.40	2.43	2.40	2.36	2.30	2.23	2.19	2.19
7.990	1.97	1.98	1.99	1.97	2.06	1.96	2.04	2.04	2.02	2.03
7.988	1.92	1.92	1.92	1.92	1.94	1.94	1.94	1.95	1.95	1.95
7.490	-0.30	-0.31	-0.35	-0.37	-0.39	-0.38	-0.38	-0.38	-0.38	-0.38
6.990	-0.84	-0.91	-0.97	-1.03	-1.05	-1.05	-1.06	-1.05	-1.02	-1.02
6.930	-0.10	-0.14	-0.14	-0.16	-0.11	-0.14	-0.22	-0.24	-0.22	-0.22
6.910	-1.32	-1.27	-1.50	-1.69	-1.73	-1.64	-1.34	-1.06	-0.79	-0.79
6.890	0.23	0.24	0.41	0.33	0.45	0.39	0.02	0.00	0.02	0.03
6.888	0.18	0.16	0.32	0.19	0.44	0.17	0.01	0.00	0.02	0.01
6.820	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64	-0.64
6.430	0.21	0.24	0.26	0.29	0.26	0.27	0.29	0.28	0.25	0.25
6.070	1.06	1.05	1.05	1.06	1.06	1.06	1.06	1.07	1.07	1.07
6.068	1.08	1.07	1.06	1.06	1.07	1.07	1.07	1.07	1.07	1.07
5.900	0.65	0.64	0.63	0.62	0.61	0.61	0.61	0.61	0.61	0.61
5.750	0.70	0.67	0.63	0.61	0.59	0.60	0.61	0.63	0.63	0.63
5.689	1.29	1.27	1.24	1.21	1.19	1.19	1.19	1.20	1.19	1.19
5.380	-0.56	-0.57	-0.57	-0.58	-0.59	-0.59	-0.60	-0.61	-0.59	-0.59
5.290	-0.38	-0.39	-0.40	-0.40	-0.40	-0.40	-0.40	-0.39	-0.35	-0.35
5.203	0.10	0.00	0.17	0.00	0.26	0.00	0.01	0.00	0.00	0.01
5.201	0.00	0.45	0.00	0.57	0.01	0.50	0.01	0.01	0.04	0.00
5.150	-4.61	-4.56	-4.54	-4.48	-4.52	-4.59	-4.58	-4.59	-4.60	-4.59
4.790	2.72	2.75	2.87	2.86	2.95	3.01	3.03	2.97	2.85	2.84
4.754	3.87	3.89	3.92	3.95	3.98	4.02	4.07	4.11	4.11	4.11
4.700	3.53	3.53	3.55	3.59	3.61	3.64	3.67	3.67	3.65	3.65
4.300	2.06	1.98	1.88	1.80	1.76	1.76	1.77	1.82	1.90	1.91
4.094	0.08	0.00	0.13	0.00	0.19	0.00	0.01	0.00	0.00	0.01
4.092	0.00	0.12	0.00	0.15	0.00	0.13	0.00	0.00	0.01	0.00
3.767	-0.92	-0.96	-0.88	-0.94	-0.86	-0.88	-0.75	-0.81	-0.90	-0.90
3.757	-0.30	-0.30	-0.31	-0.28	-0.28	-0.21	-0.14	-0.25	-0.30	-0.30
3.734	-0.28	-0.20	-0.16	-0.14	-0.17	-0.18	-0.18	-0.42	-0.67	-0.67
3.729	-0.47	-0.44	-0.40	-0.38	-0.38	-0.36	-0.34	-0.32	-0.41	-0.41
3.430	0.50	0.51	0.53	0.55	0.56	0.57	0.59	0.66	0.84	0.84
3.370	1.66	1.59	1.51	1.48	1.47	1.50	1.54	1.64	1.75	1.75
3.270	1.26	1.28	1.29	1.30	1.30	1.30	1.29	1.29	1.28	1.28
2.800	-0.50	-0.46	-0.39	-0.34	-0.32	-0.32	-0.34	-0.37	-0.41	-0.41
2.600	-1.47	-1.50	-1.53	-1.55	-1.56	-1.57	-1.57	-1.56	-1.57	-1.57
2.020	-1.39	-1.38	-1.37	-1.36	-1.35	-1.35	-1.35	-1.34	-1.33	-1.33
1.710	-0.20	-0.18	-0.17	-0.15	-0.15	-0.14	-0.14	-0.17	-0.21	-0.21
1.330	-3.33	-3.40	-3.50	-3.59	-3.67	-3.72	-3.74	-3.70	-3.61	-3.61
1.250	-1.75	-1.76	-1.78	-1.80	-1.80	-1.78	-1.76	-1.67	-1.56	-1.55
1.170	-1.55	-1.67	-1.76	-1.84	-1.87	-1.85	-1.84	-1.85	-1.87	-1.87
1.100	-0.74	-0.67	-0.64	-0.59	-0.60	-0.60	-0.63	-0.71	-0.83	-0.83
1.010	-1.30	-1.28	-1.26	-1.25	-1.25	-1.26	-1.26	-1.27	-1.27	-1.27
0.730	-0.68	-0.69	-0.69	-0.69	-0.68	-0.69	-0.69	-0.67	-0.67	-0.67
0.630	-1.22	-1.22	-1.22	-1.24	-1.24	-1.25	-1.24	-1.24	-1.23	-1.23
0.440	-0.04	-0.04	-0.03	-0.02	-0.02	-0.02	-0.03	-0.04	-0.10	-0.10
0.160	-0.74	-0.85	-0.95	-1.01	-1.01	-0.98	-0.93	-0.87	-0.72	-0.71

Table 10.4. Channel Bed Thalweg at Peak of 100-Year Hydrograph (Existing vs Floodway).

River Station	Existing Model THALWEG (ft)	Floodway Model THALWEG (ft)	Difference	Comments
33.820	1386.96	1386.93	-0.03	
33.410	1387.03	1387.01	-0.02	
32.998	1378.96	1378.80	-0.16	Morgan City Wash
32.984	1378.42	1378.51	0.09	State Rte 74
32.920	1377.14	1376.53	-0.61	
32.860	1372.80	1372.00	-0.80	
32.720	1365.12	1365.02	-0.10	
32.430	1363.83	1359.97	-3.86	
31.860	1358.46	1357.63	-0.83	
31.390	1350.51	1348.33	-2.18	
30.820	1339.05	1340.82	1.77	
30.730	1340.63	1340.38	-0.25	
30.260	1339.52	1338.87	-0.65	
30.070	1329.67	1332.77	3.10	
29.800	1330.77	1328.50	-2.27	
29.611	1326.07	1325.41	-0.66	
29.540	1325.67	1325.47	-0.20	
29.040	1316.68	1316.86	0.18	
28.950	1311.57	1311.51	-0.06	
28.670	1310.41	1310.88	0.47	
28.120	1303.84	1303.02	-0.82	
27.940	1298.80	1297.35	-1.45	
27.680	1289.88	1292.11	2.23	
27.480	1287.85	1289.07	1.22	
27.030	1281.88	1282.00	0.12	
26.730	1279.91	1279.87	-0.04	
26.630	1279.15	1278.72	-0.43	
26.290	1268.66	1268.54	-0.12	
25.940	1261.37	1260.33	-1.04	
25.860	1260.75	1260.53	-0.22	
25.666	1256.21	1256.56	0.35	
25.478	1252.91	1254.46	1.55	Jomax Road
24.996	1247.67	1248.42	0.75	
24.543	1235.93	1236.58	0.65	
24.449	1235.54	1235.89	0.35	Happy Valley Road
23.974	1228.11	1228.78	0.67	
23.692	1222.99	1223.34	0.35	
23.409	1215.74	1216.30	0.56	Pinnacle Peak Road
22.935	1211.35	1211.95	0.60	
22.745	1203.95	1205.25	1.30	
22.462	1198.64	1200.68	2.04	
22.177	1194.76	1194.63	-0.13	
21.893	1186.61	1186.40	-0.21	
21.431	1182.70	1183.00	0.30	
21.157	1177.08	1177.24	0.16	
21.061	1176.48	1176.54	0.06	Beardsley Road
20.958	1176.59	1176.71	0.12	
20.579	1171.79	1171.91	0.12	
19.920	1162.91	1162.15	-0.76	Union Hills Road

River Station	Existing Model THALWEG (ft)	Floodway Model THALWEG (ft)	Difference	Comments
19.446	1155.09	1156.16	1.07	
19.066	1148.53	1148.96	0.43	
18.962	1146.77	1146.66	-0.11	Bell Road
18.839	1144.20	1144.14	-0.06	
18.275	1130.43	1130.52	0.09	
17.821	1128.96	1129.22	0.26	
17.638	1127.08	1127.45	0.37	
17.458	1118.26	1118.42	0.16	
16.990	1111.09	1111.13	0.04	
16.612	1105.53	1105.34	-0.19	
16.506	1105.01	1104.84	-0.17	Grand Avenue
16.482	1104.95	1104.79	-0.16	
16.099	1100.90	1101.02	0.12	
15.719	1093.83	1093.93	0.10	Cactus Road - El Mirage Landfill
15.374	1092.26	1092.39	0.13	
15.094	1089.99	1089.99	0.00	
15.000	1087.44	1087.42	-0.02	
14.430	1079.84	1080.39	0.55	
13.952	1071.40	1071.77	0.37	
13.467	1064.98	1065.08	0.10	Olive Ave
13.007	1061.91	1061.93	0.02	
12.816	1058.70	1058.80	0.10	
12.470	1055.72	1055.97	0.25	
12.420	1056.49	1056.49	0.00	
12.359	1052.35	1052.37	0.02	
12.042	1045.73	1045.78	0.05	
11.847	1043.83	1044.25	0.42	
11.557	1041.22	1041.38	0.16	
11.428	1042.75	1042.79	0.04	Glendale Ave
11.029	1036.75	1036.81	0.06	
10.846	1032.12	1032.13	0.01	
10.752	1032.07	1032.09	0.02	
10.538	1031.53	1031.56	0.03	
10.343	1025.80	1025.83	0.03	
10.167	1023.84	1023.89	0.05	
9.885	1020.82	1020.79	-0.03	
9.696	1018.79	1018.83	0.04	D/S Glendale Airport
9.435	1015.29	1015.31	0.02	U/S Camelback Road
9.266	1013.76	1013.75	-0.01	
8.992	1006.91	1006.89	-0.02	
8.768	1006.27	1006.18	-0.09	
8.433	1004.93	1004.94	0.01	
8.198	1001.97	1002.19	0.22	
8.105	1001.38	1001.41	0.03	

River Station	Existing Model THALWEG (ft)	Floodway Model THALWEG (ft)	Difference	Comments
8.000	1001.42	1001.60	0.18	
7.990	1000.85	1001.09	0.24	Indian School Road
7.988	1000.92	1001.02	0.10	Grade control structure
7.490	994.81	994.85	0.04	
6.990	989.36	989.23	-0.13	
6.930	989.95	989.76	-0.19	
6.910	988.40	988.00	-0.40	
6.890	989.40	989.81	0.41	Grade control structure
6.888	990.24	989.72	-0.52	
6.820	984.13	984.16	0.03	
6.430	981.03	981.26	0.23	
6.070	977.71	977.75	0.04	Grade control structure
6.068	977.73	977.76	0.03	
5.900	976.00	976.03	0.03	
5.750	974.31	974.33	0.02	
5.689	975.08	975.09	0.01	McDowell Road
5.380	970.81	970.83	0.02	
5.290	971.12	971.10	-0.02	
5.203	970.32	970.17	-0.15	Grade control structure
5.201	969.10	969.10	0.00	
5.150	963.81	962.86	-0.95	
4.790	963.71	963.97	0.26	
4.754	964.06	964.22	0.16	
4.700	962.46	962.65	0.19	
4.300	959.38	959.48	0.10	
4.094	958.74	958.63	-0.11	Grade control structure
4.092	955.20	955.20	0.00	
3.767	951.66	952.02	0.36	
3.757	951.45	951.79	0.34	
3.734	951.74	952.14	0.40	
3.729	951.46	951.80	0.34	
3.430	946.34	946.53	0.19	
3.370	944.98	944.91	-0.07	
3.270	945.68	945.79	0.11	
2.800	941.60	941.61	0.01	
2.600	938.23	938.07	-0.16	
2.020	931.31	931.33	0.02	
1.710	927.92	928.03	0.11	
1.330	922.01	922.00	-0.01	
1.250	922.50	922.62	0.12	
1.170	921.66	921.84	0.18	
1.100	919.43	921.86	2.43	
1.010	919.15	919.94	0.79	
0.730	915.91	916.21	0.30	
0.630	914.31	914.48	0.17	
0.440	912.49	912.77	0.28	
0.160	908.30	908.65	0.35	Gila River confluence

Figure 10.4. Channel Bed Thalweg Profiles End of 100-Year Hydrology.

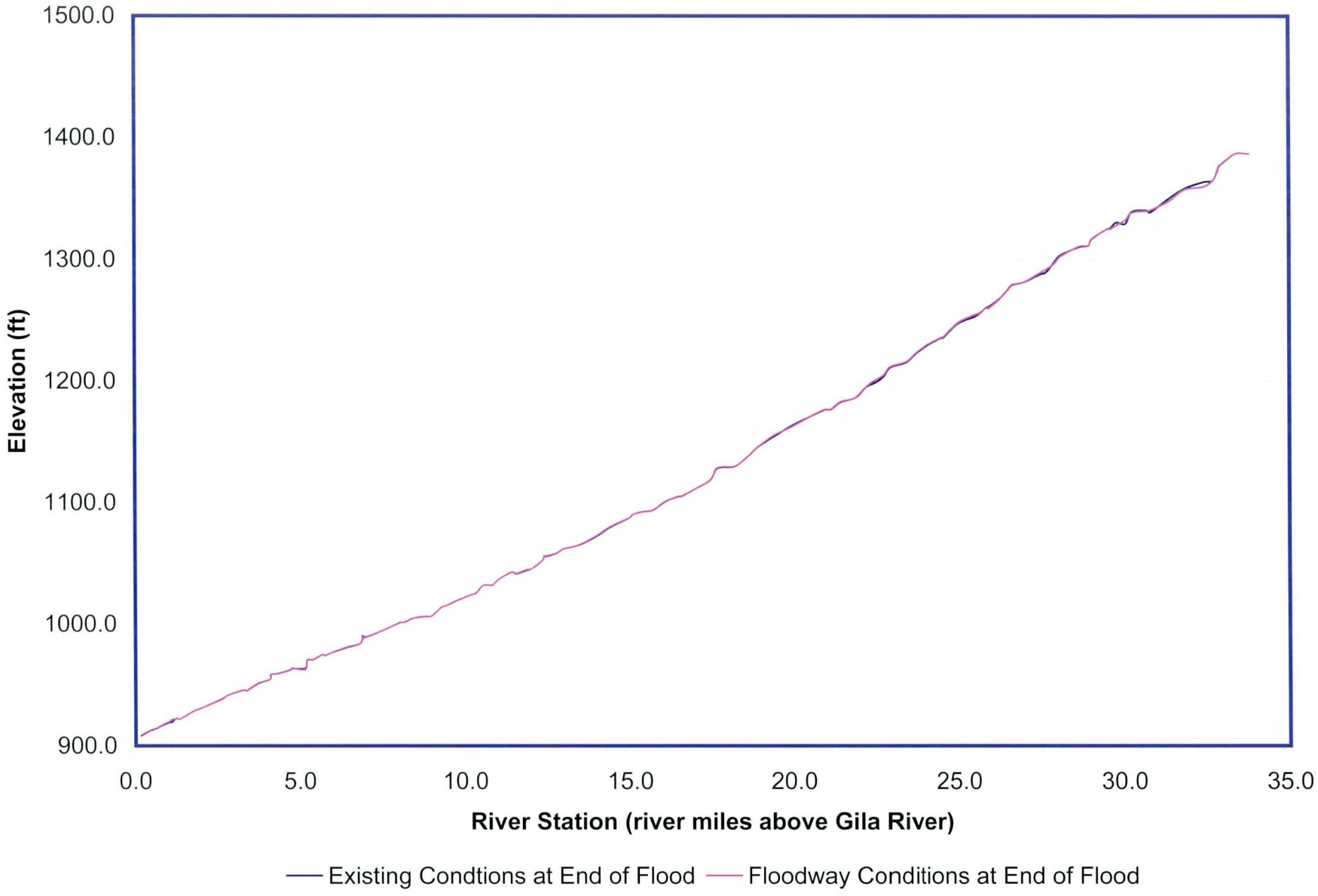


Table 10.5. Channel Bed Thalweg at End of 100-Year Hydrograph (Existing vs. Floodway).

River Station	Existing Model THALWEG (ft)	Floodway Model THALWEG (ft)	Difference (ft)	Comments
33.820	1386.96	1386.93	-0.03	
33.410	1387.03	1387.03	0.00	
32.998	1378.96	1378.86	-0.10	Morgan City Wash
32.984	1378.42	1378.42	0.00	State Rte 74
32.920	1377.14	1376.45	-0.69	
32.860	1372.80	1372.02	-0.78	
32.720	1365.12	1365.04	-0.08	
32.430	1363.83	1359.98	-3.85	
31.860	1358.46	1357.54	-0.92	
31.390	1350.51	1348.28	-2.23	
30.820	1339.05	1340.62	1.57	
30.730	1340.63	1340.09	-0.54	
30.260	1339.52	1338.75	-0.77	
30.070	1329.67	1332.82	3.15	
29.800	1330.77	1328.57	-2.20	
29.611	1326.07	1325.40	-0.67	
29.540	1325.67	1325.47	-0.20	
29.040	1316.68	1316.81	0.13	
28.950	1311.57	1311.55	-0.02	
28.670	1310.41	1310.81	0.40	
28.120	1303.84	1302.95	-0.89	
27.940	1298.80	1297.36	-1.44	
27.680	1289.88	1292.08	2.20	
27.480	1287.85	1289.03	1.18	
27.030	1281.88	1282.01	0.13	
26.730	1279.91	1279.90	-0.01	
26.630	1279.15	1278.61	-0.54	
26.290	1268.66	1268.48	-0.18	
25.940	1261.37	1260.23	-1.14	
25.860	1260.75	1260.57	-0.18	
25.666	1256.21	1256.63	0.42	
25.478	1252.91	1254.43	1.52	Jomax Road
24.996	1247.67	1248.42	0.75	
24.543	1235.93	1236.57	0.64	
24.449	1235.54	1235.89	0.35	Happy Valley Road
23.974	1228.11	1228.77	0.66	
23.692	1222.99	1223.29	0.30	
23.409	1215.74	1216.31	0.57	Pinnacle Peak Road
22.935	1211.35	1212.02	0.67	
22.745	1203.95	1205.26	1.31	
22.462	1198.64	1200.59	1.95	
22.177	1194.76	1194.67	-0.09	
21.893	1186.61	1186.30	-0.31	
21.431	1182.70	1183.16	0.46	
21.157	1177.08	1177.23	0.15	
21.061	1176.48	1176.73	0.25	Beardsley Road
20.958	1176.59	1176.73	0.14	
20.579	1171.79	1171.90	0.11	
19.920	1162.91	1162.16	-0.75	Union Hills Road
19.446	1155.09	1156.15	1.06	
19.066	1148.53	1148.95	0.42	
18.962	1146.77	1146.63	-0.14	Bell Road
18.839	1144.20	1144.09	-0.11	
18.275	1130.43	1130.53	0.10	
17.821	1128.96	1129.30	0.34	
17.638	1127.08	1127.43	0.35	
17.458	1118.26	1118.41	0.15	
16.990	1111.09	1111.30	0.21	
16.612	1105.53	1105.40	-0.13	
16.506	1105.01	1104.91	-0.10	Grand Avenue
16.482	1104.95	1104.79	-0.16	
16.099	1100.90	1100.88	-0.02	
15.719	1093.83	1093.88	0.05	Cactus Road - El Mirage Landfill
15.374	1092.26	1092.41	0.15	
15.094	1089.99	1090.00	0.01	
15.000	1087.44	1087.42	-0.02	
14.430	1079.84	1080.35	0.51	
13.952	1071.40	1071.47	0.07	
13.467	1064.98	1065.12	0.14	Olive Ave
13.007	1061.91	1062.10	0.19	
12.816	1058.70	1058.75	0.05	
12.470	1055.72	1055.76	0.04	
12.420	1056.49	1055.76	-0.73	
12.359	1052.35	1052.66	0.31	
12.042	1045.73	1046.14	0.41	
11.847	1043.83	1044.33	0.50	
11.557	1041.22	1041.94	0.72	
11.428	1042.75	1042.80	0.05	Glendale Ave
11.029	1036.75	1036.72	-0.03	
10.846	1032.12	1032.30	0.18	
10.752	1032.07	1032.12	0.05	
10.538	1031.53	1031.46	-0.07	
10.343	1025.80	1025.93	0.13	
10.167	1023.84	1023.91	0.07	
9.885	1020.82	1020.75	-0.07	
9.696	1018.79	1018.77	-0.02	D/S Glendale Airport
9.435	1015.29	1015.31	0.02	U/S Camelback Road
9.266	1013.76	1013.67	-0.09	
8.992	1006.91	1006.80	-0.11	
8.768	1006.27	1006.19	-0.08	
8.433	1004.93	1004.94	0.01	
8.198	1001.97	1002.15	0.18	
8.105	1001.38	1001.31	-0.07	
8.000	1001.42	1001.39	-0.03	
7.990	1000.85	1001.13	0.28	Indian School Road
7.988	1000.92	1001.05	0.13	Grade control structure
7.490	994.81	994.82	0.01	
6.990	989.36	989.18	-0.18	
6.930	989.95	989.68	-0.27	
6.910	988.40	988.71	0.31	
6.890	989.40	989.43	0.03	Grade control structure
6.888	990.24	989.41	-0.83	
6.820	984.13	984.16	0.03	
6.430	981.03	981.25	0.22	
6.070	977.71	977.77	0.06	Grade control structure
6.068	977.73	977.77	0.04	
5.900	976.00	976.01	0.01	
5.750	974.31	974.33	0.02	
5.689	975.08	975.04	-0.04	McDowell Road
5.380	970.81	970.81	0.00	
5.290	971.12	971.15	0.03	
5.203	970.32	970.01	-0.31	Grade control structure
5.201	969.10	969.10	0.00	
5.150	963.81	962.81	-1.00	
4.790	963.71	963.94	0.23	
4.754	964.06	964.41	0.35	
4.700	962.46	962.75	0.29	
4.300	959.38	959.51	0.13	
4.094	958.74	958.51	-0.23	Grade control structure
4.092	955.20	955.20	0.00	
3.767	951.66	952.00	0.34	
3.757	951.45	951.80	0.35	
3.734	951.74	951.63	-0.11	
3.729	951.46	951.79	0.33	
3.430	946.34	946.84	0.50	
3.370	944.98	945.15	0.17	
3.270	945.68	945.78	0.10	
2.800	941.60	941.59	-0.01	
2.600	938.23	938.03	-0.20	
2.020	931.31	931.37	0.06	
1.710	927.92	927.99	0.07	
1.330	922.01	921.89	-0.12	
1.250	922.50	922.85	0.35	
1.170	921.66	921.73	0.07	
1.100	919.43	921.67	2.24	
1.010	919.15	919.93	0.78	
0.730	915.91	916.23	0.32	
0.630	914.31	914.47	0.16	
0.440	912.49	912.70	0.21	
0.160	908.30	908.89	0.59	Gila River confluence

SECTION 11 DEVELOPMENT OF HEC-6 GRADE CONTROL STRUCTURE SEDIMENT TREND MODEL

SEDIMENT TREND ANALYSIS REPORT
AGUA FRIA WATERCOURSE MASTER PLAN
KHA Project No. 091131004

11. DEVELOPMENT OF HEC- 6 GRADE CONTROL STRUCTURE SEDIMENT TREND MODEL

This section of the report documents the impacts of four proposed grade control structures on the bed elevation profile of the Agua Fria River (from primarily upstream of Olive Avenue to the New Estrella Parkway). The effects of the proposed grade controls were examined with the use of the Corps of Engineers computer model HEC-6 "Scour and Deposition of Rivers and Reservoirs" (HEC-6 Fixed95). The downstream limit of the study is located at the confluence of the Agua Fria River with the Gila River. The upstream limit of the study is located just below New Waddell Dam. The length of the study is approximately 34 river miles.

Purpose: The purpose of this segment of the Watercourse Master Plan sediment trend analysis was to evaluate the impact of proposed grade control structures on the river bed response and to assist in the selection and recommendation of the locations of proposed grade control structures.

Approach: KHA prepared under a previous memorandum (Technical Memorandum No. 7) an encroached floodway HEC-6 model titled "Ench.dat" (see Section 10 of this report). The purpose of developing a HEC-6 model of the Agua Fria River that encroached to the regulatory floodway limits was to examine the effects on the bed profile of a potential alternative future policy for encroachment on the river. The policy would potentially allow use of the floodplain and floodplain fringe and exclude sand and gravel extraction activity within the regulatory floodway.

The results of the HEC-6 encroachment model (summarized in Technical Memorandum No. 7 and in Section 10 of this report) indicate that the Agua Fria River may be encroached to the FIS floodway limits without significant impacts on sediment transport and bed elevations above those demonstrated under existing conditions. Encroachment, however, should be examined in more detail on a reach by reach basis of the river. Encroachment may not be warranted to the limits of the FIS floodway in the upper reach (upstream of river station 31+00) of the river due to the predicted depths of degradation and the close proximity of important existing or proposed infrastructure.

The findings of Technical Memorandum No. 7, previous Technical Memorandums, and the "Lateral Migration Report for the Agua Fria River" by JEFuller Hydrology and Geomorphology indicate that there may still be a need, on a case by case basis, for stabilization of the river bed profile and/or bank stabilization. Riverbed stabilization may take the form of grade control structures and are typically located downstream/upstream of sand and gravel mines and/or at or near bridged river crossings.

This section summarizes the results of the sediment trend analysis that includes four proposed grade control structures. Note that KHA previously prepared and submitted Technical Memorandum No. 8 (October 1, 2001). Memorandum No. 8 summarized the study of three proposed grade control structures. Since the development of the Memorandum No. 8 KHA has added one additional proposed grade control and updated the HEC-6 models for this Section. The present discussion includes all four proposed grade control structures.

KHA prepared two HEC-6 models under this portion of the sediment trend analysis. The first model is an updated encroachment model titled "Enchadd.dat". The base model for

the Enchadd.dat model is the encroachment model discussed in Section 10 (Ench.dat). Additional cross sections were added in the Enchadd.dat model to model the locations of the crests of the grade control structures. The bed sediment reservoir depth at the grade control locations were set to 10 feet for the conditions of this model (same as the encroachment model). The Enchadd.dat model is used to locate proposed grade controls but not to simulate the grade control as fixed elevations in the riverbed.

The second HEC-6 model, "Enchgcs.dat", accomplishes the step of fixing the crest elevation of the grade control structures. This is done by specifying a zero depth of the sediment bed reservoir on the HD record. The crest elevations of the four grade controls were approximated based on examination of the existing channel cross sections, low points in the channel cross section, and the channel slope and energy slope of the river at the grade control locations. The grade control crests are modeled as 10-ft wide and each structure spans the entire width of the floodway encroachment. Each grade control crest is modeled with two cross-sections each, one on the upstream sill and one on the downstream sill. The depth of sediment reservoir at each grade control structure was set to zero depth in the HEC-6 Enchgcs.dat model. A summary of the proposed grade control structures is provided in Table 11-1.

Table 11.1. Summary of Proposed Grade Control Structures.

Proposed Grade Control Structure Location	HEC-6 River Stations	HEC-6 Model Crest Elevation (Ft)
Downstream of New Estrella Parkway	24.544 24.534	1239.0
Upstream Of Beardsley Rd	21.894 21.893	1191.0
Downstream Of Bell Road	18.962 18.963	1147.0
Downstream Of Olive Avenue	13.396 13.395	1066.0

The HEC-6 proposed grade control model is titled "Enchgcs.dat". The four grade control structures are located at river station 13.395 (downstream of Olive Avenue), river station 18.962 (Bell Road), river station 21.893 (upstream of Rose Garden lane and a large in-stream sand and gravel operation), and at river station 24.543 (downstream of the proposed New Estrella Parkway). These grade control structure locations were selected for investigation after joint discussions and concurrence with JE Fuller Hydrology and Geomorphology, the consulting firm responsible for the geomorphic and lateral migration analysis and investigation of the river.

The grade control located at river station 13.395 is downstream of Olive Avenue Bridge and upstream of a major sand and gravel operation. The purpose of the grade control is to help stabilize the invert of the channel upstream of the grade control and to arrest potential headcuts from the sand and gravel mine that may develop over time or during a

major flood event. There is one identified existing headcut in the river channel just downstream of the Olive Avenue Bridge (see Figure 11.1).

The grade control located at river station 18.962 is downstream of Bell Road Bridge and upstream of several identified headcuts in the Agua Fria River. There is an existing sand and gravel mine located in the left overbank area (floodplain fringe) between Bell Road and Greenway Road. The purpose of the grade control is to help stabilize the invert of the channel upstream of the grade control and to arrest the existing headcuts and potential headcuts from the sand and gravel mine that may develop over time or during a major flood event (see Figure 11.2).

The grade control located at river station 21.893 is located upstream of Rose Garden Lane about ½ mile downstream of Deer Valley Road. The grade control is located upstream of an existing large in-stream sand and gravel operation. The purpose of the grade control is to arrest potential headcuts from the mine and to stabilize the invert of the river channel. Three headcuts have been located in the river channel at Deer Valley Road alignment (see Figure 11.3). These headcuts are discussed in a separate Lateral Migration Report for the Agua Fria River Watercourse Master Plan.

The fourth grade control is located just downstream of the proposed New Estrella Parkway, which is approximately at Happy Valley Road. The new roadway will cross the river at this location. The purpose of the grade control is to stabilize the river invert upstream of the grade control, which in turn could benefit the Parkway Bridge foundation. There is an identified existing headcut approximately ¼ mile upstream of the Pinnacle Peak Road alignment that could potentially promulgate over time towards the proposed bridge location. There is also a large sand and gravel mine approximately ½ mile downstream of the proposed grade control structure location and located on the east side of the river channel. The mine is within the floodplain limits of the Agua Fria River (see Figure 11.4).

Interpretation: The two models Enchadd.dat and Enchgcs.dat were executed and results reviewed. Several tables and figures have been prepared and are used to visually and graphically summarize the results of the sediment trend analysis evaluation of the impact of the proposed grade control structures (Enchgcs.dat).

Figures 11.1 through 11.4 present the locations of the four proposed grade control structures.

Figures 11.5 and 11.6 presents the riverbed channel thalweg and bed elevation change, respectively, during the project hydrology for the Enchadd.dat model (revised encroachment model that includes added cross sections for the proposed grade control structures). The results of the Enchadd model will be used to compare with the results of the Enchgcs model. Changes in thalweg elevations are evaluated between the two models later in this section (see Tables 11.8 and 11.9).

Tables 11.2 and 11.3 presents the riverbed channel thalweg and bed elevation change, respectively, during the project hydrology for the Enchadd.dat model. This is the tabular data used to prepare Figures 11.5 and 11.6. These tables will be used to compare peak and end of 100-year hydrograph bed elevations and bed elevation changes with the proposed grade control model later in this section.

Review of Figure 11.6 and Table 11.3 (updated encroachment model results) indicates that the average range of aggradation and deposition for the Agua Fria River under encroachment conditions is from zero feet to plus or minus three feet. This is the same result that was observed in the original encroachment model (Ench.dat: see Section 10). There is a notable exception, however, at river station 13.396 where the degradation was estimated at 9.3-ft. Table 11.3 indicates that this depth is mainly attained during the 9,000 cfs flow (at hydrology day 15) with a maximum of 9.7-feet and a recovery back to 9.3-ft at the end of the 100-year hydrograph. This river station is located downstream of the Olive Avenue Bridge and is one of the river stations that was added to the updated encroachment model. Further discussion of the proposed grade control downstream of the Olive Avenue Bridge is presented later in this section.

Figures 11.7 and 11.8 presents the riverbed channel thalweg and bed elevation change, respectively, during the project hydrology for the Enchgcs.dat model (proposed grade control structures model). The results of the Enchgcs model will be used to compare with the results of the Enchadd model later in this section. Review of Figure 11.8 indicates that the average bed elevation change (aggradation or deposition) for the Agua Fria River under grade control structure conditions is from zero feet to plus or minus three feet. The exception is the river reach upstream of river station 31+00. The bed degradation in this reach has attained a maximum degradation of 6-plus feet. The majority of the degradation is attributable to the 30-days of 9,000 cfs flow rather that the 100-year flood event (for the project hydrology simulation). The aggradation/degradation pattern exhibited as a result of the Enchgcs model is of a similar pattern exhibited in the enroachment models (Ench.dat and Enchadd.dat).

Tables 11.4 and 11.5 presents the riverbed channel thalweg and bed elevation change, respectively, during the project hydrology for the Enchgcs.dat model. This is the tabular data used to prepare Figures 11.7 and 11.8. These tables will be used to compare peak and end of 100-year hydrograph bed elevations and bed elevation changes with the revised encroachment model later in this section of the report.

In order to make a valid comparison of the Enchadd model (revised encroachment model) with the Enchgcs model (grade control model) KHA made a comparison of the original encroachment model results (from Ench.dat in Section 10) with the revised encroachment model. Tables 11.6 and 11.7 provide a comparison of the peak and end of 100-year hydrology, respectively, between the original encroachment model (Ench.dat) and the revised encroachment model (Enchadd.dat) for the channel bed thalweg. Figures 11.9 and 11.10 present charts of the comparison of the peak and end of 100-year hydrology, respectively, between the original encroachment model (Ench.dat) and the revised encroachment model (Enchadd.dat) for the channel bed thalweg.

Examination of Tables 11.6 and 11.7 indicate a very close relationship of the bed thalweg elevations for the peak and end of hydrology simulations, respectively, between the original and revised encroachment models. Therefore, based on this comparison, the revised encroachment model is a considered valid for the purposes of this study and for further evaluation of the proposed grade control HEC-6 model.

Tables 11.8 and 11.9 presents the river bed thalweg elevations for the peak and end of hydrology simulation, respectively, for the revised HEC-6 encroachment model (Enchadd.dat) and the HEC-6 grade control model (Enchgcs.dat). Figures 11.11 and

11.12 present the riverbed profiles for the peak and end of hydrology simulation, respectively, for the revised HEC-6 encroachment model (Enchadd.dat) and the HEC-6 grade control model (Enchgcs.dat). Observation of the tabular results indicates that the proposed grade control structures have aggraded locally at the structures. The largest difference is exhibited at the proposed grade control at Olive Avenue. There is an aggradation of approximately 5.8-feet at this location. At the other three grade control structure locations, the grade controls have aggraded the river channel locally (see Table 11.8 and 11.9).

At the Olive Avenue grade control structure location (Station 13.395), the HEC-6 encroachment model (Enchadd.dat) indicated a degradation of 9.3-feet (end of hydrology bed elevation 1063.75-ft: see Table 11.2 and 11.3). The HEC-6 grade control model indicated that at this location the river channel would aggrade to 2.8 feet (see Table 11.5) above existing conditions. It should be noted that the grade control structures in the HEC-6 grade control model are allowed to have local aggradation but not degradation. The grade control model "Enchgcs.dat" modeled the sediment reservoir depth at the grade controls for a depth of zero feet. The grade control at Olive Avenue appears to be warranted due to the change from minus 9.3 feet to plus 2.8 feet, considering the close proximity of the bridge, the downstream sand and gravel mine, the relatively narrower river channel in this reach of the river, and the existing headcut just downstream of the bridge.

The grade control structure at Bell Road (river station 18+962) appears not to be warranted at this time from interpretation of the HEC-6 results. From examination of Table 11.3 the encroachment model indicates local aggradation at the Bell Road proposed grade control location. Table 11.5 also indicates local aggradation at the proposed grade control location at Bell Road. However, due to the extensive in-channel mining downstream, a potential headcut could occur which could propagate upstream in a flood event. The HEC-6 encroachment and grade control model indicates minor aggradation to occur at the proposed the Bell Road grade control structure location.

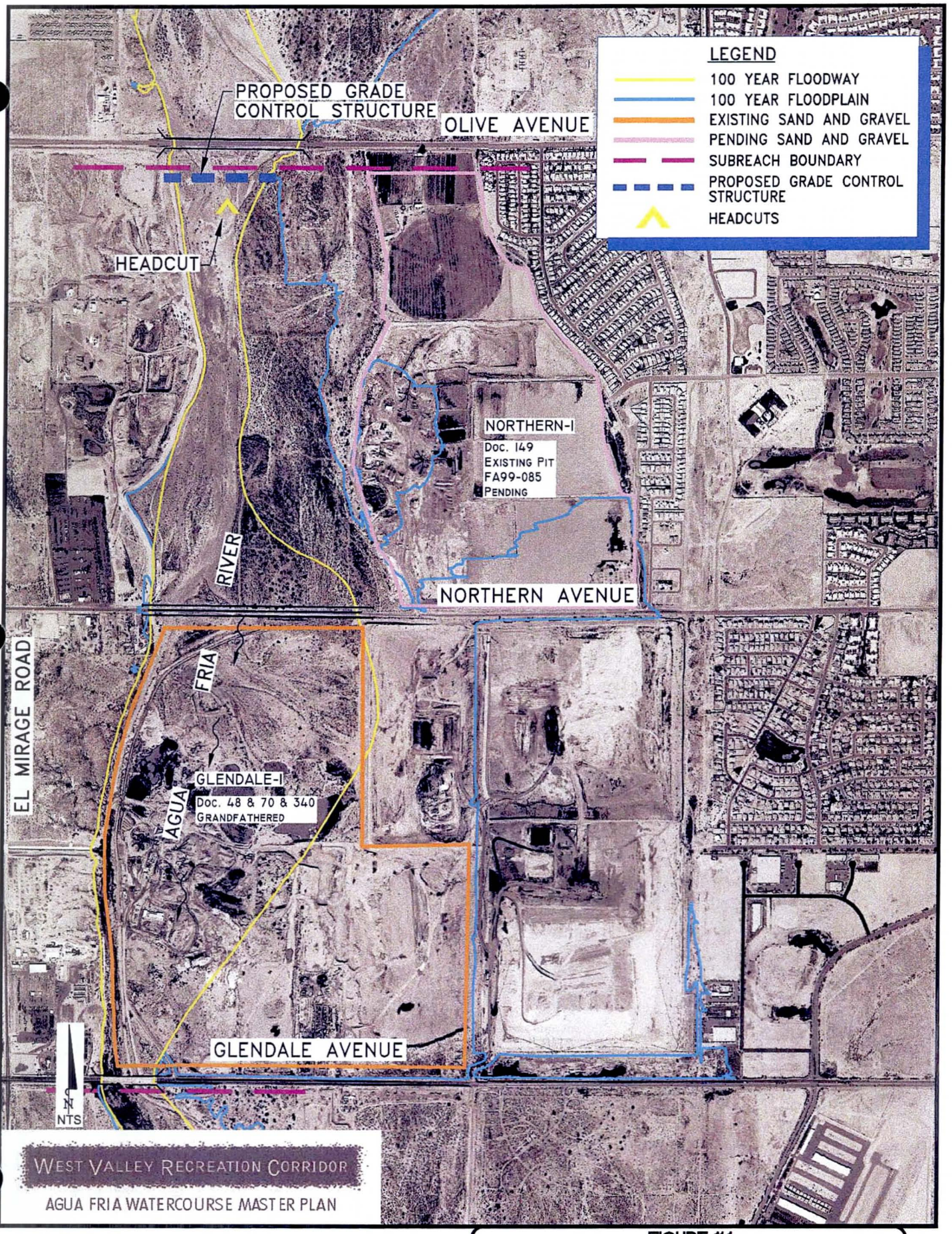
Table 11.3 indicates that the river will degrade at river station 21.893 (Rose Garden Lane grade control structure location) approximately 1.0 to 1.2-ft locally under project hydrology simulation. The grade control model results indicate slight aggradation at this location (see Table 11.5). The grade control structure location (Station 21.893) at Rose Garden appears to be feasible based on strict interpretation of the HEC-6 results. However, providing a grade control structure for a local river degradation of 1.2-ft under the hydrology simulation (30-days of 9,000-cfs followed by the 100-year flood) conditions appears unwarranted at this time. But, due to the extensive in-channel mining downstream, a potential headcut could occur which could propagate upstream during a flood event. Field evidence upstream of the proposed grade control indicates the existence of several headcuts. It is recommended at this time that the District monitor and inspect the river at this location after flood events and observer for propagation of headcuts.

Both the encroachment model and the grade control model indicates that aggradation would occur at the proposed grade control at Station 24.543 (Happy Valley Road or the New Estrella Parkway location). The aggradation would occur to a deposition depth of approximately 2.0 feet (see Table 11.5). Based on the results of the HEC-6 models, a grade control at this location may not be warranted at this time. However, due to the close proximity of an existing headcut and a large downstream sand and gravel mine,

stabilization or scour countermeasures may still be warranted for the proposed new bridge.

Conclusions: At this time, as a result of the HEC-6 analysis, based on the policy of enroachment to the floodway limits, one grade control structure appears to be warranted (Olive Avenue grade control structure). Stabilization or scour countermeasures are recommended at the proposed New Estrella Parkway. Monitoring and inspection are recommended for the river channel in the vicinity of Bell Road and Rose Garden Lane after flood events. These monitoring activities should take the form of estimating the rate of headcut propagation and dimensions of headcuts that form. Monitoring should include taking the form of review of time sequence aerial photographs of the river channel and ground inspections. Distance measurements of the upstream end of the headcut to infrastructure should be recorded on an annual basis.

Note that this grade control analyses was based on the policy of encroachment to the floodway limits (see Section 10 of this report). If this policy in not promulgated by future District actions, the recommendations for grade control structures under this section may need to be expanded considerably. More local detailed analyses are recommended for design purposes of proposed river channel and bank stabilization measures.



WEST VALLEY RECREATION CORRIDOR

AGUA FRIA WATERCOURSE MASTER PLAN

FIGURE 11.1
GRADE CONTROL STRUCTURE AT OLIVE AVENUE
GLENDALE AVENUE TO OLIVE AVENUE

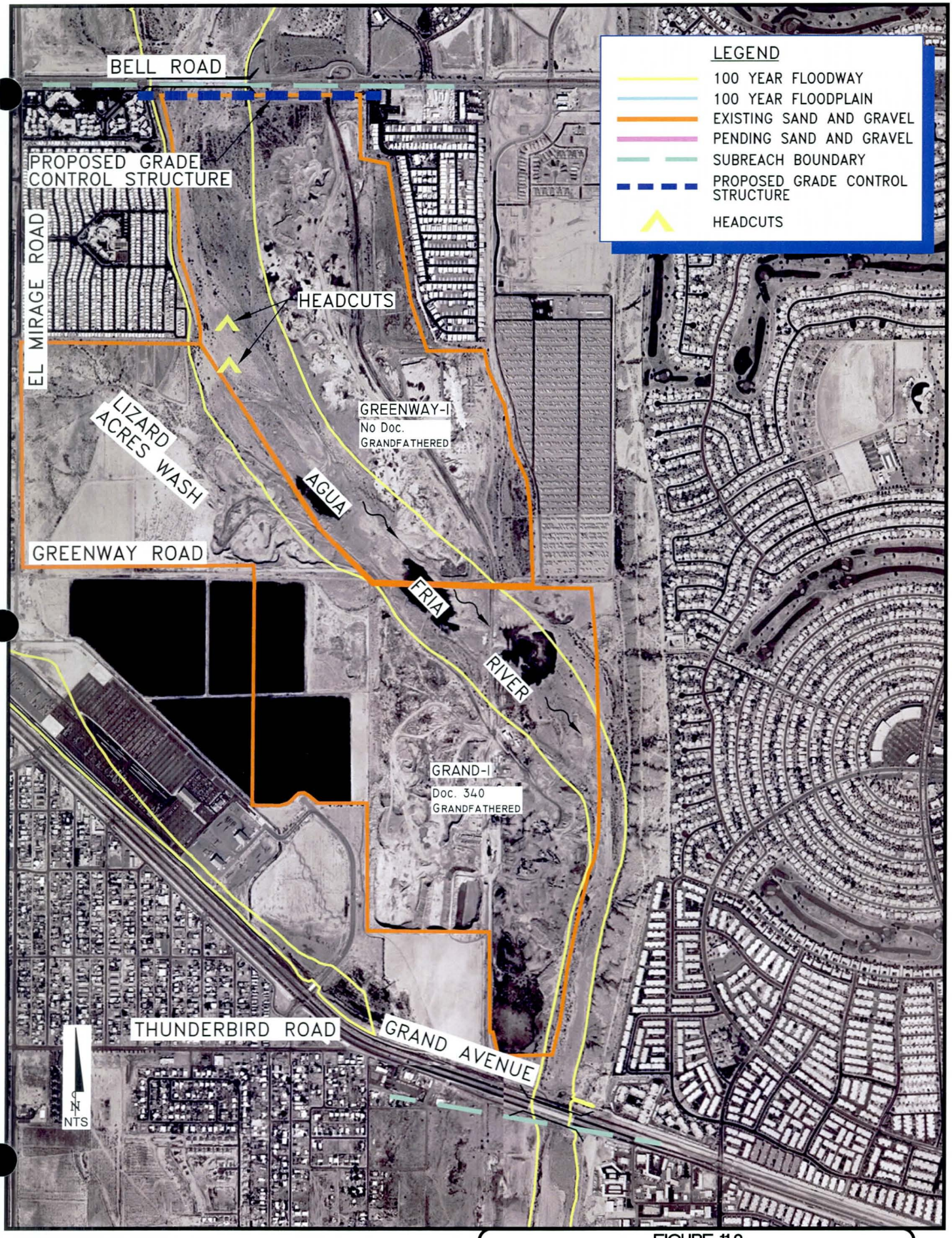
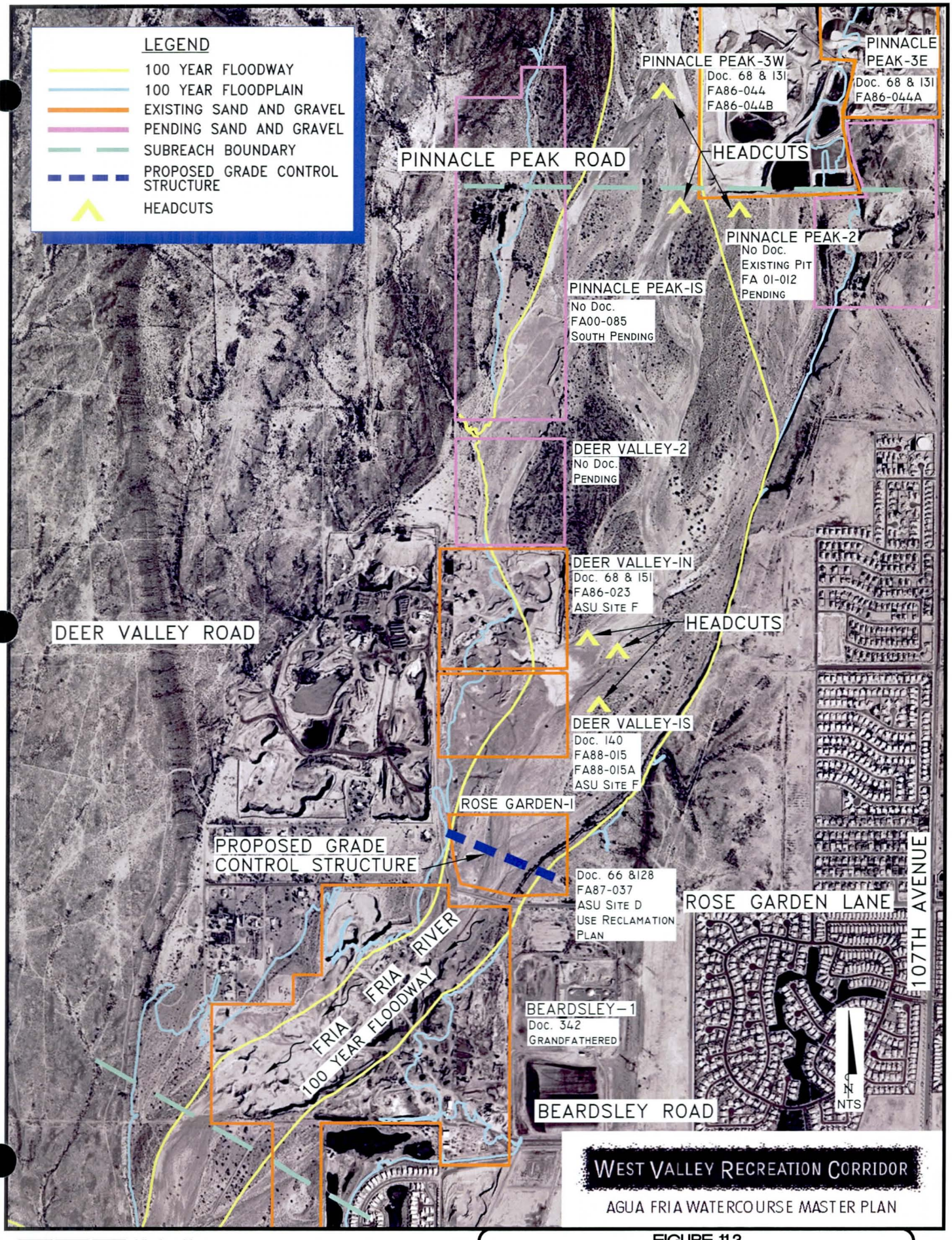


FIGURE 11.2
GRADE CONTROL STRUCTRE AT BELL ROAD
GRAND AVENUE TO BELL ROAD



WEST VALLEY RECREATION CORRIDOR

AGUA FRIA WATERCOURSE MASTER PLAN

FIGURE 11.3
GRADE CONT STRUCTURE AT ROSE GARDEN LN
BEARDSLEY ROAD TO PINNACLE PEAK ROAD

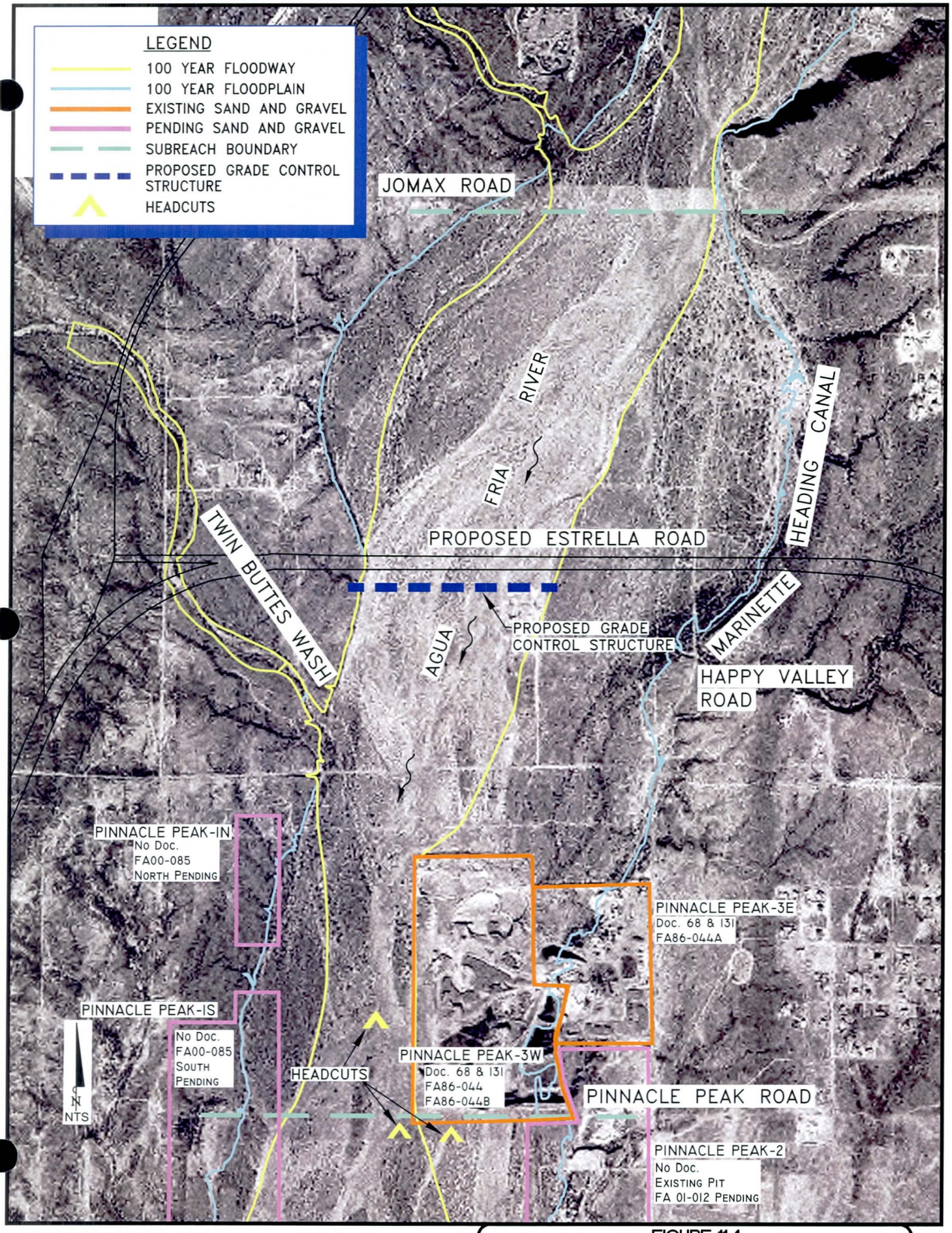


FIGURE 11.4
GRADE CONTROL STRUCTURE AT ESTRELLA RD
PINNACLE PEAK ROAD TO JOMAX ROAD

Figure 11.5 Channel Bed Thalweg During Flood Hydrology
(Enchadd.dat)

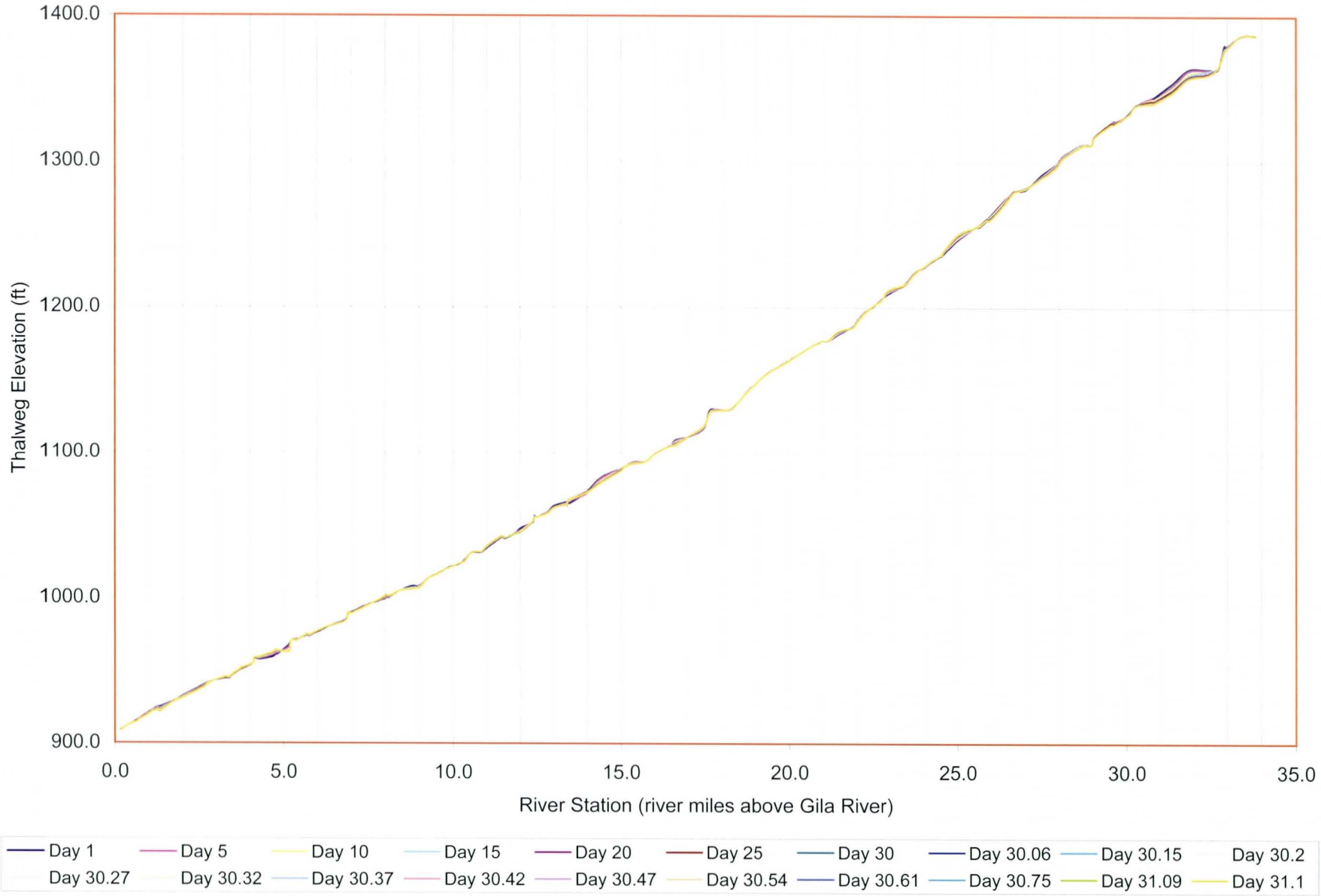


Figure 11.6. Bed Elevation Change During Flood Hydrology
(Enchadd.dat)

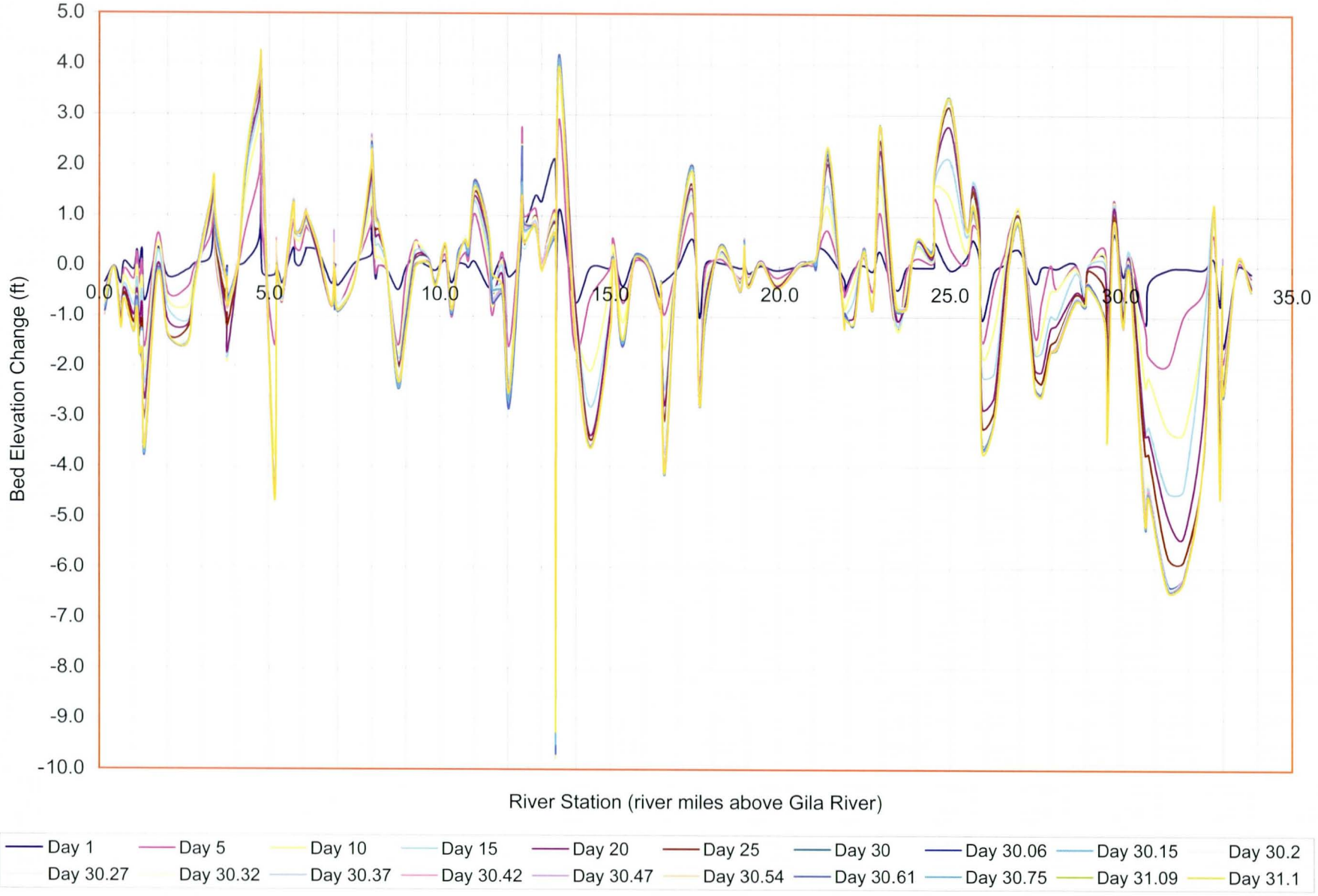


Table 11.2. Channel Bed Thalweg During Flood Hydrology
(Enchadd.dat)

Hydrograph Day / SECTION NUMBER	Day 1 THALWEG (ft)	Day 5 THALWEG (ft)	Day 10 THALWEG (ft)	Day 15 THALWEG (ft)	Day 20 THALWEG (ft)	Day 25 THALWEG (ft)	Day 30 THALWEG (ft)	Day 30.06 THALWEG (ft)	Day 30.15 THALWEG (ft)	Day 30.2 THALWEG (ft)	Day 30.27 THALWEG (ft)	Day 30.32 THALWEG (ft)	Day 30.37 THALWEG (ft)	Day 30.42 THALWEG (ft)	Day 30.47 THALWEG (ft)	Day 30.54 THALWEG (ft)	Day 30.61 THALWEG (ft)	Day 30.75 THALWEG (ft)	Day 31.09 THALWEG (ft)	Day 31.1 THALWEG (ft)	Grade Control Location
33.820	1387.27	1387.19	1387.12	1387.06	1387.01	1386.97	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.92	1386.92	1386.92	1386.92	1386.93	1386.93	1386.93	
33.410	1386.89	1386.94	1386.98	1387.00	1387.01	1387.02	1387.02	1387.02	1387.03	1387.03	1387.02	1387.01	1387.01	1387.01	1387.01	1387.01	1387.03	1387.03	1387.03	1387.03	
32.998	1379.79	1379.49	1379.28	1379.11	1378.99	1378.92	1378.85	1378.85	1378.89	1378.86	1378.81	1378.81	1378.80	1378.80	1378.79	1378.79	1378.81	1378.83	1378.86	1378.86	
32.984	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.40	1378.41	1378.48	1378.42	1378.51	1378.42	1378.57	1378.41	1378.41	1378.40	1378.40	1378.42	
32.920	1380.24	1377.81	1377.44	1377.09	1376.91	1376.69	1376.52	1376.52	1376.49	1376.53	1376.50	1376.54	1376.53	1376.57	1376.49	1376.55	1376.50	1376.49	1376.46	1376.46	
32.860	1374.35	1373.65	1373.38	1372.74	1372.54	1372.24	1372.08	1372.06	1372.03	1372.00	1372.00	1372.00	1372.01	1372.02	1372.03	1372.03	1372.03	1372.03	1372.03	1372.03	
32.720	1363.95	1364.42	1364.71	1364.92	1364.99	1365.03	1365.05	1365.06	1365.06	1365.06	1365.05	1365.02	1365.02	1365.02	1365.01	1365.01	1365.02	1365.03	1365.03	1365.04	
32.430	1363.76	1363.33	1362.58	1362.57	1360.89	1359.93	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.98	1359.99	1359.99	
31.860	1363.77	1362.82	1360.51	1359.36	1358.44	1357.96	1357.63	1357.63	1357.63	1357.63	1357.63	1357.63	1357.63	1357.62	1357.60	1357.57	1357.56	1357.55	1357.53	1357.53	
31.390	1354.65	1352.75	1351.46	1350.22	1349.72	1348.93	1348.37	1348.36	1348.34	1348.33	1348.31	1348.29	1348.29	1348.29	1348.29	1348.28	1348.27	1348.26	1348.24	1348.24	
30.820	1344.88	1343.43	1343.01	1342.02	1341.85	1341.47	1340.89	1340.89	1340.89	1340.89	1340.89	1340.87	1340.81	1340.74	1340.69	1340.67	1340.66	1340.65	1340.62	1340.62	
30.730	1344.06	1343.96	1342.82	1341.92	1341.84	1341.46	1340.77	1340.77	1340.77	1340.77	1340.68	1340.57	1340.37	1340.17	1340.07	1340.03	1340.02	1340.05	1340.08	1340.08	
30.260	1339.00	1339.18	1339.19	1339.17	1339.04	1338.90	1338.79	1338.79	1338.79	1338.79	1338.81	1338.83	1338.87	1338.90	1338.92	1338.91	1338.86	1338.81	1338.77	1338.77	
30.070	1333.82	1333.36	1333.19	1333.16	1333.01	1332.90	1332.78	1332.78	1332.78	1332.77	1332.77	1332.78	1332.78	1332.79	1332.79	1332.80	1332.82	1332.83	1332.82	1332.82	
29.800	1328.34	1329.02	1328.97	1328.93	1328.86	1328.70	1328.51	1328.51	1328.51	1328.51	1328.50	1328.51	1328.51	1328.52	1328.52	1328.51	1328.53	1328.55	1328.57	1328.57	
29.611	1327.91	1327.35	1326.70	1326.51	1326.31	1326.03	1325.46	1325.46	1325.45	1325.45	1325.44	1325.43	1325.43	1325.44	1325.44	1325.45	1325.45	1325.44	1325.43	1325.43	
29.540	1326.89	1327.04	1326.91	1326.76	1326.62	1326.23	1325.62	1325.62	1325.59	1325.59	1325.58	1325.57	1325.57	1325.57	1325.57	1325.57	1325.57	1325.57	1325.57	1325.57	
29.040	1317.21	1317.20	1317.23	1317.25	1317.20	1317.14	1316.81	1316.80	1316.80	1316.80	1316.83	1316.84	1316.86	1316.88	1316.90	1316.90	1316.87	1316.83	1316.81	1316.81	
28.950	1311.59	1311.70	1311.73	1311.75	1311.70	1311.63	1311.50	1311.50	1311.53	1311.50	1311.50	1311.50	1311.51	1311.52	1311.52	1311.51	1311.50	1311.53	1311.55	1311.55	
28.670	1311.56	1311.53	1311.47	1311.38	1310.99	1310.94	1310.90	1310.90	1310.90	1310.90	1310.89	1310.88	1310.87	1310.85	1310.84	1310.82	1310.82	1310.82	1310.80	1310.79	
28.120	1304.57	1304.17	1304.15	1303.59	1303.45	1303.16	1303.09	1303.09	1303.09	1303.09	1303.07	1303.06	1303.04	1303.01	1302.98	1302.95	1302.95	1302.96	1302.97	1302.97	
27.940	1299.10	1299.14	1298.60	1298.12	1297.86	1297.54	1297.39	1297.39	1297.39	1297.39	1297.38	1297.38	1297.37	1297.38	1297.38	1297.39	1297.39	1297.39	1297.39	1297.39	
27.680	1294.69	1294.00	1293.40	1292.99	1292.61	1292.38	1292.16	1292.15	1292.14	1292.14	1292.14	1292.13	1292.13	1292.13	1292.14	1292.14	1292.13	1292.12	1292.10	1292.10	
27.480	1291.18	1290.14	1289.81	1289.76	1289.47	1289.35	1289.10	1289.10	1289.09	1289.09	1289.09	1289.08	1289.09	1289.09	1289.09	1289.09	1289.08	1289.06	1289.05	1289.05	
27.030	1281.52	1282.30	1282.32	1282.18	1282.12	1282.15	1282.08	1282.08	1282.08	1282.08	1282.05	1282.03	1282.00	1281.97	1281.95	1281.95	1281.96	1281.97	1282.01	1282.01	
26.730	1280.08	1280.52	1280.40	1280.16	1280.09	1280.01	1279.91	1279.91	1279.91	1279.91	1279.88	1279.86	1279.86	1279.86	1279.86	1279.86	1279.86	1279.87	1279.89	1279.89	
26.630	1279.46	1279.75	1279.59	1279.36	1279.22	1278.93	1278.74	1278.74	1278.74	1278.74	1278.73	1278.72	1278.67	1278.62	1278.58	1278.55	1278.55	1278.54	1278.54	1278.54	
26.290	1271.50	1271.19	1270.36	1269.48	1269.02	1268.73	1268.50	1268.50	1268.49	1268.49	1268.51	1268.53	1268.53	1268.54	1268.56	1268.55	1268.53	1268.51	1268.49	1268.49	
25.940	1262.34	1261.90	1261.64	1261.24	1260.60	1260.23	1259.88	1259.88	1259.87	1259.87	1259.86	1259.85	1259.85	1259.85	1259.85	1259.86	1259.84	1259.81	1259.74	1259.74	
25.860	1260.17	1260.61	1261.05	1261.19	1260.87	1260.61	1260.37	1260.36	1260.36	1260.35	1260.36	1260.38	1260.41	1260.43	1260.45	1260.43	1260.41	1260.42	1260.40	1260.40	
25.666	1255.93	1256.24	1256.84	1257.10	1257.01	1256.92	1256.77	1256.77	1256.77	1256.76	1256.71	1256.65	1256.56	1256.48	1256.44	1256.47	1256.54	1256.58	1256.62	1256.63	
25.478	1254.08	1253.95	1254.17	1254.49	1254.63	1254.67	1254.63	1254.63	1254.63	1254.63	1254.63	1254.64	1254.64	1254.65	1254.65	1254.65	1254.64	1254.64	1254.64	1254.64	
24.996	1246.23	1246.68	1247.67	1248.41	1249.04	1249.44	1249.54	1249.54	1249.53	1249.54	1249.56	1249.58	1249.60	1249.62	1249.63	1249.64	1249.64	1249.64	1249.62	1249.62	
24.544	1236.09	1236.96	1237.17	1237.28	1237.42	1237.47	1237.54	1237.54	1237.55	1237.54	1237.52	1237.50	1237.49	1237.49	1237.48	1237.47	1237.47	1237.48	1237.49	1237.49	Propsed New
24.543	1235.61	1235.74	1235.83	1235.95	1236.00	1236.03	1236.06	1236.06	1236.06	1236.06	1236.07	1236.09	1236.13	1236.17	1236.19	1236.20	1236.18	1236.17	1236.15	1236.15	Estrella Parkway
24.449	1234.98	1235.05	1235.09	1235.11	1235.15	1235.20	1235.23	1235.23	1235.23	1235.23	1235.24	1235.25	1235.27	1235.28	1235.30	1235.30	1235.30	1235.28	1235.23	1235.23	
23.974	1227.48	1227.66	1227.87	1227.90	1227.98	1228.03	1228.05	1228.05	1228.05	1228.05	1228.04	1228.03	1228.01	1227.99	1227.98	1227.98	1227.98	1228.00	1228.03	1228.03	
23.692	1223.77	1223.69	1223.44	1223.22	1223.13	1223.06	1222.99	1222.99	1222.99	1222.99	1223.00	1223.01	1223.01	1223.00	1222.99	1222.99	1222.97	1222.96	1222.96	1222.96	
23.409	1216.24	1215.49	1215.48	1215.57	1215.67	1215.82	1216.00	1216.00	1216.01	1216.01	1215.98	1215.95	1215.90	1215.86	1215.83	1215.82	1215.83	1215.85	1215.89	1215.89	
22.935	1209.29	1210.07	1210.63	1211.02	1211.30	1211.49	1211.65	1211.65	1211.65	1211.66	1211.68	1211.70	1211.73	1211.76	1211.78	1211.80	1211.80	1211.79	1211.79	1211.79	
22.745	1205.91	1205.52	1205.30	1205.24	1205.23	1205.22	1205.22	1205.22	1205.22	1205.22	1205.21	1205.21	1205.20	1205.20	1205.19	1205.19	1205.19	1205.20	1205.20	1205.20	
22.462	1200.32	1200.48	1200.54	1200.57	1200.63	1200.65	1200.69	1200.69	1200.69	1200.69	1200.68	1200.68	1200.68	1200.69	1200.68	1200.68	1200.67	1200.65	1200.61	1200.61	
22.177	1195.96	1195.91	1195.67	1195.35	1195.00	1194.85	1194.83	1194.83	1194.83	1194.83	1194.84	1194.84	1194.84	1194.84	1194.84	1194.84	1194.84	1194.86	1194.87	1194.87	
21.894	1186.91	1186.80	1186.52	1186.40	1186.36	1186.44	1186.51	1186.51	1186.51	1186.51	1186.50	1186.49	1186.48	1186.48	1186.47	1186.48	1186.49	1186.39	1186.36	1186.36	U/S Beardsley
21.893	1187.14	1186.88	1186.57	1186.29	1186.20	1186.21	1186.25	1186.25	1186.25	1186.25	1186.24	1186.23	1186.22	1186.22	1186.22	1186.22	1186.23	1186.20	1186.17	1186.17	
21.431	1181.24	1181.68	1182.15	1182.56	1183.00	1183.11	1183.18	1183.18	1183.19	1183.19	1183.19	1183.19	1183.20	1183.20	1183.20	1183.19	1183.19	1183.27	1183.33	1183.33	
21.157	1176.97	1176.96	1177.15	1177.27	1177.07	1177.08	1177.11	1177.11	1177.11	1177.11	1177.15	1177.18	1177.23	1177.26	1177.28	1177.29	1177.28	1177.25	1177.21	1177.21	
21.061	1176.59	1176.53	1176.57	1176.68	1176.57	1176.67	1176.68	1176.68	1176.66	1176.65	1176.59	1176.53	1176.50	1176.48	1176.47	1176.48	1176.45	1176.54	1176.67	1176.67	
20.958	1176.65	1176.62	1176.65	1176.68	1176.66	1176.64	1176.65	1176.65	1176.66	1176.65	1176.66	1176.67	1176.67	1176.67	1176.69	1176.71	1176.71	1176.71	1176.70	1176.70	
20.579	1171.91	1171.93	1171.96	1171.96	1171.97	1171.95	1171.95	1171.95	1171.95	1171.95	1171.94	1171.93	1171.92	1171.91	1171.90	1171.90	1171.90	1171.91	1171.91	1171.91	
19.920	1162.52	1162.37	1162.25	1162.21	1162.21	1162.17	1162.15	1162.15	1162.15	1162.15	1162.15	1162.15	1162.16	1162.17	1162.16	1162.16	1162.16	1162.16	1162.16	1162.16	
19.446	1155.91	1155.97	1156.00	1156.01	1156.01	1155.99	1155.99	1155.99	1155.99	1155.99	1155.98	1155.98	1155.97	1155.96	1155.95	1155.96	1155.95	1155.96	1155.96	1155.96	
19.066	1149.26	1149.19	1149.15	1149.06	1149.03	1149.00	1148.98	1148.98	1148.98	1148.98	1148.99	1148.99	1149.00	1149.00	1148.99	1148.98	1148.98	1148.98	1148.99	1148.99	
18.962	1146.40	1146.53	1146.55	1146.59	1146.62	1146.59	1146.61	1146.61	1146.64	1146.63	1146.66	1146.69	1146.72	1146.74	1146.71	1146.69	1146.70	1146.68	1146.61	1146.61	D/S Bell Road
18.960	1146.20	1146.29	1146.35	1146.44	1146.51	1146.48	1146.51	1146.51	1146.53	1146.52	1146.52	1146.52	1146.51	1146.51	1146.52	1146.54	1146.57	1146.57	1146.53	1146.53	
18.839	1144.56	1144.36	1144.32	1144.29	1144.26	1144.25	1144.24	1144.24	1144.24	1144.24	1144.23	1144.22	1144.17	1144.13	1144.11	1144.10	1144.09	1144.10	1144.11	1144.11	
18.275	1130.16	1130.24	1130.31	1130.36	1130.40	1130.41	1130.43	1130.43	1130.42	1130.42	1130.43	1130.44	1130.48	1130.51	1130.53	1130.54	1130.53	1130.51	1130.49	1130.49	
17.821	1130.04	1129.95	1129.68	1129.50	1129.32	1129.22	1129.13	1129.13	1129.12	1129.12	1129.10	1129.07	1128.99	1128.93	1128.92	1128.92	1128.94	1128.99	1129.06	1129.06	
17.638	1128.98	1127.61	1127.33	1127.32	1127.21	1127.24	1127.24	1127.24	1127.24	1127.24	1127.24	1127.24	1127.30	1127.31	1127.29	1127.29	1127.29	1127.29	1127.29	1127.29	
17.458	1117.01	1117.48	1117.72	1117.81	1117.94	1118.04	1118.12	1118.12	1118.12	1118.13	1118.17	1118.22	1118.31	1118.39	1118.44	1118.45	1118.43	1118.39	1118.31	1118.31	
16.990	1110.86	1110.93	1111.02	1111.09	1111.13	1111.19	1111.22	1111.22	1111.23	1111.22	1111.14	1111.11	1111.09	1111.08	1111.08	1111.08	1111.12	1111.17	1111.23	1111.23	
16.612	1108.71	1108.04	1107.35	1106.54	1106.23	1105.92	1105.65	1105.65	1105.64	1105.66	1105.63	1105.50	1105.26	1105.03	1104.90	1104.89	1104.83	1104.84	1104.87	1104.87	
16.506	1105.04	1104.94	1104.93	1104.96	1104.95	1104.93	1104.91	1104.91	1104.90	1104.91	1104.92	1104.95	1104.98	1105.02	1105.05	1105.07	1105.06	1105.05	1105.04	1105.04	
16.482	1104.98	1104.70	1104.71	1104.75	1104.77	1104.77	1104.79	1104.79	1104.80	1104.79	1104.82	1104.80	1104.78	1104.78	1104.79	1104.80	1104.79	1104.79	1104.79	1104.79	
16.099	1100.92	1100.80	1100.86	1100.82	1100.82	1100.85	1100.84	1100.84	1100.84	1100.84	1100.88	1100.91	1100.93	1100.94	1100.94	1100.93	1100.91	1100.89	1100.86	1100.86	
15.719	1093.89	1093.78	1093.85	1093.85	1093.82	1093.84	1093.85	1093.85	1093.85	1093.85	1093.85	1093.85	1093.86	1093.86	1093.87	1093.88	1093.90	1093.87	1093.84	1093.84	
15.374	1093.40	1093.07	1092.68	1092.23	1092.18	1092.24	1092.27	1092.27	1092.29	1092.27	1092.21	1092.20	1092.19	1092.18	1092.18	1092.17	1092.19	1092.26	1092.33	1092.33	
15.094	1090.16	1090.44	1090.31	1090.09	1090.07	1090.04	1090.01	1090.01	1090.03	1090.02	1090.03	1090.02	1090.02	1090.03	1090.04	1090.04	1090.07	1090.06	1090.03	1090.03	
15.000	1088.76	1088.77	1088.45	1087.91	1087.83	1087.45	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	1087.46	
14.430	1083.17	1082.58	1081.11	1080.39	1079.83	1079.74	1079.63	1079.63	1079.62	1079.63	1079.64	1079.63	1079.63	1079.63	1079.62	1079.60	1079.59	1079.58	1079.57	1079.57	
13.952	1072.59	1071.71	1072.29	1072.75	1072.80	1072.59	1072.39	1072.39	1072.38	1072.37	1072.33	1072.28	1072.21	1072.15	1072.10	1072.09	1072.08	1072.09	1072.11	1072.11	
13.467	1065.05	1066.82	1067.45	1067.68	1067.76	1067.72	1067.66	1067.66	1067.66	1067.66	1067.72	1067.78	1067.87	1067.96	1068.02	1068.05	1068.05	1067.97	1067.83	1067.83	
13.396	1066.31	1064.29	1063.75	1063.75	1063.74	1063.73	1063.73	1063.73	1063.73	1063.73	1063.50	1063.27	1063.23	1063.23	1063.23	1063.23	1063.31	1063.50	1063.74	1063.75	D/S Olive Ave
13.395	1066.04	1065.02	1064.94	1064.84	1064.80	1064.77	1064.69	1064.69	1064.74	1064.70	1064.73	1064.73	1064.59	1064.48	1064.46	1064.46	1064.47	1064.52	1064.59	1064.59	
13.007	1063.29	1062.02	1062.01	1062.01	1062.04	1062.02	1061.99	1061.99	1061.98	1062.00	1062.02	1062.07	1062.10	1062.08	1062.03	1061.98	1061.92	1061.91	1061.90	1061.90	
12.816	1058.80	1058.54	1058.12	1058.21	1058.36	1058.40	1058.36	1058.36	1058.35	1058.36	1058.37	1058.36	1058.29	1058.23	1058.19	1058.19	1058.17	1058.17	1058.21	1058.21	
12.470	1055.74	1055.91	1055.60	1055.46	1055.41	1055.35	1055.28	1055.27	1055.26	1055.28	1055.38	1055.47	1055.60	1055.70	1055.77	1055.80	1055.77	1055.64	1055.38	1055.37	
12.420	1056.29	1056.75	1056.41	1056.28	1056.20	1056.10	1056.01	1056.01	1055.96	1055.98	1056.03	1056.06	1056.10	1056.15	1056.21	1056.29	1056.38	1055.68	1055.41	1055.40	
12.359	1051.83	1052.61	1052.47	1052.34	1052.26	1052.19	1052.11	1052.11	1052.11	1052.11	1052.10	1052.09	1052.08	1052.07	1052.07	1052.07	1052.08	1052.28	1052.32	1052.32	
12.042	1048.28	1046.89	1046.30	1046.15	1046.00	1045.85	1045.72	1045.72	1045.72	1045.71	1045.69	1045.68	1045.67	1045.67	1045.67	1045.66	1045.66	1045.83	1045.98	1045.98	
11.847	1044.77	1044.87	1044.65	1044.58	1044.42	1044.21	1044.18	1044.18	1044.20	1044.17	1044.16	1044.14	1044.12	1044.10	1044.07	1044.04	1044.02	1044.10	1044.20	1044.20	
11.557	1041.45	1040.72	1040.89	1040.98	1041.14	1041.24	1041.22	1041.22	1041.26	1041.26	1041.18	1041.11	1041.04	1040.98	1040.95	1040.94	1040.96	1041.22	1041.52	1041.53	
11.428	1041.37	1041.58	1041.86	1042.08	1042.30	1042.48	1042.68	1042.68	1042.68	1042.69	1042.67	1042.63	1042.56	1042.50	1042.46	1042.43	1042.40	1042.42	1042.52	1042.52	
11.029	1034.78	1035.74	1036.03	1035.99	1036.09	1036.18	1036.23	1036.23	1036.22	1036.23	1036.31	1036.35	1036.39	1036.42	1036.43	1036.43	1036.40	1036.35	1036.27	1036.27	
10.846	1031.56	1031.70	1031.91	1031.89	1031.93	1031.91	1031.94	1031.94	1031.95	1031.94	1031.91	1031.87	1031.85	1031.83	1031.82	1031.81	1031.81	1031.87	1031.98	1031.98	
10.752	1031.32	1031.56	1031.84	1031.82	1031.86	1031.86	1031.89	1031.88	1031.89	1031.88	1031.86	1031.84	1031.81	1031.79	1031.77	1031.75	1031.75	1031.77	1031.82	1031.82	
10.538	1031.22	1031.19	1031.27	1031.27	1031.28	1031.28	1031.29	1031.29	1031.28	1031.29	1031.34	1031.38	1031.41	1031.44	1031.46	1031.46	1031.46	1031.40	1031.30	1031.30	
10.343	1026.36	1025.68	1025.76	1025.78	1025.80	1025.80	1025.81	1025.81	1025.81	1025.81	1025.78	1025.76	1025.74	1025.73	1025.71	1025.71	1025.72	1025.76	1025.83	1025.83	
10.167	1023.40	1023.51	1023.65	1023.71	1023.70	1023.75	1023.75	1023.75	1023.75	1023.75	1023.75	1023.75	1023.74	1023.73	1023.73	1023.73	1023.73	1023.74	1023.74	1023.74	
9.885	1021.01	1020.79	1020.71	1020.73	1020.72	1020.73	1020.72	1020.72	1020.72	1020.72	1020.73	1020.74	1020.75	1020.77	1020.77	1020.77	1020.76	1020.74	1020.71	1020.70	
9.696	1018.67	1018.72	1018.79	1018.81	1018.79	1018.79	1018.79	1018.79	1018.78	1018.78	1018.77	1018.77	1018.78	1018.79	1018.79	1018.77	1018.75	1018.73	1018.72	1018.72	
9.435	1015.27	1015.50	1015.59	1015.52	1015.45	1015.40	1015.38	1015.38	1015.37	1015.36	1015.33	1015.31	1015.27	1015.25	1015.24	1015.25	1015.25	1015.25	1015.26	1015.27	
9.266	1013.86	1014.18	1014.15	1013.98	1013.87	1013.79	1013.76	1013.76	1013.75	1013.75	1013.74	1013.73	1013.72	1013.72	1013.71	1013.71	1013.70	1013.68	1013.64	1013.64	
8.992	1008.05	1007.88	1007.41	1007.18	1006.99	1006.91	1006.84	1006.84	1006.84	1006.86	1006.87	1006.88	1006.87	1006.87	1006.87	1006.87	1006.88	1006.85	1006.75	1006.75	
8.768	1007.92	1006.81	1006.65	1006.57	1006.48	1006.43	1006.36	1006.36	1006.36	1006.34	1006.30	1006.24	1006.17	1006.11	1006.05	1006.00	1005.97	1006.00	1006.12	1006.12	
8.433	1004.93	1004.90	1004.92	1004.98	1005.04	1005.08	1005.10	1005.10	1005.10	1005.09	1005.03	1005.00	1004.97	1004.94	1004.92	1004.92	1004.92	1004.93	1004.95	1004.95	
8.198	1001.49	1001.50	1001.68	1001.93	1002.11	1002.23	1002.28	1002.28	1002.28	1002.29	1002.32	1002.33	1002.34	1002.35	1002.36	1002.35	1002.33	1002.33	1002.32	1002.32	
8.105	1000.25	1000.35	1000.65	1000.90	1001.07	1001.21	1001.28	1001.28	1001.28	1001.29	1001.39	1001.45	1001.54	1001.59	1001.61	1001.56	1001.52	1001.48	1001.43	1001.43	
8.000	999.97	1000.48	1000.80	1001.07	1001.23	1001.37	1001.44	1001.44	1001.44	1001.46	1001.56	1001.65	1001.73	1001.76	1001.75	1001.68	1001.62	1001.55	1001.50	1001.50	
7.990	999.65	1000.16	1000.50	1000.77	1000.96	1001.10	1001.17	1001.17	1001.16	1001.15	1001.16	1001.22	1001.23	1001.28	1001.27	1001.26	1001.27	1001.26	1001.24	1001.25	
7.988	999.31	999.94	1000.38	1000.71	1000.89	1001.06	1001.13	1001.13	1001.13	1001.14	1001.14	1001.16	1001.17	1001.17	1001.18	1001.19	1001.18	1001.19	1001.19	1001.19	
7.490	995.24	995.12	995.00	994.96	994.96	994.97	994.98	994.98	994.98	994.98	994.95	994.94	994.90	994.88	994.87	994.87	994.88	994.88	994.89	994.89	
6.990	989.80	989.37	989.36	989.39	989.40	989.41	989.42	989.42	989.42	989.41	989.37	989.35	989.32	989.29	989.28	989.29	989.28	989.29	989.31	989.31	
6.930	989.93	989.77	989.74	989.77	989.77	989.76	989.77	989.77	989.76	989.79	989.83	989.79	989.76	989.82	989.87	989.84	989.75	989.73	989.74	989.74	
6.910	989.09	988.86	988.86	988.86	988.86	988.87	988.86	988.86	988.89	988.84	988.84	988.84	988.85	988.60	988.85	988.62	988.60	988.71	988.85	988.86	
6.890	989.41	989.42	989.41	989.42	989.42	989.41	989.41	989.41	989.41	989.40	989.84	989.40	990.02	989.40	990.10	989.40	989.44	989.41	989.43	989.43	
6.888	989.44	989.45	989.43	989.46	989.46	989.43	989.43	989.43	989.40	989.51	989.42	989.75	989.42	989.83	989.45	989.80	989.41	989.40	989.42	989.42	
6.820	984.44	983.98	983.98	983.99	983.99	984.00	984.00	984.00	984.00	984.00	984.00	984.00	984.00	984.00	984.00	984.01	984.00	984.00	984.00	984.00	
6.430	981.26	981.35	981.16	981.13	981.17	981.26	981.33	981.33	981.34	981.33	981.34	981.32	981.34	981.33	981.32	981.31	981.37	981.36	981.34	981.34	
6.070	977.04	977.46	977.60	977.67	977.73	977.79	977.83	977.83	977.83	977.83	977.81	977.79	977.78	977.77	977.76	977.76	977.77	977.78	977.78	977.78	
6.068	977.01	977.50	977.63	977.69	977.74	977.81	977.85	977.85	977.85	977.85	977.85	977.83	977.82	977.81	977.80	977.79	977.79	977.79	977.79	977.79	
5.900	975.40	975.70	975.88	975.97	976.04	976.08	976.11	976.11	976.11	976.11	976.11	976.11	976.11	976.09	976.09	976.08	976.08	976.07	976.06	976.06	
5.750	973.76	974.07	974.25	974.36	974.43	974.48	974.49	974.49	974.49	974.49	974.45	974.42	974.38	974.36	974.34	974.34	974.35	974.37	974.36	974.36	
5.689	974.19	974.73	974.94	975.06	975.15	975.19	975.19	975.19	975.19	975.19	975.18	975.16	975.13	975.10	975.09	975.07	975.08	975.08	975.07	975.07	
5.380	971.06	970.69	970.73	970.76	970.81	970.84	970.85	970.85	970.84	970.85	970.85	970.85	970.84	970.83	970.83	970.83	970.82	970.81	970.82	970.82	
5.290	971.31	971.11	971.12	971.16	971.18	971.19	971.20	971.20	971.20	971.19	971.13	971.10	971.09	971.08	971.08	971.07	971.07	971.09	971.13	971.13	
5.203	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.09	970.02	970.14	970.02	970.21	970.02	970.01	970.00	970.00	970.01	
5.201	969.15	969.19	969.15	969.20	969.21	969.16	969.16	969.16	969.10	969.23	969.15	969.50	969.20	969.60	969.25	969.54	969.10	969.11	969.14	969.10	
5.150	967.21	965.81	963.64	963.08	962.85	962.75	962.74	962.74	962.75	962.74	962.74	962.80	962.81	962.89	962.82	962.77	962.77	962.76	962.76	962.76	
4.790	960.96	961.81	963.16	963.31	963.52	963.74	963.80	963.80	963.81	963.82	963.96	963.99	964.12	964.12	964.22	964.29	964.30	964.23	964.10	964.09	
4.754	962.02	962.86	963.67	963.85	964.04	964.22	964.29	964.29	964.30	964.28	964.27	964.28	964.32	964.34	964.36	964.42	964.49	964.55	964.55	964.55	
4.700	959.63	960.91	961.91	962.21	962.40	962.65	962.74	962.74	962.74	962.74	962.74	962.74	962.77	962.82	962.86	962.89	962.91	962.92	962.90	962.90	
4.300	957.66	958.31	959.08	959.39	959.55	959.75	959.84	959.84	959.84	959.82	959.73	959.65	959.55	959.48	959.45	959.45	959.46	959.51	959.60	959.60	
4.094	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.58	958.50	958.63	958.50	958.70	958.50	958.51	958.50	958.50	958.51	
4.092	955.21	955.22	955.21	955.22	955.22	955.21	955.21	955.21	955.20	955.23	955.20	955.32	955.20	955.35	955.20	955.34	955.20	955.20	955.21	955.20	
3.767	952.02	951.12	951.02	951.08	951.18	951.71	951.99	951.99	952.01	951.99	952.05	952.02	952.10	952.04	952.12	952.12	952.25	952.19	952.09	952.10	
3.757	952.09	950.96	950.91	951.00	951.15	951.61	951.86	951.87	951.86	951.87	951.85	951.86	951.85	951.89	951.90	951.98	952.03	951.93	951.87	951.87	
3.734	951.80	950.97	950.94	951.02	951.13	951.64	951.91	951.91	951.92	951.96	952.08	952.16	952.20	952.22	952.17	952.20	952.20	951.95	951.72	951.72	
3.729	951.59	950.99	950.96	951.03	951.13	951.48	951.75	951.75	951.76	951.76	951.79	951.82	951.85	951.88	951.89	951.91	951.93	951.95	951.87	951.87	
3.430	946.08	946.03	946.19	946.35	946.47	946.38	946.52	946.52	946.52	946.52	946.54	946.55	946.57	946.60	946.61	946.62	946.64	946.72	946.90	946.90	
3.370	944.43	944.65	944.90	945.07	945.19	945.08	945.19	945.19	945.20	945.18	945.09	945.02	944.94	944.91	944.91	944.95	944.99	945.09	945.21	945.21	
3.270	944.67	945.09	945.34	945.48	945.57	945.71	945.78	945.78	945.78	945.78	945.79	945.80	945.82	945.82	945.83	945.83	945.82	945.82	945.81	945.81	
2.800	942.03	941.97	941.82	941.62	941.57	941.57	941.45	941.45	941.45	941.46	941.50	941.54	941.61	941.66	941.69	941.68	941.67	941.64	941.60	941.60	
2.600	939.51	939.16	938.79	938.50	938.42	938.35	938.16	938.16	938.16	938.16	938.15	938.11	938.08	938.06	938.05	938.04	938.04	938.05	938.04	938.04	
2.020	932.47	932.14	931.99	931.83	931.59	931.33	931.26	931.26	931.26	931.26	931.26	931.27	931.28	931.29	931.30	931.31	931.31	931.32	931.33	931.33	
1.710	928.54	928.82	928.64	928.45	928.21	928.12	928.01	928.01	928.01	928.01	928.03	928.04	928.06	928.07	928.08	928.08	928.08	928.05	928.01	928.01	
1.330	924.79	923.87	923.44	923.15	922.84	922.45	922.31	922.30	922.30	922.27	922.17	922.10	921.99	921.89	921.82	921.75	921.74	921.78	921.87	921.87	
1.250	924.72	924.46	924.14	923.88	923.63	923.31	923.10	923.10	923.10	923.04	922.71	922.66	922.58	922.50	922.46	922.45	922.50	922.61	922.75	922.75	
1.170	923.53	923.22	922.91	922.66	922.42	922.14	921.92	921.92	921.92	921.94	922.03	921.93	921.90	921.87	921.86	921.89	921.88	921.85	921.82	921.81	
1.100	922.80	922.76	922.48	922.25	922.03	921.82	921.58	921.58	921.58	921.60	921.74	921.81	921.85	921.91	921.90	921.90	921.87	921.78	921.66	921.66	
1.010	921.12	920.93	920.62	920.40	920.21	920.06	919.84	919.84	919.83	919.83	919.84	919.86	919.87	919.89	919.90	919.89	919.89	919.88	919.88	919.89	
0.730	916.97	916.82	916.69	916.54	916.45	916.36	916.28	916.28	916.27	916.26	916.24	916.23	916.23	916.23	916.24	916.23	916.22	916.24	916.24	916.24	
0.630	915.34	914.88	914.82	914.70	914.62	914.50	914.47	914.47	914.47	914.48	914.48	914.49	914.48	914.47	914.47	914.46	914.46	914.46	914.47	914.47	
0.440	912.78	912.75	912.75	912.75	912.75	912.75	912.74	912.74	912.74	912.75	912.76	912.76	912.77	912.78	912.79	912.79	912.77	912.76	912.74	912.73	
0.160	909.26	909.11	909.08	909.06	909.05	909.01	908.99	908.99	908.99	908.96	908.87	908.78	908.68	908.63	908.62	908.65	908.69	908.77	908.87	908.87	

Table 11.3. Bed Elevation Change During Flood Hydrology
(Enchadd.dat)

Hydrograph Day SECTION NUMBER	Day 1 BED CHANGE (ft)	Day 5 BED CHANGE (ft)	Day 10 BED CHANGE (ft)	Day 15 BED CHANGE (ft)	Day 20 BED CHANGE (ft)	Day 25 BED CHANGE (ft)	Day 30 BED CHANGE (ft)	Day 30.06 BED CHANGE (ft)	Day 30.15 BED CHANGE (ft)	Day 30.2 BED CHANGE (ft)	Day 30.27 BED CHANGE (ft)	Day 30.32 BED CHANGE (ft)	Day 30.37 BED CHANGE (ft)	Day 30.42 BED CHANGE (ft)	Day 30.47 BED CHANGE (ft)	Day 30.54 BED CHANGE (ft)	Day 30.61 BED CHANGE (ft)	Day 30.75 BED CHANGE (ft)	Day 31.09 BED CHANGE (ft)	Day 31.1 BED CHANGE (ft)	Grade Control Location
33.820	-0.13	-0.21	-0.28	-0.34	-0.39	-0.43	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.48	-0.48	-0.48	-0.48	-0.47	-0.47	-0.47	
33.410	-0.01	0.04	0.08	0.10	0.11	0.12	0.12	0.12	0.13	0.13	0.12	0.11	0.11	0.11	0.11	0.11	0.13	0.13	0.13	0.13	
32.998	-1.61	-1.91	-2.12	-2.29	-2.41	-2.48	-2.55	-2.55	-2.51	-2.54	-2.59	-2.59	-2.60	-2.60	-2.61	-2.61	-2.59	-2.57	-2.54	-2.54	
32.984	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.08	0.02	0.11	0.02	0.17	0.01	0.01	0.00	0.00	0.02	
32.920	-0.76	-3.19	-3.56	-3.91	-4.09	-4.31	-4.48	-4.48	-4.51	-4.47	-4.50	-4.46	-4.47	-4.43	-4.51	-4.45	-4.50	-4.51	-4.54	-4.54	
32.860	-0.55	-1.25	-1.52	-2.16	-2.36	-2.66	-2.82	-2.84	-2.87	-2.90	-2.90	-2.90	-2.89	-2.88	-2.87	-2.87	-2.87	-2.87	-2.87	-2.87	
32.720	0.15	0.62	0.91	1.12	1.19	1.23	1.25	1.26	1.26	1.26	1.25	1.22	1.22	1.22	1.21	1.21	1.22	1.23	1.23	1.24	
32.430	-0.04	-0.47	-1.22	-1.23	-2.91	-3.87	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.82	-3.81	-3.81	
31.860	-0.02	-0.97	-3.29	-4.43	-5.36	-5.84	-6.16	-6.16	-6.17	-6.16	-6.16	-6.16	-6.16	-6.17	-6.20	-6.22	-6.23	-6.24	-6.26	-6.26	
31.390	-0.05	-1.95	-3.24	-4.48	-4.98	-5.77	-6.33	-6.34	-6.36	-6.37	-6.39	-6.41	-6.41	-6.41	-6.41	-6.42	-6.43	-6.44	-6.46	-6.46	
30.820	-0.32	-1.77	-2.19	-3.18	-3.35	-3.73	-4.31	-4.31	-4.31	-4.31	-4.31	-4.33	-4.39	-4.46	-4.51	-4.53	-4.54	-4.55	-4.58	-4.58	
30.730	-1.14	-1.24	-2.38	-3.28	-3.36	-3.74	-4.43	-4.43	-4.43	-4.43	-4.52	-4.63	-4.83	-5.03	-5.13	-5.17	-5.18	-5.15	-5.12	-5.12	
30.260	0.10	0.28	0.29	0.27	0.14	0.00	-0.11	-0.11	-0.11	-0.11	-0.09	-0.07	-0.03	0.00	0.02	0.01	-0.04	-0.09	-0.13	-0.13	
30.070	-0.18	-0.64	-0.81	-0.84	-0.99	-1.10	-1.22	-1.22	-1.22	-1.23	-1.23	-1.22	-1.22	-1.21	-1.21	-1.20	-1.18	-1.17	-1.18	-1.18	
29.800	0.64	1.32	1.27	1.23	1.16	1.00	0.81	0.81	0.81	0.81	0.80	0.81	0.81	0.82	0.82	0.81	0.83	0.85	0.87	0.87	
29.611	-0.99	-1.55	-2.20	-2.39	-2.59	-2.87	-3.44	-3.44	-3.45	-3.45	-3.46	-3.47	-3.47	-3.46	-3.46	-3.45	-3.45	-3.46	-3.47	-3.47	
29.540	0.19	0.34	0.21	0.06	-0.08	-0.47	-1.08	-1.08	-1.11	-1.11	-1.12	-1.13	-1.13	-1.13	-1.13	-1.13	-1.13	-1.13	-1.13	-1.13	
29.040	0.01	0.00	0.03	0.05	0.00	-0.06	-0.39	-0.40	-0.40	-0.40	-0.37	-0.36	-0.34	-0.32	-0.30	-0.30	-0.33	-0.37	-0.39	-0.39	
28.950	-0.71	-0.60	-0.57	-0.55	-0.60	-0.67	-0.80	-0.80	-0.77	-0.80	-0.80	-0.80	-0.79	-0.78	-0.78	-0.79	-0.80	-0.77	-0.75	-0.75	
28.670	0.06	0.03	-0.03	-0.12	-0.51	-0.56	-0.60	-0.60	-0.60	-0.60	-0.61	-0.62	-0.63	-0.65	-0.66	-0.68	-0.68	-0.68	-0.70	-0.71	
28.120	-0.03	-0.43	-0.45	-1.01	-1.15	-1.44	-1.51	-1.51	-1.51	-1.51	-1.53	-1.54	-1.56	-1.59	-1.62	-1.65	-1.65	-1.64	-1.63	-1.63	
27.940	0.00	0.04	-0.50	-0.98	-1.24	-1.56	-1.71	-1.71	-1.71	-1.71	-1.72	-1.72	-1.73	-1.72	-1.72	-1.71	-1.71	-1.71	-1.71	-1.71	
27.680	-0.01	-0.70	-1.30	-1.71	-2.09	-2.32	-2.54	-2.55	-2.56	-2.56	-2.56	-2.57	-2.57	-2.57	-2.56	-2.56	-2.57	-2.58	-2.60	-2.60	
27.480	-0.32	-1.36	-1.69	-1.74	-2.03	-2.15	-2.40	-2.40	-2.41	-2.41	-2.41	-2.42	-2.41	-2.41	-2.41	-2.41	-2.42	-2.44	-2.45	-2.45	
27.030	0.32	1.10	1.12	0.98	0.92	0.95	0.88	0.88	0.88	0.88	0.85	0.83	0.80	0.77	0.75	0.75	0.76	0.77	0.81	0.81	
26.730	0.28	0.72	0.60	0.36	0.29	0.21	0.11	0.11	0.11	0.11	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.09	0.09	
26.630	0.06	0.35	0.19	-0.04	-0.18	-0.47	-0.66	-0.66	-0.66	-0.66	-0.67	-0.68	-0.73	-0.78	-0.82	-0.85	-0.85	-0.86	-0.86	-0.86	
26.290	-0.10	-0.41	-1.24	-2.12	-2.58	-2.87	-3.10	-3.10	-3.11	-3.11	-3.09	-3.07	-3.07	-3.06	-3.04	-3.05	-3.07	-3.09	-3.11	-3.11	
25.940	-1.06	-1.50	-1.76	-2.16	-2.80	-3.17	-3.52	-3.52	-3.53	-3.53	-3.54	-3.55	-3.55	-3.55	-3.55	-3.54	-3.56	-3.59	-3.66	-3.66	
25.860	0.17	0.61	1.05	1.19	0.87	0.61	0.37	0.36	0.36	0.35	0.36	0.38	0.41	0.43	0.45	0.43	0.41	0.42	0.40	0.40	
25.666	0.53	0.84	1.44	1.70	1.61	1.52	1.37	1.37	1.37	1.36	1.31	1.25	1.16	1.08	1.04	1.07	1.14	1.18	1.22	1.23	
25.478	0.18	0.05	0.27	0.59	0.73	0.77	0.73	0.73	0.73	0.73	0.73	0.74	0.74	0.75	0.75	0.75	0.74	0.74	0.74	0.74	
24.996	-0.07	0.38	1.37	2.11	2.74	3.14	3.24	3.24	3.23	3.24	3.26	3.28	3.30	3.32	3.33	3.34	3.34	3.34	3.32	3.32	
24.544	0.49	1.36	1.57	1.68	1.82	1.87	1.94	1.94	1.95	1.94	1.92	1.90	1.89	1.89	1.88	1.87	1.87	1.88	1.89	1.89	Propsed New
24.543	0.01	0.14	0.23	0.35	0.40	0.43	0.46	0.46	0.46	0.46	0.47	0.49	0.53	0.57	0.59	0.60	0.58	0.57	0.55	0.55	Estrella Parkway
24.449	-0.02	0.05	0.09	0.11	0.15	0.20	0.23	0.23	0.23	0.23	0.24	0.25	0.27	0.28	0.30	0.30	0.30	0.28	0.23	0.23	
23.974	-0.02	0.16	0.37	0.40	0.48	0.53	0.55	0.55	0.55	0.55	0.54	0.53	0.51	0.49	0.48	0.48	0.48	0.50	0.53	0.53	
23.692	-0.03	-0.11	-0.36	-0.58	-0.67	-0.74	-0.81	-0.81	-0.81	-0.81	-0.80	-0.79	-0.79	-0.80	-0.81	-0.81	-0.83	-0.84	-0.84	-0.84	
23.409	-0.46	-1.21	-1.22	-1.13	-1.03	-0.88	-0.70	-0.70	-0.69	-0.69	-0.72	-0.75	-0.80	-0.84	-0.87	-0.88	-0.87	-0.85	-0.81	-0.81	
22.935	0.29	1.07	1.63	2.02	2.30	2.49	2.65	2.65	2.65	2.66	2.68	2.70	2.73	2.76	2.78	2.80	2.80	2.79	2.79	2.79	
22.745	-0.09	-0.48	-0.70	-0.76	-0.77	-0.78	-0.78	-0.78	-0.78	-0.78	-0.79	-0.79	-0.80	-0.80	-0.81	-0.81	-0.81	-0.80	-0.80	-0.80	
22.462	0.02	0.18	0.24	0.27	0.33	0.35	0.39	0.39	0.39	0.39	0.38	0.38	0.38	0.39	0.38	0.38	0.37	0.35	0.31	0.31	
22.177	-0.04	-0.09	-0.33	-0.65	-1.00	-1.15	-1.17	-1.17	-1.17	-1.17	-1.16	-1.16	-1.16	-1.16	-1.16	-1.16	-1.16	-1.14	-1.13	-1.13	
21.894	-0.49	-0.60	-0.88	-1.00	-1.04	-0.96	-0.89	-0.89	-0.89	-0.89	-0.90	-0.91	-0.92	-0.92	-0.93	-0.92	-0.91	-1.01	-1.04	-1.04	U/S Beardsley
21.893	-0.26	-0.52	-0.83	-1.11	-1.20	-1.19	-1.15	-1.15	-1.15	-1.15	-1.16	-1.17	-1.18	-1.18	-1.18	-1.18	-1.17	-1.20	-1.23	-1.23	
21.431	0.24	0.68	1.15	1.56	2.00	2.11	2.18	2.18	2.19	2.19	2.19	2.19	2.20	2.20	2.20	2.19	2.19	2.27	2.33	2.33	
21.157	0.37	0.36	0.55	0.67	0.47	0.48	0.51	0.51	0.51	0.51	0.55	0.58	0.63	0.66	0.68	0.69	0.68	0.65	0.61	0.61	
21.061	0.09	0.03	0.07	0.18	0.07	0.17	0.18	0.18	0.16	0.15	0.09	0.03	0.00	-0.02	-0.03	-0.02	-0.05	0.04	0.17	0.17	
20.958	0.05	0.02	0.05	0.08	0.06	0.04	0.05	0.05	0.06	0.05	0.06	0.07	0.07	0.07	0.09	0.11	0.11	0.11	0.10	0.10	
20.579	0.01	0.03	0.06	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.01	
19.920	-0.08	-0.23	-0.35	-0.39	-0.39	-0.43	-0.45	-0.45	-0.45	-0.45	-0.45	-0.45	-0.44	-0.43	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	
19.446	0.01	0.07	0.10	0.11	0.11	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.07	0.06	0.05	0.06	0.05	0.06	0.06	0.06	
19.066	-0.14	-0.21	-0.25	-0.34	-0.37	-0.40	-0.42	-0.42	-0.42	-0.42	-0.41	-0.41	-0.40	-0.40	-0.41	-0.42	-0.42	-0.42	-0.41	-0.41	
18.962	0.20	0.33	0.35	0.39	0.42	0.39	0.41	0.41	0.44	0.43	0.46	0.49	0.52	0.54	0.51	0.49	0.50	0.48	0.41	0.41	D/S Bell Road
18.960	0.00	0.09	0.15	0.24	0.31	0.28	0.31	0.31	0.33	0.32	0.32	0.32	0.31	0.31	0.32	0.34	0.37	0.37	0.33	0.33	
18.839	-0.04	-0.24	-0.28	-0.31	-0.34	-0.35	-0.36	-0.36	-0.36	-0.36	-0.37	-0.38	-0.43	-0.47	-0.49	-0.50	-0.51	-0.50	-0.49	-0.49	
18.275	0.06	0.14	0.21	0.26	0.30	0.31	0.33	0.33	0.32	0.32	0.33	0.34	0.38	0.41	0.43	0.44	0.43	0.41	0.39	0.39	
17.821	0.04	-0.05	-0.32	-0.50	-0.68	-0.78	-0.87	-0.87	-0.88	-0.88	-0.90	-0.93	-1.01	-1.07	-1.08	-1.08	-1.06	-1.01	-0.94	-0.94	
17.638	-1.02	-2.39	-2.67	-2.68	-2.79	-2.76	-2.76	-2.76	-2.76	-2.76	-2.76	-2.76	-2.70	-2.69	-2.71	-2.71	-2.71	-2.71	-2.71	-2.71	
17.458	0.51	0.98	1.22	1.31	1.44	1.54	1.62	1.62	1.62	1.63	1.67	1.72	1.81	1.89	1.94	1.95	1.93	1.89	1.81	1.81	
16.990	-0.04	0.03	0.12	0.19	0.23	0.29	0.32	0.32	0.33	0.32	0.24	0.21	0.19	0.18	0.18	0.18	0.22	0.27	0.33	0.33	
16.612	-0.29	-0.96	-1.65	-2.46	-2.77	-3.08	-3.35	-3.35	-3.36	-3.34	-3.37	-3.50	-3.74	-3.97	-4.10	-4.11	-4.17	-4.16	-4.13	-4.13	
16.506	-0.36	-0.46	-0.47	-0.44	-0.45	-0.47	-0.49	-0.49	-0.50	-0.49	-0.48	-0.45	-0.42	-0.38	-0.35	-0.33	-0.34	-0.35	-0.36	-0.36	
16.482	-0.62	-0.90	-0.89	-0.85	-0.83	-0.83	-0.81	-0.81	-0.80	-0.81	-0.78	-0.80	-0.82	-0.82	-0.81	-0.80	-0.81	-0.81	-0.81	-0.81	
16.099	0.12	0.00	0.06	0.02	0.02	0.05	0.04	0.04	0.04	0.04	0.08	0.11	0.13	0.14	0.14	0.13	0.11	0.09	0.06	0.06	
15.719	0.19	0.08	0.15	0.15	0.12	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.17	0.18	0.20	0.17	0.14	0.14	
15.374	-0.40	-0.73	-1.12	-1.57	-1.62	-1.56	-1.53	-1.53	-1.51	-1.53	-1.59	-1.60	-1.61	-1.62	-1.62	-1.63	-1.61	-1.54	-1.47	-1.47	
15.094	0.26	0.54	0.41	0.19	0.17	0.14	0.11	0.11	0.13	0.12	0.13	0.12	0.12	0.13	0.14	0.14	0.17	0.16	0.13	0.13	
15.000	-0.04	-0.03	-0.35	-0.89	-0.97	-1.35	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	-1.34	
14.430	-0.03	-0.62	-2.09	-2.81	-3.37	-3.46	-3.57	-3.57	-3.58	-3.57	-3.56	-3.57	-3.57	-3.57	-3.58	-3.60	-3.61	-3.62	-3.63	-3.63	
13.952	-0.71	-1.59	-1.01	-0.55	-0.50	-0.71	-0.91	-0.91	-0.92	-0.93	-0.97	-1.02	-1.09	-1.15	-1.20	-1.21	-1.22	-1.21	-1.19	-1.19	
13.467	0.95	2.72	3.35	3.58	3.66	3.62	3.56	3.56	3.56	3.56	3.62	3.68	3.77	3.86	3.92	3.95	3.95	3.87	3.73	3.73	
13.396	-6.69	-8.71	-9.25	-9.25	-9.26	-9.27	-9.27	-9.27	-9.27	-9.27	-9.50	-9.73	-9.77	-9.77	-9.77	-9.77	-9.69	-9.50	-9.26	-9.25	D/S Olive Ave
13.395	2.04	1.02	0.94	0.84	0.80	0.77	0.69	0.69	0.74	0.70	0.73	0.73	0.59	0.48	0.46	0.46	0.47	0.52	0.59	0.59	
13.007	1.29	0.02	0.01	0.01	0.04	0.02	-0.01	-0.01	-0.02	0.00	0.02	0.07	0.10	0.08	0.03	-0.02	-0.08	-0.09	-0.10	-0.10	
12.816	1.40	1.14	0.72	0.81	0.96	1.00	0.96	0.96	0.95	0.96	0.97	0.96	0.89	0.83	0.79	0.79	0.77	0.77	0.81	0.81	
12.470	0.84	1.01	0.70	0.56	0.51	0.45	0.38	0.37	0.36	0.38	0.48	0.57	0.70	0.80	0.87	0.90	0.87	0.74	0.48	0.47	
12.420	2.29	2.75	2.41	2.28	2.20	2.10	2.01	2.01	1.96	1.98	2.03	2.06	2.10	2.15	2.21	2.29	2.38	1.68	1.41	1.40	
12.359	0.13	0.91	0.77	0.64	0.56	0.49	0.41	0.41	0.41	0.41	0.40	0.39	0.38	0.37	0.37	0.37	0.38	0.58	0.62	0.62	
12.042	-0.22	-1.61	-2.20	-2.35	-2.50	-2.65	-2.78	-2.78	-2.78	-2.79	-2.81	-2.82	-2.83	-2.83	-2.83	-2.84	-2.84	-2.67	-2.52	-2.52	
11.847	0.17	0.27	0.05	-0.02	-0.18	-0.39	-0.42	-0.42	-0.40	-0.43	-0.44	-0.46	-0.48	-0.50	-0.53	-0.56	-0.58	-0.50	-0.40	-0.40	
11.557	-0.25	-0.98	-0.81	-0.72	-0.56	-0.46	-0.48	-0.48	-0.44	-0.44	-0.52	-0.59	-0.66	-0.72	-0.75	-0.76	-0.74	-0.48	-0.18	-0.17	
11.428	-0.43	-0.22	0.06	0.28	0.50	0.68	0.88	0.88	0.88	0.89	0.87	0.83	0.76	0.70	0.66	0.63	0.60	0.62	0.72	0.72	
11.029	0.08	1.04	1.33	1.29	1.39	1.48	1.53	1.53	1.52	1.53	1.61	1.65	1.69	1.72	1.73	1.73	1.70	1.65	1.57	1.57	
10.846	-0.04	0.10	0.31	0.29	0.33	0.31	0.34	0.34	0.35	0.34	0.31	0.27	0.25	0.23	0.22	0.21	0.21	0.27	0.38	0.38	
10.752	0.02	0.26	0.54	0.52	0.56	0.56	0.59	0.58	0.59	0.58	0.56	0.54	0.51	0.49	0.47	0.45	0.45	0.47	0.52	0.52	
10.538	0.02	-0.01	0.07	0.07	0.08	0.08	0.09	0.09	0.08	0.09	0.14	0.18	0.21	0.24	0.26	0.26	0.26	0.20	0.10	0.10	
10.343	-0.34	-1.02	-0.94	-0.92	-0.90	-0.90	-0.89	-0.89	-0.89	-0.89	-0.92	-0.94	-0.96	-0.97	-0.99	-0.99	-0.98	-0.94	-0.87	-0.87	
10.167	0.10	0.21	0.35	0.41	0.40	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.44	0.43	0.43	0.43	0.43	0.44	0.44	0.44	
9.885	-0.09	-0.31	-0.39	-0.37	-0.38	-0.37	-0.38	-0.38	-0.38	-0.38	-0.37	-0.36	-0.35	-0.33	-0.33	-0.33	-0.34	-0.36	-0.39	-0.40	
9.696	-0.03	0.02	0.09	0.11	0.09	0.09	0.09	0.09	0.08	0.08	0.07	0.07	0.08	0.09	0.09	0.07	0.05	0.03	0.02	0.02	
9.435	0.07	0.30	0.39	0.32	0.25	0.20	0.18	0.18	0.17	0.16	0.13	0.11	0.07	0.05	0.04	0.05	0.05	0.05	0.06	0.07	
9.266	0.16	0.48	0.45	0.28	0.17	0.09	0.06	0.06	0.05	0.05	0.04	0.03	0.02	0.02	0.01	0.01	0.00	-0.02	-0.06	-0.06	
8.992	-0.05	-0.22	-0.69	-0.92	-1.11	-1.19	-1.26	-1.26	-1.26	-1.24	-1.23	-1.22	-1.23	-1.23	-1.23	-1.23	-1.22	-1.25	-1.35	-1.35	
8.768	-0.48	-1.59	-1.75	-1.83	-1.92	-1.97	-2.04	-2.04	-2.04	-2.06	-2.10	-2.16	-2.23	-2.29	-2.35	-2.40	-2.43	-2.40	-2.28	-2.28	
8.433	-0.07	-0.10	-0.08	-0.02	0.04	0.08	0.10	0.10	0.10	0.09	0.03	0.00	-0.03	-0.06	-0.08	-0.08	-0.08	-0.07	-0.05	-0.05	
8.198	-0.01	0.00	0.18	0.43	0.61	0.73	0.78	0.78	0.78	0.79	0.82	0.83	0.84	0.85	0.86	0.85	0.83	0.83	0.82	0.82	
8.105	-0.25	-0.15	0.15	0.40	0.57	0.71	0.78	0.78	0.78	0.79	0.89	0.95	1.04	1.09	1.11	1.06	1.02	0.98	0.93	0.93	
8.000	0.77	1.28	1.60	1.87	2.03	2.17	2.24	2.24	2.24	2.26	2.36	2.45	2.53	2.56	2.55	2.48	2.42	2.35	2.30	2.30	
7.990	0.55	1.06	1.40	1.67	1.86	2.00	2.07	2.07	2.06	2.05	2.06	2.12	2.13	2.18	2.17	2.16	2.17	2.16	2.14	2.15	
7.988	0.21	0.84	1.28	1.61	1.79	1.96	2.03	2.03	2.03	2.04	2.04	2.06	2.07	2.07	2.08	2.09	2.08	2.09	2.09	2.09	
7.490	0.04	-0.08	-0.20	-0.24	-0.24	-0.23	-0.22	-0.22	-0.22	-0.22	-0.25	-0.26	-0.30	-0.32	-0.33	-0.33	-0.32	-0.32	-0.31	-0.31	
6.990	-0.40	-0.83	-0.84	-0.81	-0.80	-0.79	-0.78	-0.78	-0.78	-0.79	-0.83	-0.85	-0.88	-0.91	-0.92	-0.91	-0.92	-0.91	-0.89	-0.89	
6.930	0.03	-0.13	-0.16	-0.13	-0.13	-0.14	-0.13	-0.13	-0.14	-0.11	-0.07	-0.11	-0.14	-0.08	-0.03	-0.06	-0.15	-0.17	-0.16	-0.16	
6.910	-0.41	-0.64	-0.64	-0.64	-0.64	-0.63	-0.64	-0.64	-0.61	-0.66	-0.66	-0.66	-0.65	-0.90	-0.65	-0.88	-0.90	-0.79	-0.65	-0.64	
6.890	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.44	0.00	0.62	0.00	0.70	0.00	0.04	0.01	0.03	0.03	
6.888	0.04	0.05	0.03	0.06	0.06	0.03	0.03	0.03	0.00	0.11	0.02	0.35	0.02	0.43	0.05	0.40	0.01	0.00	0.02	0.02	
6.820	-0.36	-0.82	-0.82	-0.81	-0.81	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-0.80	-0.79	-0.80	-0.80	-0.80	-0.80	
6.430	0.26	0.35	0.16	0.13	0.17	0.26	0.33	0.33	0.34	0.33	0.34	0.32	0.34	0.33	0.32	0.31	0.37	0.36	0.34	0.34	
6.070	0.34	0.76	0.90	0.97	1.03	1.09	1.13	1.13	1.13	1.13	1.11	1.09	1.08	1.07	1.06	1.06	1.07	1.08	1.08	1.08	
6.068	0.31	0.80	0.93	0.99	1.04	1.11	1.15	1.15	1.15	1.15	1.15	1.13	1.12	1.11	1.10	1.09	1.09	1.09	1.09	1.09	
5.900	0.00	0.30	0.48	0.57	0.64	0.68	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.69	0.69	0.68	0.68	0.67	0.66	0.66	
5.750	0.06	0.37	0.55	0.66	0.73	0.78	0.79	0.79	0.79	0.79	0.75	0.72	0.68	0.66	0.64	0.64	0.65	0.67	0.66	0.66	
5.689	0.34	0.88	1.09	1.21	1.30	1.34	1.34	1.34	1.34	1.34	1.33	1.31	1.28	1.25	1.24	1.22	1.23	1.23	1.22	1.22	
5.380	-0.34	-0.71	-0.67	-0.64	-0.59	-0.56	-0.55	-0.55	-0.56	-0.55	-0.55	-0.55	-0.56	-0.57	-0.57	-0.57	-0.58	-0.59	-0.58	-0.58	
5.290	-0.19	-0.39	-0.38	-0.34	-0.32	-0.31	-0.30	-0.30	-0.30	-0.31	-0.37	-0.40	-0.41	-0.42	-0.42	-0.43	-0.43	-0.41	-0.37	-0.37	
5.203	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.02	0.14	0.02	0.21	0.02	0.01	0.00	0.00	0.01	
5.201	0.05	0.09	0.05	0.10	0.11	0.06	0.06	0.06	0.00	0.13	0.05	0.40	0.10	0.50	0.15	0.44	0.00	0.01	0.04	0.00	
5.150	-0.19	-1.59	-3.76	-4.32	-4.55	-4.65	-4.66	-4.66	-4.65	-4.66	-4.66	-4.60	-4.59	-4.51	-4.58	-4.63	-4.63	-4.64	-4.64	-4.64	
4.790	-0.14	0.71	2.06	2.21	2.42	2.64	2.70	2.70	2.71	2.72	2.86	2.89	3.02	3.02	3.12	3.19	3.20	3.13	3.00	2.99	
4.754	1.72	2.56	3.37	3.55	3.74	3.92	3.99	3.99	4.00	3.98	3.97	3.98	4.02	4.04	4.06	4.12	4.19	4.25	4.25	4.25	
4.700	0.53	1.81	2.81	3.11	3.30	3.55	3.64	3.64	3.64	3.64	3.64	3.64	3.67	3.72	3.76	3.79	3.81	3.82	3.80	3.80	
4.300	0.06	0.71	1.48	1.79	1.95	2.15	2.24	2.24	2.24	2.22	2.13	2.05	1.95	1.88	1.85	1.85	1.86	1.91	2.00	2.00	
4.094	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.13	0.00	0.20	0.00	0.01	0.00	0.00	0.01	
4.092	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.03	0.00	0.12	0.00	0.15	0.00	0.14	0.00	0.00	0.01	0.00	
3.767	-0.88	-1.78	-1.88	-1.82	-1.72	-1.19	-0.91	-0.91	-0.89	-0.91	-0.85	-0.88	-0.80	-0.86	-0.78	-0.78	-0.65	-0.71	-0.81	-0.80	
3.757	-0.01	-1.14	-1.19	-1.10	-0.95	-0.49	-0.24	-0.23	-0.24	-0.23	-0.25	-0.24	-0.25	-0.21	-0.20	-0.12	-0.07	-0.17	-0.23	-0.23	
3.734	-0.50	-1.33	-1.36	-1.28	-1.17	-0.66	-0.39	-0.39	-0.38	-0.34	-0.22	-0.14	-0.10	-0.08	-0.13	-0.10	-0.10	-0.35	-0.58	-0.58	
3.729	-0.61	-1.21	-1.24	-1.17	-1.07	-0.72	-0.45	-0.45	-0.44	-0.44	-0.41	-0.38	-0.35	-0.32	-0.31	-0.29	-0.27	-0.25	-0.33	-0.33	
3.430	0.08	0.03	0.19	0.35	0.47	0.38	0.52	0.52	0.52	0.52	0.54	0.55	0.57	0.60	0.61	0.62	0.64	0.72	0.90	0.90	
3.370	1.03	1.25	1.50	1.67	1.79	1.68	1.79	1.79	1.80	1.78	1.69	1.62	1.54	1.51	1.51	1.55	1.59	1.69	1.81	1.81	
3.270	0.17	0.59	0.84	0.98	1.07	1.21	1.28	1.28	1.28	1.28	1.29	1.30	1.32	1.32	1.33	1.33	1.32	1.32	1.31	1.31	
2.800	0.03	-0.03	-0.18	-0.38	-0.43	-0.43	-0.55	-0.55	-0.55	-0.54	-0.50	-0.46	-0.39	-0.34	-0.31	-0.32	-0.33	-0.36	-0.40	-0.40	
2.600	-0.09	-0.44	-0.81	-1.10	-1.18	-1.25	-1.44	-1.44	-1.44	-1.44	-1.45	-1.49	-1.52	-1.54	-1.55	-1.56	-1.56	-1.55	-1.56	-1.56	
2.020	-0.23	-0.56	-0.71	-0.87	-1.11	-1.37	-1.44	-1.44	-1.44	-1.44	-1.44	-1.43	-1.42	-1.41	-1.40	-1.39	-1.39	-1.38	-1.37	-1.37	
1.710	0.34	0.62	0.44	0.25	0.01	-0.08	-0.19	-0.19	-0.19	-0.19	-0.17	-0.16	-0.14	-0.13	-0.12	-0.12	-0.12	-0.15	-0.19	-0.19	
1.330	-0.71	-1.63	-2.06	-2.35	-2.66	-3.05	-3.19	-3.20	-3.20	-3.23	-3.33	-3.40	-3.51	-3.61	-3.68	-3.75	-3.76	-3.72	-3.63	-3.63	
1.250	0.32	0.06	-0.26	-0.52	-0.77	-1.09	-1.30	-1.30	-1.30	-1.36	-1.69	-1.74	-1.82	-1.90	-1.94	-1.95	-1.90	-1.79	-1.65	-1.65	
1.170	-0.07	-0.38	-0.69	-0.94	-1.18	-1.46	-1.68	-1.68	-1.68	-1.66	-1.57	-1.67	-1.70	-1.73	-1.74	-1.71	-1.72	-1.75	-1.78	-1.79	
1.100	0.30	0.26	-0.02	-0.25	-0.47	-0.68	-0.92	-0.92	-0.92	-0.90	-0.76	-0.69	-0.65	-0.59	-0.60	-0.60	-0.63	-0.72	-0.84	-0.84	
1.010	-0.08	-0.27	-0.58	-0.80	-0.99	-1.14	-1.36	-1.36	-1.37	-1.37	-1.36	-1.34	-1.33	-1.31	-1.30	-1.31	-1.31	-1.32	-1.32	-1.31	
0.730	0.07	-0.08	-0.21	-0.36	-0.45	-0.54	-0.62	-0.62	-0.63	-0.64	-0.66	-0.67	-0.67	-0.67	-0.66	-0.67	-0.68	-0.66	-0.66	-0.66	
0.630	-0.36	-0.82	-0.88	-1.00	-1.08	-1.20	-1.23	-1.23	-1.23	-1.22	-1.22	-1.21	-1.22	-1.23	-1.23	-1.24	-1.24	-1.24	-1.23	-1.23	
0.440	-0.02	-0.05	-0.05	-0.05	-0.05	-0.05	-0.06	-0.06	-0.06	-0.05	-0.04	-0.04	-0.03	-0.02	-0.01	-0.01	-0.03	-0.04	-0.06	-0.07	
0.160	-0.34	-0.49	-0.52	-0.54	-0.55	-0.59	-0.61	-0.61	-0.61	-0.64	-0.73	-0.82	-0.92	-0.97	-0.98	-0.95	-0.91	-0.83	-0.73	-0.73	

Figure 11.7. Channel Bed Thalweg During Flood Hydrology (Grade control structure model).

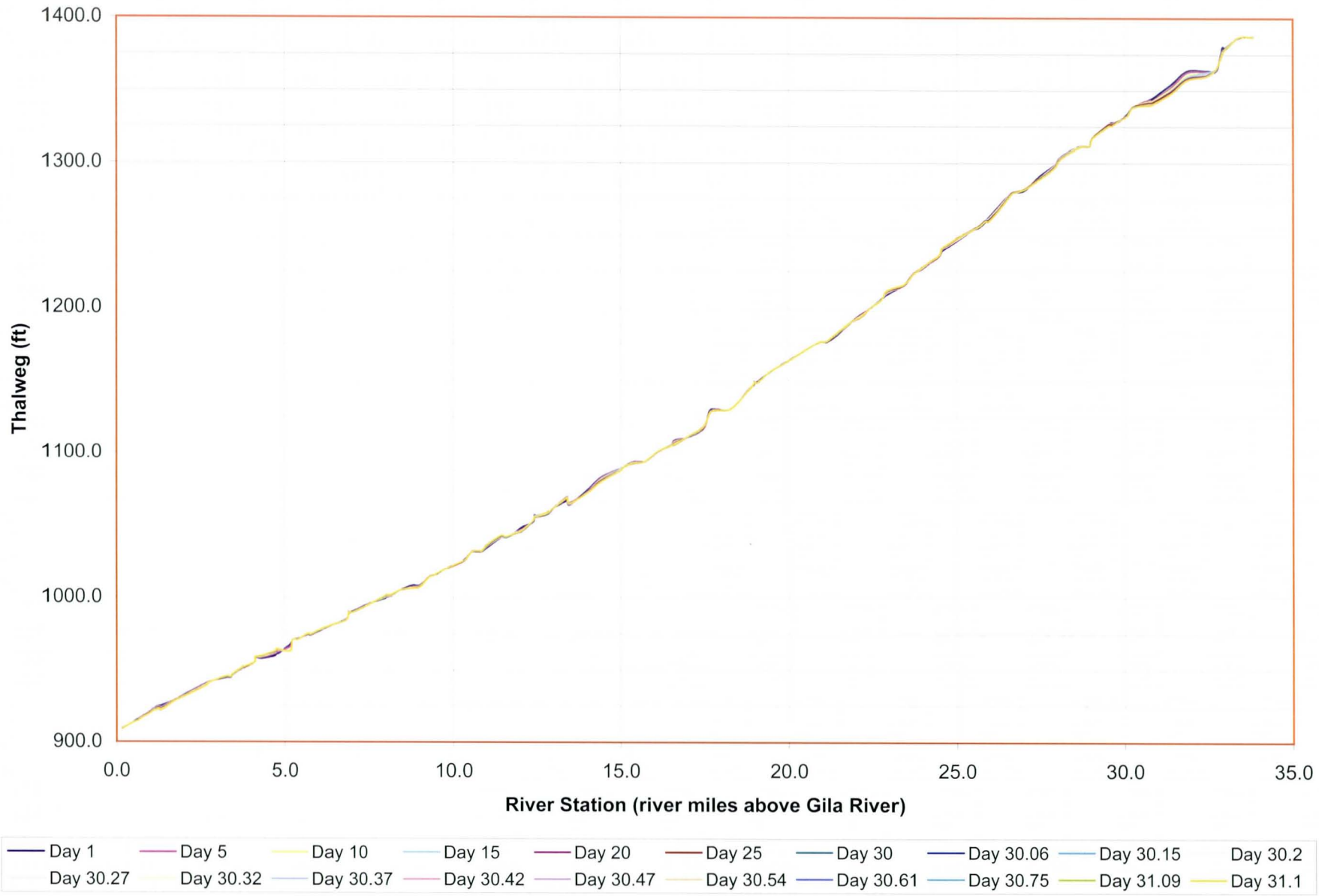


Figure 11.8. Bed Elevation Change During Flood Hydrology (Grade control structure model).

Table 11.4. Channel Bed Thalweg During Flood Hydrology (Grade control structure model).

Hydrograph Day	1.00	5.00	10.00	15.00	20.00	25.00	30.00	30.06	30.15	30.20	30.27	30.32	30.37	30.42	30.47	30.54	30.61	30.75	31.09	31.10		
Section Number	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Thalweg (ft)	Section Number	Grade Control Location
33.820	1387.27	1387.19	1387.12	1387.06	1387.01	1386.97	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.93	1386.92	1386.92	1386.92	1386.92	1386.93	1386.93	1386.93	33.820	
33.410	1386.89	1386.94	1386.98	1387.00	1387.02	1387.02	1387.02	1387.02	1387.03	1387.03	1387.02	1387.01	1387.01	1387.01	1387.01	1387.01	1387.03	1387.03	1387.03	1387.03	33.410	
32.998	1379.79	1379.49	1379.29	1379.11	1378.99	1378.92	1378.85	1378.85	1378.89	1378.86	1378.81	1378.81	1378.80	1378.80	1378.79	1378.79	1378.81	1378.83	1378.86	1378.86	32.998	
32.984	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.41	1378.40	1378.40	1378.41	1378.48	1378.42	1378.51	1378.42	1378.57	1378.41	1378.41	1378.40	1378.40	1378.42	32.984	
32.920	1380.24	1377.81	1377.44	1377.08	1376.89	1376.70	1376.55	1376.55	1376.53	1376.57	1376.55	1376.57	1376.56	1376.60	1376.53	1376.60	1376.55	1376.54	1376.53	1376.52	32.920	
32.860	1374.34	1373.65	1373.38	1372.73	1372.73	1372.42	1372.38	1372.38	1372.36	1372.34	1372.33	1372.33	1372.34	1372.35	1372.36	1372.36	1372.36	1372.35	1372.34	1372.34	32.860	
32.720	1363.95	1364.42	1364.71	1364.93	1365.00	1365.05	1365.08	1365.08	1365.09	1365.08	1365.08	1365.06	1365.05	1365.05	1365.05	1365.04	1365.05	1365.06	1365.07	1365.07	32.720	
32.430	1363.76	1363.33	1362.52	1362.51	1360.74	1359.96	1360.00	1360.00	1360.00	1360.00	1360.00	1360.00	1359.99	1360.00	1360.00	1360.00	1360.00	1360.00	1360.00	1360.00	32.430	
31.860	1363.77	1362.81	1360.48	1359.36	1358.47	1357.87	1357.58	1357.58	1357.58	1357.58	1357.58	1357.59	1357.58	1357.58	1357.55	1357.53	1357.52	1357.51	1357.49	1357.49	31.860	
31.390	1354.66	1352.75	1351.45	1350.23	1349.73	1348.97	1348.39	1348.38	1348.36	1348.35	1348.33	1348.31	1348.30	1348.30	1348.30	1348.29	1348.28	1348.27	1348.24	1348.24	31.390	
30.820	1344.89	1343.42	1342.93	1341.97	1341.84	1341.52	1340.91	1340.91	1340.91	1340.91	1340.90	1340.86	1340.78	1340.70	1340.65	1340.63	1340.62	1340.61	1340.59	1340.59	30.820	
30.730	1344.04	1343.94	1342.76	1341.88	1341.82	1341.51	1340.78	1340.78	1340.78	1340.77	1340.70	1340.60	1340.42	1340.22	1340.10	1340.04	1340.03	1340.05	1340.08	1340.08	30.730	
30.260	1338.99	1339.18	1339.21	1339.18	1339.05	1338.90	1338.67	1338.66	1338.66	1338.66	1338.67	1338.70	1338.75	1338.78	1338.81	1338.79	1338.74	1338.69	1338.64	1338.64	30.260	
30.070	1333.82	1333.37	1333.21	1333.16	1333.01	1332.88	1332.68	1332.68	1332.68	1332.68	1332.68	1332.69	1332.70	1332.71	1332.72	1332.73	1332.69	1332.69	1332.68	1332.68	30.070	
29.800	1328.34	1328.99	1329.05	1328.94	1328.87	1328.69	1328.52	1328.52	1328.51	1328.51	1328.50	1328.50	1328.51	1328.52	1328.51	1328.52	1328.59	1328.62	1328.62	1328.63	29.800	
29.611	1327.89	1327.31	1326.77	1326.49	1326.30	1326.03	1325.50	1325.50	1325.50	1325.50	1325.48	1325.47	1325.46	1325.46	1325.47	1325.48	1325.49	1325.48	1325.46	1325.46	29.611	
29.540	1326.89	1327.04	1326.94	1326.76	1326.63	1326.26	1325.67	1325.66	1325.61	1325.59	1325.57	1325.55	1325.53	1325.52	1325.50	1325.49	1325.48	1325.48	1325.49	1325.49	29.540	
29.040	1317.21	1317.20	1317.23	1317.25	1317.21	1317.14	1316.82	1316.82	1316.81	1316.82	1316.85	1316.87	1316.90	1316.92	1316.94	1316.94	1316.91	1316.85	1316.83	1316.83	29.040	
28.950	1311.59	1311.70	1311.73	1311.75	1311.70	1311.63	1311.52	1311.52	1311.55	1311.51	1311.51	1311.51	1311.52	1311.54	1311.53	1311.52	1311.53	1311.58	1311.56	1311.56	28.950	
28.670	1311.56	1311.54	1311.48	1311.37	1310.99	1310.93	1310.90	1310.90	1310.90	1310.90	1310.89	1310.88	1310.87	1310.86	1310.84	1310.83	1310.83	1310.84	1310.82	1310.81	28.670	
28.120	1304.57	1304.18	1304.13	1303.59	1303.44	1303.13	1303.08	1303.08	1303.08	1303.08	1303.07	1303.06	1303.04	1303.02	1303.00	1302.98	1302.98	1303.00	1303.01	1303.01	28.120	
27.940	1299.11	1299.14	1298.59	1298.10	1297.86	1297.51	1297.37	1297.38	1297.38	1297.38	1297.37	1297.37	1297.36	1297.37	1297.37	1297.38	1297.38	1297.38	1297.38	1297.38	27.940	
27.680	1294.69	1293.94	1293.36	1292.99	1292.60	1292.35	1292.14	1292.14	1292.13	1292.12	1292.13	1292.12	1292.12	1292.13	1292.13	1292.14	1292.12	1292.12	1292.10	1292.10	27.680	
27.480	1291.17	1290.14	1289.80	1289.76	1289.48	1289.37	1289.11	1289.11	1289.10	1289.10	1289.10	1289.09	1289.09	1289.09	1289.09	1289.09	1289.08	1289.07	1289.06	1289.06	27.480	
27.030	1281.53	1282.30	1282.31	1282.17	1282.11	1282.14	1282.07	1282.07	1282.07	1282.07	1282.04	1282.02	1281.99	1281.97	1281.95	1281.94	1281.96	1281.97	1282.00	1282.00	27.030	
26.730	1280.08	1280.53	1280.39	1280.16	1280.08	1280.00	1279.90	1279.90	1279.90	1279.90	1279.89	1279.85	1279.86	1279.86	1279.86	1279.86	1279.86	1279.87	1279.88	1279.88	26.730	
26.630	1279.46	1279.75	1279.59	1279.36	1279.21	1278.90	1278.72	1278.72	1278.73	1278.73	1278.72	1278.70	1278.66	1278.62	1278.57	1278.54	1278.54	1278.54	1278.54	1278.54	26.630	
26.290	1271.50	1271.19	1270.36	1269.46	1269.01	1268.71	1268.48	1268.48	1268.47	1268.47	1268.47	1268.50	1268.51	1268.52	1268.53	1268.52	1268.50	1268.48	1268.47	1268.47	26.290	
25.940	1262.35	1261.91	1261.64	1261.24	1260.57	1260.21	1259.83	1259.82	1259.82	1259.82	1259.80	1259.79	1259.79	1259.79	1259.79	1259.80	1259.78	1259.75	1259.69	1259.69	25.940	
25.860	1260.17	1260.62	1261.06	1261.18	1260.84	1260.57	1260.30	1260.30	1260.29	1260.29	1260.29	1260.31	1260.34	1260.36	1260.38	1260.35	1260.33	1260.34	1260.33	1260.33	25.860	
25.666	1255.93	1256.26	1256.87	1257.06	1256.90	1256.77	1256.57	1256.56	1256.56	1256.56	1256.52	1256.48	1256.40	1256.33	1256.31	1256.35	1256.40	1256.43	1256.46	1256.46	25.666	
25.478	1254.08	1253.97	1254.18	1254.42	1254.48	1254.42	1254.32	1254.31	1254.31	1254.31	1254.30	1254.30	1254.31	1254.32	1254.31	1254.31	1254.31	1254.31	1254.30	1254.30	25.478	
24.996	1246.22	1246.43	1247.10	1247.54	1247.98	1248.09	1247.94	1247.94	1247.93	1247.94	1247.96	1247.96	1247.97	1247.97	1247.97	1247.97	1247.96	1247.94	1247.92	1247.92	24.996	
24.544	1239.42	1240.18	1240.47	1240.62	1240.74	1240.87	1240.97	1240.97	1240.97	1240.96	1240.94	1240.93	1240.92	1240.91	1240.91	1240.91	1240.92	1240.94	1240.96	1240.96	24.544	Propsed New
24.543	1239.27	1240.09	1240.40	1240.56	1240.68	1240.82	1240.92	1240.92	1240.92	1240.92	1240.95	1240.98	1241.02	1241.04	1241.05	1241.04	1241.01	1240.97	1240.92	1240.92	24.543	Estrella Parkway
24.449	1235.01	1235.14	1235.26	1235.37	1235.44	1235.56	1235.67	1235.67	1235.67	1235.67	1235.69	1235.72	1235.75	1235.78	1235.81	1235.82	1235.82	1235.80	1235.76	1235.76	24.449	
23.974	1227.49	1227.74	1228.13	1228.34	1228.49	1228.61	1228.63	1228.63	1228.63	1228.63	1228.61	1228.59	1228.56	1228.53	1228.51	1228.50	1228.50	1228.52	1228.56	1228.56	23.974	
23.692	1223.77	1223.73	1223.58	1223.42	1223.34	1223.27	1223.21	1223.22	1223.21	1223.22	1223.23	1223.24	1223.25	1223.26	1223.26	1223.27	1223.24	1223.22	1223.20	1223.20	23.692	
23.409	1216.24	1215.60	1215.61	1215.72	1215.89	1216.10	1216.34	1216.34	1216.35	1216.34	1216.31	1216.28	1216.22	1216.17	1216.14	1216.12	1216.13	1216.16	1216.22	1216.22	23.409	
22.935	1209.29	1210.08	1210.68	1211.09	1211.38	1211.58	1211.75	1211.75	1211.76	1211.77	1211.79	1211.82	1211.85	1211.89	1211.92	1211.94	1211.94	1211.94	1211.93	1211.93	22.935	
22.745	1205.87	1205.43	1205.25	1205.23	1205.23	1205.23	1205.22	1205.22	1205.22	1205.22	1205.21	1205.20	1205.20	1205.19	1205.19	1205.18	1205.19	1205.20	1205.21	1205.21	22.745	
22.462	1200.36	1200.55	1200.55	1200.55	1200.56	1200.58	1200.59	1200.59	1200.59	1200.59	1200.60	1200.59	1200.60	1200.60	1200.60	1200.59	1200.59	1200.54	1200.49	1200.49	22.462	
22.177	1195.93	1195.57	1194.77	1194.34	1194.19	1194.18	1194.17	1194.17	1194.17	1194.17	1194.17	1194.17	1194.16	1194.16	1194.16	1194.15	1194.15	1194.20	1194.23	1194.23	22.177	
21.894	1191.01	1191.02	1191.04	1191.06	1191.06	1191.07	1191.10	1191.10	1191.09	1191.13	1191.17	1191.19	1191.22	1191.24	1191.25	1191.28	1191.28	1191.17	1191.12	1191.12	21.894	U/S Beardsley
21.893	1191.01	1191.02	1191.02	1191.02	1191.02	1191.03	1191.04	1191.04	1191.04	1191.04	1191.06	1191.07	1191.09	1191.10	1191.10	1191.11	1191.12	1191.09	1191.03	1191.03	21.893	
21.431	1181.07	1181.53	1181.99	1182.05	1182.05	1182.10	1182.28	1182.28	1182.29	1182.29	1182.28	1182.27	1182.28	1182.28	1182.29	1182.29	1182.29	1182.42	1182.54	1182.54	21.431	
21.157	1176.78	1177.12	1177.41	1177.42	1177.36	1177.33	1177.40	1177.40	1177.39	1177.38	1177.36	1177.35	1177.35	1177.34	1177.34	1177.33	1177.32	1177.28	1177.24	1177.24	21.157	
21.061	1176.53	1176.57	1176.68	1176.78	1176.63	1176.70	1176.72	1176.72	1176.70	1176.71	1176.66	1176.60	1176.56	1176.53	1176.50	1176.50	1176.48	1176.56	1176.68	1176.68	21.061	
20.958	1176.61	1176.65	1176.75	1176.76	1176.72	1176.68	1176.69	1176.69	1176.70	1176.70	1176.70	1176.72	1176.71	1176.71	1176.73	1176.73	1176.74	1176.73	1176.72	1176.72	20.958	
20.579	1171.89	1171.94	1171.98	1171.97	1171.95	1171.93	1171.92	1171.92	1171.92	1171.92	1171.91	1171.90	1171.89	1171.88	1171.88	1171.88	1171.88	1171.88	1171.88	1171.88	20.579	
19.920	1162.45	1162.34	1162.28	1162.27	1162.24	1162.17	1162.11	1162.11	1162.11	1162.11	1162.11	1162.12	1162.12	1162.13	1162.13	1162.13	1162.13	1162.13	1162.13	1162.13	19.920	
19.446	1155.97	1156.01	1156.09	1156.12	1156.12	1156.10	1156.09	1156.09	1156.09	1156.09	1156.09	1156.08	1156.07	1156.06	1156.05	1156.05	1156.04	1156.04	1156.04	1156.04	19.446	
19.066	1148.94	1148.43	1148.40	1148.38	1148.36	1148.34	1148.33	1148.33	1148.34	1148.33	1148.33	1148.33	1148.34	1148.34	1148.34	1148.33	1148.32	1148.33	1148.34	1148.34	19.066	
18.962	1148.28	1148.47	1148.67	1148.79	1148.84	1148.87	1148.89	1148.89	1148.88	1148.90	1148.98	1149.03	1149.09	1149.13	1149.12	1149.07	1149.03	1148.91	1148.85	1148.85	18.962	D/S Bell Road
18.960	1147.07	1147.49	1147.89	1148.07	1148.18	1148.19	1148.22	1148.22	1148.22	1148.22	1148.22	1148.23	1148.24	1148.27	1148.30	1148.32	1148.33	1148.33	1148.30	1148.29	18.960	
18.839	1144.59	1144.42	1144.36	1144.33	1144.29	1144.26	1144.24	1144.24	1144.24	1144.24	1144.23	1144.22	1144.20	1144.16	1144.14	1144.13	1144.14	1144.15	1144.14	1144.14	18.839	
18.275	1130.17	1130.21	1130.31	1130.39	1130.44	1130.46	1130.48	1130.48	1130.48	1130.48	1130.48	1130.49	1130.51	1130.53	1130.55	1130.55	1130.54	1130.54	1130.53	1130.53	18.275	
17.821	1130.05	1129.95	1129.68	1129.55	1129.48	1129.40	1129.33	1129.33	1129.32	1129.32	1129.30	1129.27	1129.18	1129.15	1129.13	1129.12	1129.14	1129.18	1129.25	1129.25	17.821	
17.638	1128.99	1127.60	1127.33	1127.33	1127.35	1127.37	1127.38	1127.38	1127.39	1127.38	1127.39	1127.39	1127.43	1127.42	1127.42	1127.41	1127.41	1127.40	1127.40	1127.41	17.638	
17.458	1117.01	1117.49	1117.70	1117.84	1117.98	1118.09	1118.17	1118.17	1118.17	1118.18	1118.22	1118.28	1118.37	1118.46	1118.51	1118.51	1118.49	1118.45	1118.36	1118.36	17.458	
16.990	1110.86	1110.92	1111.02	1111.11	1111.18	1111.25	1111.29	1111.29	1111.30	1111.29	1111.21	1111.16	1111.12	1111.10	1111.09	1111.10	1111.15	1111.20	1111.28	1111.28	16.990	
16.612	1108.74	1108.22	1107.46	1106.95	1106.74	1106.53	1106.18	1106.18	1106.19	1106.19	1106.15	1106.05	1105.75	1105.54	1105.47	1105.55	1105.57	1105.64	1105.77	1105.77	16.612	
16.506	1105.04	1104.95	1104.95	1104.97	1104.96	1104.94	1104.93	1104.92	1104.91	1104.92	1104.94	1104.96	1105.00	1105.04	1105.07	1105.09	1105.09	1105.08	1105.06	1105.06	16.506	
16.482	1105.01	1104.74	1104.73	1104.78	1104.79	1104.81	1104.82	1104.82	1104.83	1104.83	1104.86	1104.85	1104.82	1104.80	1104.82	1104.82	1104.81	1104.80	1104.81	1104.81	16.482	
16.099	1100.92	1100.81	1100.86	1100.84	1100.85	1100.88	1100.89	1100.89	1100.89	1100.89	1100.93	1100.97	1101.01	1101.02	1101.01	1100.99	1100.96	1100.92	1100.88	1100.88	16.099	
15.719	1093.90	1093.78	1093.86	1093.87	1093.87	1093.88	1093.90	1093.90	1093.90	1093.90	1093.90	1093.90	1093.91	1093.92	1093.92	1093.93	1093.94	1093.92	1093.87	1093.87	15.719	
15.374	1093.44	1093.12	1092.67	1092.33	1092.33	1092.36	1092.38	1092.38	1092.40	1092.38	1092.33	1092.32	1092.32	1092.31	1092.30	1092.29	1092.30	1092.36	1092.41	1092.41	15.374	
15.094	1090.25	1090.43	1090.49	1090.42	1090.14	1090.09	1090.07	1090.07	1090.08	1090.08	1090.08	1090.06	1090.05	1090.06	1090.06	1090.06	1090.11	1090.11	1090.07	1090.06	15.094	
15.000	1088.78	1088.78	1088.69	1088.44	1087.87	1087.71	1087.72	1087.72	1087.71	1087.71	1087.70	1087.70	1087.70	1087.69	1087.69	1087.69	1087.69	1087.69	1087.69	1087.69	15.000	
14.430	1083.00	1082.74	1081.94	1081.19	1080.65	1080.18	1080.10	1080.10	1080.09	1080.10	1080.11	1080.11	1080.11	1080.11	1080.11	1080.10	1080.10	1080.09	1080.10	1080.10	14.430	
13.952	1073.00	1072.00	1071.55	1071.60	1071.62	1071.57	1071.56	1071.56	1071.56	1071.56	1071.56	1071.55	1071.49	1071.41	1071.35	1071.32	1071.32	1071.30	1071.28	1071.28	13.952	
13.467	1063.86	1064.19	1064.71	1064.98	1065.17	1064.97	1064.61	1064.61	1064.60	1064.60	1064.62	1064.64	1064.75	1064.86	1064.93	1064.93	1064.89	1064.88	1064.85	1064.85	13.467	
13.396	1067.47	1068.45	1068.88	1069.04	1069.17	1069.06	1068.79	1068.79	1068.78	1068.78	1068.87	1068.99	1069.05	1069.08	1069.08	1069.09	1069.06	1068.85	1068.71	1068.71	13.396	D/S Olive Ave
13.395	1066.85	1068.33	1068.95	1069.14	1069.31	1069.22	1068.96	1068.96	1068.95	1068.95	1068.94	1068.93	1068.93	1068.94	1068.96	1069.00	1069.03	1069.00	1068.89	1068.89	13.395	
13.007	1061.93	1061.87	1061.89	1062.09	1062.29	1062.32	1062.20	1062.20	1062.20	1062.19	1062.06	1061.97	1061.92	1061.88	1061.87	1061.87	1061.87	1061.95	1062.08	1062.08	13.007	
12.816	1057.58	1057.98	1058.37	1058.79	1059.08	1059.15	1059.06	1059.06	1059.06	1059.06	1059.04	1058.97	1058.85	1058.75	1058.68	1058.67	1058.68	1058.72	1058.78	1058.78	12.816	
12.470	1055.34	1055.52	1055.52	1055.62	1055.66	1055.65	1055.60	1055.60	1055.59	1055.60	1055.71	1055.81	1055.95	1056.07	1056.15	1056.19	1056.15	1056.03	1055.74	1055.74	12.470	
12.420	1055.63	1056.42	1056.34	1056.42	1056.43	1056.40	1056.35	1056.35	1056.28	1056.30	1056.37	1056.42	1056.48	1056.54	1056.61	1056.72	1056.78	1056.01	1055.71	1055.71	12.420	
12.359	1051.73	1052.27	1052.36	1052.38	1052.43	1052.41	1052.36	1052.36	1052.38	1052.38	1052.37	1052.36	1052.35	1052.33	1052.33	1052.33	1052.35	1052.57	1052.61	1052.61	12.359	
12.042	1048.28	1046.73	1046.24	1046.11	1045.99	1045.84	1045.73	1045.73	1045.73	1045.71	1045.70	1045.69	1045.69	1045.69	1045.69	1045.67	1045.65	1045.92	1046.12	1046.13	12.042	
11.847	1044.77	1044.82	1044.65	1044.56	1044.39	1044.26	1044.26	1044.26	1044.27	1044.25	1044.22	1044.21	1044.16	1044.12	1044.08	1044.04	1044.03	1044.13	1044.25	1044.25	11.847	
11.557	1041.44	1040.69	1040.79	1040.94	1041.22	1041.37	1041.48	1041.48	1041.54	1041.53	1041.47	1041.40	1041.33	1041.27	1041.23	1041.22	1041.23	1041.45	1041.83	1041.84	11.557	
11.428	1041.32	1041.45	1041.75	1042.07	1042.41	1042.68	1042.85	1042.85	1042.86	1042.87	1042.86	1042.84	1042.80	1042.75	1042.72	1042.70	1042.68	1042.69	1042.79	1042.79	11.428	
11.029	1034.78	1035.57	1035.77	1035.96	1036.23	1036.46	1036.61	1036.61	1036.61	1036.62	1036.68	1036.74	1036.80	1036.84	1036.86	1036.87	1036.86	1036.80	1036.72	1036.72	11.029	
10.846	1031.56	1031.63	1031.73	1031.84	1031.97	1032.08	1032.21	1032.21	1032.21	1032.21	1032.17	1032.15	1032.14	1032.12	1032.09	1032.06	1032.08	1032.16	1032.30	1032.30	10.846	
10.752	1031.31	1031.51	1031.68	1031.75	1031.89	1032.02	1032.13	1032.13	1032.14	1032.13	1032.11	1032.09	1032.07	1032.06	1032.05	1032.03	1032.03	1032.06	1032.11	1032.11	10.752	
10.538	1031.22	1031.18	1031.21	1031.23	1031.27	1031.33	1031.40	1031.40	1031.40	1031.41	1031.46	1031.50	1031.54	1031.58	1031.61	1031.63	1031.62	1031.56	1031.45	1031.45	10.538	
10.343	1026.35	1025.67	1025.71	1025.74	1025.79	1025.83	1025.89	1025.89	1025.90	1025.89	1025.86	1025.84	1025.82	1025.80	1025.80	1025.79	1025.79	1025.84	1025.93	1025.93	10.343	
10.167	1023.39	1023.47	1023.56	1023.61	1023.68	1023.79	1023.85	1023.85	1023.85	1023.85	1023.86	1023.86	1023.85	1023.85	1023.85	1023.87	1023.88	1023.88	1023.89	1023.89	10.167	
9.885	1021.01	1020.78	1020.68	1020.69	1020.69	1020.72	1020.74	1020.74	1020.74	1020.74	1020.75	1020.76	1020.78	1020.80	1020.81	1020.80	1020.80	1020.77	1020.73	1020.73	9.885	
9.696	1018.66	1018.70	1018.74	1018.75	1018.76	1018.79	1018.81	1018.81	1018.81	1018.81	1018.80	1018.80	1018.81	1018.82	1018.82	1018.80	1018.78	1018.76	1018.75	1018.75	9.696	
9.435	1015.26	1015.44	1015.52	1015.47	1015.40	1015.38	1015.39	1015.39	1015.39	1015.38	1015.35	1015.32	1015.29	1015.27	1015.26	1015.27	1015.27	1015.27	1015.29	1015.29	9.435	
9.266	1013.85	1014.13	1014.12	1013.97	1013.84	1013.77	1013.75	1013.75	1013.75	1013.74	1013.73	1013.73	1013.72	1013.72	1013.71	1013.71	1013.70	1013.68	1013.65	1013.65	9.266	
8.992	1008.05	1007.79	1007.50	1007.17	1006.97	1006.86	1006.80	1006.80	1006.80	1006.82	1006.84	1006.85	1006.85	1006.85	1006.85	1006.86	1006.87	1006.82	1006.75	1006.75	8.992	
8.768	1007.92	1006.93	1006.68	1006.54	1006.43	1006.37	1006.32	1006.32	1006.32	1006.30	1006.26	1006.20	1006.14	1006.09	1006.04	1006.00	1005.99	1006.02	1006.12	1006.12	8.768	
8.433	1004.93	1004.90	1004.92	1004.98	1005.03	1005.05	1005.07	1005.07	1005.07	1005.06	1005.00	1004.97	1004.94	1004.93	1004.92	1004.91	1004.91	1004.92	1004.94	1004.94	8.433	
8.198	1001.48	1001.45	1001.60	1001.86	1002.06	1002.18	1002.23	1002.23	1002.23	1002.24	1002.25	1002.27	1002.28	1002.26	1002.25	1002.23	1002.22	1002.22	1002.22	1002.22	8.198	
8.105	1000.23	1000.29	1000.55	1000.82	1001.04	1001.16	1001.21	1001.21	1001.21	1001.23	1001.33	1001.39	1001.48	1001.52	1001.53	1001.49	1001.46	1001.42	1001.37	1001.37	8.105	
8.000	999.96	1000.45	1000.71	1000.97	1001.19	1001.33	1001.38	1001.38	1001.38	1001.40	1001.50	1001.59	1001.68	1001.70	1001.68	1001.63	1001.57	1001.49	1001.45	1001.44	8.000	
7.990	999.64	1000.12	1000.41	1000.69	1000.91	1001.06	1001.11	1001.12	1001.11	1001.09	1001.13	1001.16	1001.15	1001.17	1001.15	1001.25	1001.21	1001.20	1001.19	1001.19	7.990	
7.988	999.30	999.91	1000.29	1000.58	1000.85	1001.01	1001.08	1001.08	1001.08	1001.08	1001.09	1001.10	1001.10	1001.10	1001.12	1001.13	1001.13	1001.13	1001.14	1001.14	7.988	
7.490	995.23	995.13	994.97	994.93	994.94	994.94	994.95	994.95	994.95	994.95	994.92	994.91	994.88	994.85	994.85	994.84	994.85	994.86	994.86	994.86	7.490	
6.990	989.83	989.40	989.36	989.37	989.39	989.41	989.41	989.41	989.41	989.40	989.37	989.34	989.30	989.27	989.26	989.27	989.26	989.27	989.29	989.29	6.990	
6.930	989.92	989.78	989.74	989.76	989.77	989.76	989.77	989.77	989.76	989.78	989.83	989.80	989.81	989.83	989.84	989.86	989.75	989.73	989.74	989.74	6.930	
6.910	989.07	988.91	988.86	988.85	988.87	988.87	988.87	988.88	988.90	988.83	988.75	988.70	988.72	988.59	988.78	988.58	988.59	988.69	988.83	988.83	6.910	
6.890	989.41	989.42	989.41	989.42	989.42	989.41	989.41	989.41	989.41	989.40	989.81	989.40	989.99	989.40	990.14	989.40	989.45	989.40	989.40	989.46	6.890	
6.888	989.44	989.46	989.43	989.46	989.46	989.43	989.43	989.43	989.40	989.51	989.42	989.78	989.42	989.82	989.44	989.79	989.40	989.41	989.44	989.40	6.888	
6.820	984.58	984.18	984.18	984.18	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.19	984.20	984.19	984.19	984.19	6.820	
6.430	981.17	981.22	981.07	981.03	981.06	981.15	981.22	981.22	981.23	981.22	981.23	981.21	981.24	981.23	981.22	981.20	981.26	981.25	981.23	981.23	6.430	
6.070	977.01	977.43	977.57	977.61	977.68	977.75	977.79	977.79	977.80	977.80	977.79	977.78	977.77	977.75	977.76	977.75	977.76	977.76	977.77	977.77	6.070	
6.068	976.99	977.46	977.59	977.62	977.69	977.75	977.80	977.80	977.80	977.81	977.80	977.79	977.78	977.77	977.77	977.76	977.77	977.77	977.77	977.76	6.068	
5.900	975.39	975.67	975.85	975.92	975.99	976.05	976.08	976.08	976.08	976.08	976.07	976.06	976.05	976.03	976.02	976.02	976.01	976.01	976.01	976.01	5.900	
5.750	973.75	974.05	974.23	974.32	974.39	974.44	974.46	974.46	974.46	974.45	974.42	974.38	974.34	974.32	974.30	974.30	974.31	974.33	974.33	974.33	5.750	
5.689	974.18	974.70	974.92	975.03	975.11	975.15	975.17	975.17	975.17	975.17	975.15	975.13	975.11	975.08	975.06	975.05	975.05	975.05	975.05	975.05	5.689	
5.380	971.06	970.69	970.72	970.77	970.79	970.83	970.84	970.84	970.84	970.84	970.84	970.84	970.83	970.82	970.82	970.82	970.81	970.80	970.82	970.82	5.380	
5.290	971.31	971.10	971.12	971.14	971.16	971.19	971.19	971.19	971.19	971.18	971.13	971.10	971.09	971.09	971.09	971.09	971.09	971.10	971.14	971.14	5.290	
5.203	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.09	970.02	970.15	970.02	970.22	970.02	970.01	970.00	970.00	970.01	5.203	
5.201	969.15	969.19	969.15	969.20	969.21	969.16	969.15	969.15	969.10	969.23	969.16	969.49	969.21	969.58	969.26	969.53	969.10	969.11	969.14	969.10	5.201	
5.150	967.21	965.79	963.44	962.93	962.79	962.76	962.77	962.77	962.77	962.76	962.76	962.75	962.81	962.89	962.77	962.75	962.76	962.76	962.76	962.76	5.150	
4.790	960.96	961.81	963.16	963.29	963.46	963.63	963.71	963.71	963.72	963.73	963.86	963.96	964.02	964.02	964.16	964.17	964.18	964.12	963.99	963.99	4.790	
4.754	962.01	962.85	963.65	963.83	963.99	964.15	964.22	964.22	964.22	964.21	964.19	964.22	964.27	964.28	964.34	964.39	964.42	964.45	964.45	964.45	4.754	
4.700	959.63	960.90	961.89	962.19	962.37	962.58	962.66	962.66	962.66	962.66	962.65	962.66	962.69	962.71	962.75	962.79	962.82	962.82	962.80	962.80	4.700	
4.300	957.66	958.31	959.05	959.38	959.54	959.71	959.78	959.78	959.79	959.77	959.68	959.59	959.49	959.42	959.38	959.38	959.40	959.44	959.53	959.53	4.300	
4.094	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.58	958.50	958.63	958.50	958.69	958.50	958.51	958.50	958.50	958.51	4.094	
4.092	955.21	955.22	955.21	955.22	955.22	955.21	955.21	955.21	955.20	955.23	955.20	955.32	955.20	955.35	955.20	955.34	955.20	955.20	955.21	955.20	4.092	
3.767	952.02	951.12	951.01	951.07	951.27	951.72	951.96	951.97	951.98	951.96	952.01	951.97	952.05	951.99	952.07	952.06	952.19	952.13	952.03	952.03	3.767	
3.757	952.09	950.97	950.91	951.00	951.32	951.62	951.84	951.84	951.84	951.84	951.83	951.83	951.82	951.86	951.86	951.93	951.98	951.88	951.83	951.83	3.757	
3.734	951.80	951.02	950.94	951.03	951.32	951.66	951.88	951.88	951.89	951.94	952.05	952.12	952.16	952.19	952.14	952.16	952.15	951.90	951.67	951.66	3.734	
3.729	951.59	950.98	950.95	951.03	951.15	951.50	951.73	951.73	951.74	951.74	951.78	951.80	951.83	951.85	951.85	951.87	951.89	951.91	951.82	951.82	3.729	
3.430	946.08	946.03	946.18	946.35	946.41	946.38	946.49	946.49	946.49	946.49	946.51	946.52	946.54	946.56	946.56	946.58	946.60	946.67	946.85	946.86	3.430	
3.370	944.42	944.65	944.87	945.09	945.14	945.06	945.15	945.15	945.15	945.14	945.04	944.98	944.90	944.86	944.86	944.90	944.94	945.03	945.15	945.15	3.370	
3.270	944.67	945.09	945.32	945.47	945.59	945.70	945.75	945.75	945.75	945.75	945.76	945.77	945.79	945.80	945.80	945.80	945.80	945.79	945.78	945.78	3.270	
2.800	942.03	941.98	941.84	941.69	941.46	941.41	941.41	941.41	941.41	941.41	941.46	941.51	941.58	941.64	941.66	941.66	941.65	941.62	941.58	941.58	2.800	
2.600	939.51	939.14	938.75	938.41	938.19	938.19	938.19	938.19	938.19	938.19	938.18	938.16	938.12	938.11	938.09	938.08	938.09	938.09	938.09	938.09	2.600	
2.020	932.47	932.17	931.98	931.81	931.65	931.42	931.35	931.34	931.34	931.34	931.35	931.35	931.36	931.37	931.38	931.38	931.39	931.39	931.40	931.40	2.020	
1.710	928.54	928.79	928.63	928.41	928.21	928.13	927.99	927.98	927.98	927.98	928.00	928.01	928.03	928.04	928.05	928.06	928.05	928.03	927.98	927.98	1.710	
1.330	924.78	923.87	923.44	923.14	922.85	922.45	922.26	922.26	922.26	922.23	922.12	922.05	921.95	921.86	921.79	921.74	921.72	921.77	921.85	921.86	1.330	
1.250	924.72	924.46	924.14	923.88	923.64	923.33	923.07	923.07	923.07	923.00	922.62	922.55	922.55	922.55	922.55	922.57	922.61	922.69	922.81	922.82	1.250	
1.170	923.53	923.22	922.91	922.66	922.43	922.15	921.91	921.90	921.90	921.93	922.05	921.95	921.82	921.73	921.70	921.72	921.73	921.72	921.70	921.70	1.170	
1.100	922.80	922.76	922.47	922.25	922.05	921.82	921.58	921.58	921.57	921.60	921.73	921.81	921.86	921.89	921.88	921.87	921.85	921.76	921.64	921.64	1.100	
1.010	921.12	920.93	920.62	920.41	920.23	920.05	919.86	919.86	919.85	919.85	919.86	919.87	919.89	919.90	919.91	919.90	919.89	919.89	919.89	919.89	1.010	
0.730	916.97	916.83	916.68	916.58	916.47	916.37	916.27	916.27	916.27	916.25	916.23	916.23	916.23	916.23	916.23	916.23	916.22	916.24	916.24	916.24	0.730	
0.630	915.34	914.89	914.82	914.76	914.65	914.57	914.46	914.46	914.46	914.46	914.47	914.47	914.47	914.45	914.44	914.43	914.44	914.44	914.45	914.45	0.630	
0.440	912.78	912.75	912.75	912.75	912.75	912.75	912.75	912.75	912.75	912.75	912.76	912.76	912.77	912.78	912.79	912.79	912.78	912.76	912.74	912.74	0.440	
0.160	909.26	909.11	909.08	909.05	909.04	909.04	908.99	908.99	908.99	908.96	908.88	908.78	908.66	908.57	908.57	908.61	908.66	908.74	908.85	908.85	0.160	

Table 11.5. Bed Elevation Change During Flood Hydrology (Grade control structure model).

Hydrograph Day	1.00	5.00	10.00	15.00	20.00	25.00	30.00	30.06	30.15	30.20	30.27	30.32	30.37	30.42	30.47	30.54	30.61	30.75	31.09	31.10		
Section Number	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Bed Change (ft)	Section Number	Grade Control Location
33.820	-0.130	-0.210	-0.280	-0.340	-0.390	-0.430	-0.470	-0.470	-0.470	-0.470	-0.470	-0.470	-0.470	-0.480	-0.480	-0.480	-0.480	-0.470	-0.470	-0.470	33.820	
33.410	-0.010	0.040	0.080	0.100	0.120	0.120	0.120	0.120	0.130	0.130	0.120	0.110	0.110	0.110	0.110	0.110	0.130	0.130	0.130	0.130	33.410	
32.998	-1.610	-1.910	-2.110	-2.290	-2.410	-2.480	-2.550	-2.550	-2.510	-2.540	-2.590	-2.590	-2.600	-2.600	-2.610	-2.610	-2.590	-2.570	-2.540	-2.540	32.998	
32.984	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.000	0.000	0.010	0.080	0.020	0.110	0.020	0.170	0.010	0.010	0.000	0.000	0.020	32.984	
32.920	-0.760	-3.190	-3.560	-3.920	-4.110	-4.300	-4.450	-4.450	-4.470	-4.430	-4.450	-4.430	-4.440	-4.400	-4.470	-4.400	-4.450	-4.460	-4.470	-4.480	32.920	
32.860	-0.560	-1.250	-1.520	-2.170	-2.170	-2.480	-2.520	-2.520	-2.540	-2.560	-2.570	-2.570	-2.560	-2.550	-2.540	-2.540	-2.540	-2.550	-2.560	-2.560	32.860	
32.720	0.150	0.620	0.910	1.130	1.200	1.250	1.280	1.280	1.290	1.280	1.280	1.260	1.250	1.250	1.250	1.240	1.250	1.260	1.270	1.270	32.720	
32.430	-0.040	-0.470	-1.280	-1.290	-3.060	-3.840	-3.800	-3.800	-3.800	-3.800	-3.800	-3.800	-3.810	-3.800	-3.800	-3.800	-3.800	-3.800	-3.800	-3.800	32.430	
31.860	-0.020	-0.980	-3.310	-4.430	-5.330	-5.920	-6.210	-6.210	-6.210	-6.210	-6.210	-6.210	-6.210	-6.220	-6.240	-6.260	-6.280	-6.280	-6.300	-6.300	31.860	
31.390	-0.040	-1.950	-3.250	-4.470	-4.970	-5.730	-6.310	-6.320	-6.340	-6.350	-6.370	-6.390	-6.400	-6.400	-6.400	-6.410	-6.420	-6.430	-6.460	-6.460	31.390	
30.820	-0.310	-1.780	-2.270	-3.230	-3.360	-3.680	-4.290	-4.290	-4.290	-4.290	-4.300	-4.340	-4.420	-4.500	-4.550	-4.570	-4.580	-4.590	-4.610	-4.610	30.820	
30.730	-1.160	-1.260	-2.440	-3.320	-3.380	-3.690	-4.420	-4.420	-4.420	-4.430	-4.500	-4.600	-4.780	-4.980	-5.100	-5.160	-5.170	-5.150	-5.120	-5.120	30.730	
30.260	0.090	0.280	0.310	0.280	0.150	0.000	-0.230	-0.240	-0.240	-0.240	-0.230	-0.200	-0.150	-0.120	-0.090	-0.110	-0.160	-0.210	-0.260	-0.260	30.260	
30.070	-0.180	-0.630	-0.790	-0.840	-0.990	-1.120	-1.320	-1.320	-1.320	-1.320	-1.320	-1.310	-1.300	-1.290	-1.280	-1.270	-1.310	-1.310	-1.320	-1.320	30.070	
29.800	0.640	1.290	1.350	1.240	1.170	0.990	0.820	0.820	0.810	0.810	0.800	0.800	0.810	0.820	0.810	0.820	0.890	0.920	0.920	0.930	29.800	
29.611	-1.010	-1.590	-2.130	-2.410	-2.600	-2.870	-3.400	-3.400	-3.400	-3.400	-3.420	-3.430	-3.440	-3.440	-3.430	-3.420	-3.410	-3.420	-3.440	-3.440	29.611	
29.540	0.190	0.340	0.240	0.060	-0.070	-0.440	-1.030	-1.040	-1.090	-1.110	-1.130	-1.150	-1.170	-1.180	-1.200	-1.210	-1.220	-1.220	-1.210	-1.210	29.540	
29.040	0.010	0.000	0.030	0.050	0.010	-0.060	-0.380	-0.380	-0.390	-0.380	-0.350	-0.330	-0.300	-0.280	-0.260	-0.260	-0.290	-0.350	-0.370	-0.370	29.040	
28.950	-0.710	-0.600	-0.570	-0.550	-0.600	-0.670	-0.780	-0.780	-0.750	-0.790	-0.790	-0.790	-0.780	-0.760	-0.770	-0.780	-0.770	-0.720	-0.740	-0.740	28.950	
28.670	0.060	0.040	-0.020	-0.130	-0.510	-0.570	-0.600	-0.600	-0.600	-0.600	-0.610	-0.620	-0.630	-0.640	-0.660	-0.670	-0.670	-0.660	-0.680	-0.690	28.670	
28.120	-0.030	-0.420	-0.470	-1.010	-1.160	-1.470	-1.520	-1.520	-1.520	-1.520	-1.530	-1.540	-1.560	-1.580	-1.600	-1.620	-1.620	-1.600	-1.590	-1.590	28.120	
27.940	0.010	0.040	-0.510	-1.000	-1.240	-1.590	-1.730	-1.720	-1.720	-1.720	-1.730	-1.730	-1.740	-1.730	-1.730	-1.720	-1.720	-1.720	-1.720	-1.720	27.940	
27.680	-0.010	-0.760	-1.340	-1.710	-2.100	-2.350	-2.560	-2.560	-2.570	-2.580	-2.570	-2.580	-2.580	-2.570	-2.570	-2.560	-2.580	-2.580	-2.600	-2.600	27.680	
27.480	-0.330	-1.360	-1.700	-1.740	-2.020	-2.130	-2.390	-2.390	-2.400	-2.400	-2.400	-2.410	-2.410	-2.410	-2.410	-2.410	-2.420	-2.430	-2.440	-2.440	27.480	
27.030	0.330	1.100	1.110	0.970	0.910	0.940	0.870	0.870	0.870	0.870	0.840	0.820	0.790	0.770	0.750	0.740	0.760	0.770	0.800	0.800	27.030	
26.730	0.280	0.730	0.590	0.360	0.280	0.200	0.100	0.100	0.100	0.100	0.090	0.050	0.060	0.060	0.060	0.060	0.060	0.070	0.080	0.080	26.730	
26.630	0.060	0.350	0.190	-0.040	-0.190	-0.500	-0.680	-0.680	-0.670	-0.670	-0.680	-0.700	-0.740	-0.780	-0.830	-0.860	-0.860	-0.860	-0.860	-0.860	26.630	
26.290	-0.100	-0.410	-1.240	-2.140	-2.590	-2.890	-3.120	-3.120	-3.130	-3.130	-3.130	-3.100	-3.090	-3.080	-3.070	-3.080	-3.100	-3.120	-3.130	-3.130	26.290	
25.940	-1.050	-1.490	-1.760	-2.160	-2.830	-3.190	-3.570	-3.580	-3.580	-3.580	-3.600	-3.610	-3.610	-3.610	-3.610	-3.600	-3.620	-3.650	-3.710	-3.710	25.940	
25.860	0.170	0.620	1.060	1.180	0.840	0.570	0.300	0.300	0.290	0.290	0.290	0.310	0.340	0.360	0.380	0.350	0.330	0.340	0.330	0.330	25.860	
25.666	0.530	0.860	1.470	1.660	1.500	1.370	1.170	1.160	1.160	1.160	1.120	1.080	1.000	0.930	0.910	0.950	1.000	1.030	1.060	1.060	25.666	
25.478	0.180	0.070	0.280	0.520	0.580	0.520	0.420	0.410	0.410	0.410	0.400	0.400	0.410	0.420	0.410	0.410	0.410	0.410	0.400	0.400	25.478	
24.996	-0.080	0.130	0.800	1.240	1.680	1.790	1.640	1.640	1.630	1.640	1.660	1.660	1.670	1.670	1.670	1.670	1.660	1.640	1.620	1.620	24.996	
24.544	0.420	1.180	1.470	1.620	1.740	1.870	1.970	1.970	1.970	1.960	1.940	1.930	1.920	1.910	1.910	1.910	1.920	1.940	1.960	1.960	24.544	Propsed New
24.543	0.270	1.090	1.400	1.560	1.680	1.820	1.920	1.920	1.920	1.920	1.950	1.980	2.020	2.040	2.050	2.040	2.010	1.970	1.920	1.920	24.543	Estrella Parkway
24.449	0.010	0.140	0.260	0.370	0.440	0.560	0.670	0.670	0.670	0.670	0.690	0.720	0.750	0.780	0.810	0.820	0.820	0.800	0.760	0.760	24.449	
23.974	-0.010	0.240	0.630	0.840	0.990	1.110	1.130	1.130	1.130	1.130	1.110	1.090	1.060	1.030	1.010	1.000	1.000	1.020	1.060	1.060	23.974	
23.692	-0.030	-0.070	-0.220	-0.380	-0.460	-0.530	-0.590	-0.580	-0.590	-0.580	-0.570	-0.560	-0.550	-0.540	-0.540	-0.530	-0.560	-0.580	-0.600	-0.600	23.692	
23.409	-0.460	-1.100	-1.090	-0.980	-0.810	-0.600	-0.360	-0.360	-0.350	-0.360	-0.390	-0.420	-0.480	-0.530	-0.560	-0.580	-0.570	-0.540	-0.480	-0.480	23.409	
22.935	0.290	1.080	1.680	2.090	2.380	2.580	2.750	2.750	2.760	2.770	2.790	2.820	2.850	2.890	2.920	2.940	2.940	2.940	2.930	2.930	22.935	
22.745	-0.130	-0.570	-0.750	-0.770	-0.770	-0.770	-0.780	-0.780	-0.780	-0.780	-0.790	-0.800	-0.800	-0.810	-0.810	-0.820	-0.810	-0.800	-0.790	-0.790	22.745	
22.462	0.060	0.250	0.250	0.250	0.260	0.280	0.290	0.290	0.290	0.290	0.300	0.290	0.300	0.300	0.300	0.290	0.290	0.240	0.190	0.190	22.462	
22.177	-0.070	-0.430	-1.230	-1.660	-1.810	-1.820	-1.830	-1.830	-1.830	-1.830	-1.830	-1.830	-1.840	-1.840	-1.840	-1.850	-1.850	-1.800	-1.770	-1.770	22.177	
21.894	0.010	0.020	0.040	0.060	0.060	0.070	0.100	0.100	0.090	0.130	0.170	0.190	0.220	0.240	0.250	0.280	0.280	0.170	0.120	0.120	21.894	U/S Beardsley
21.893	0.010	0.020	0.020	0.020	0.020	0.030	0.040	0.040	0.040	0.040	0.060	0.070	0.090	0.100	0.100	0.110	0.120	0.090	0.030	0.030	21.893	
21.431	0.070	0.530	0.990	1.050	1.050	1.100	1.280	1.280	1.290	1.290	1.280	1.270	1.280	1.280	1.290	1.290	1.290	1.420	1.540	1.540	21.431	
21.157	0.180	0.520	0.810	0.820	0.760	0.730	0.800	0.800	0.790	0.780	0.760	0.750	0.750	0.740	0.740	0.730	0.720	0.680	0.640	0.640	21.157	
21.061	0.030	0.070	0.180	0.280	0.130	0.200	0.220	0.220	0.200	0.210	0.160	0.100	0.060	0.030	0.000	0.000	-0.020	0.060	0.180	0.180	21.061	
20.958	0.010	0.050	0.150	0.160	0.120	0.080	0.090	0.090	0.100	0.100	0.100	0.120	0.110	0.110	0.130	0.130	0.140	0.130	0.120	0.120	20.958	
20.579	-0.010	0.040	0.080	0.070	0.050	0.030	0.020	0.020	0.020	0.020	0.010	0.000	-0.010	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	20.579	
19.920	-0.150	-0.260	-0.320	-0.330	-0.360	-0.430	-0.490	-0.490	-0.490	-0.490	-0.490	-0.480	-0.480	-0.470	-0.470	-0.470	-0.470	-0.470	-0.470	-0.470	19.920	
19.446	0.070	0.110	0.190	0.220	0.220	0.200	0.190	0.190	0.190	0.190	0.190	0.180	0.170	0.160	0.150	0.150	0.140	0.140	0.140	0.140	19.446	
19.066	-0.460	-0.970	-1.000	-1.020	-1.040	-1.060	-1.070	-1.070	-1.060	-1.070	-1.070	-1.070	-1.060	-1.060	-1.060	-1.070	-1.080	-1.070	-1.060	-1.060	19.066	
18.962	1.280	1.470	1.670	1.790	1.840	1.870	1.890	1.890	1.880	1.900	1.980	2.030	2.090	2.130	2.120	2.070	2.030	1.910	1.850	1.850	18.962	D/S Bell Road
18.960	0.070	0.490	0.890	1.070	1.180	1.190	1.220	1.220	1.220	1.220	1.220	1.230	1.240	1.270	1.300	1.320	1.330	1.330	1.300	1.290	18.960	
18.839	-0.010	-0.180	-0.240	-0.270	-0.310	-0.340	-0.360	-0.360	-0.360	-0.360	-0.370	-0.380	-0.400	-0.440	-0.460	-0.470	-0.460	-0.450	-0.460	-0.460	18.839	
18.275	0.070	0.110	0.210	0.290	0.340	0.360	0.380	0.380	0.380	0.380	0.380	0.390	0.410	0.430	0.450	0.450	0.440	0.440	0.430	0.430	18.275	
17.821	0.050	-0.050	-0.320	-0.450	-0.520	-0.600	-0.670	-0.670	-0.680	-0.680	-0.700	-0.730	-0.820	-0.850	-0.870	-0.880	-0.860	-0.820	-0.750	-0.750	17.821	
17.638	-1.010	-2.400	-2.670	-2.670	-2.650	-2.630	-2.620	-2.620	-2.610	-2.620	-2.610	-2.610	-2.570	-2.580	-2.580	-2.590	-2.590	-2.600	-2.600	-2.590	17.638	
17.458	0.510	0.990	1.200	1.340	1.480	1.590	1.670	1.670	1.670	1.680	1.720	1.780	1.870	1.960	2.010	2.010	1.990	1.950	1.860	1.860	17.458	
16.990	-0.040	0.020	0.120	0.210	0.280	0.350	0.390	0.390	0.400	0.390	0.310	0.260	0.220	0.200	0.190	0.200	0.250	0.300	0.380	0.380	16.990	
16.612	-0.260	-0.780	-1.540	-2.050	-2.260	-2.470	-2.820	-2.820	-2.810	-2.810	-2.850	-2.950	-3.250	-3.460	-3.530	-3.450	-3.430	-3.360	-3.230	-3.230	16.612	
16.506	-0.360	-0.450	-0.450	-0.430	-0.440	-0.460	-0.470	-0.480	-0.490	-0.480	-0.460	-0.440	-0.400	-0.360	-0.330	-0.310	-0.310	-0.320	-0.340	-0.340	16.506	
16.482	-0.590	-0.860	-0.870	-0.820	-0.810	-0.790	-0.780	-0.780	-0.770	-0.770	-0.740	-0.750	-0.780	-0.800	-0.780	-0.780	-0.790	-0.800	-0.790	-0.790	16.482	
16.099	0.120	0.010	0.060	0.040	0.050	0.080	0.090	0.090	0.090	0.090	0.130	0.170	0.210	0.220	0.210	0.190	0.160	0.120	0.080	0.080	16.099	
15.719	0.200	0.080	0.160	0.170	0.170	0.180	0.200	0.200	0.200	0.200	0.200	0.200	0.210	0.220	0.220	0.230	0.240	0.220	0.170	0.170	15.719	
15.374	-0.360	-0.680	-1.130	-1.470	-1.470	-1.440	-1.420	-1.420	-1.400	-1.420	-1.470	-1.480	-1.480	-1.490	-1.500	-1.510	-1.500	-1.440	-1.390	-1.390	15.374	
15.094	0.350	0.530	0.590	0.520	0.240	0.190	0.170	0.170	0.180	0.180	0.180	0.160	0.150	0.160	0.160	0.160	0.210	0.210	0.170	0.160	15.094	
15.000	-0.020	-0.020	-0.110	-0.360	-0.930	-1.090	-1.080	-1.080	-1.090	-1.090	-1.100	-1.100	-1.100	-1.110	-1.110	-1.110	-1.110	-1.110	-1.110	-1.110	15.000	
14.430	-0.200	-0.460	-1.260	-2.010	-2.550	-3.020	-3.100	-3.100	-3.110	-3.100	-3.090	-3.090	-3.090	-3.090	-3.090	-3.100	-3.100	-3.110	-3.100	-3.100	14.430	
13.952	-0.300	-1.300	-1.750	-1.700	-1.680	-1.730	-1.740	-1.740	-1.740	-1.740	-1.740	-1.750	-1.810	-1.890	-1.950	-1.980	-1.980	-2.000	-2.020	-2.020	13.952	
13.467	-0.240	0.090	0.610	0.880	1.070	0.870	0.510	0.510	0.500	0.500	0.520	0.540	0.650	0.760	0.830	0.830	0.790	0.780	0.750	0.750	13.467	
13.396	1.470	2.450	2.880	3.040	3.170	3.060	2.790	2.790	2.780	2.780	2.870	2.990	3.050	3.080	3.080	3.090	3.060	2.850	2.710	2.710	13.396	D/S Olive Ave
13.395	0.850	2.330	2.950	3.140	3.310	3.220	2.960	2.960	2.950	2.950	2.940	2.930	2.930	2.940	2.960	3.000	3.030	3.000	2.890	2.890	13.395	
13.007	-0.070	-0.130	-0.110	0.090	0.290	0.320	0.200	0.200	0.200	0.190	0.060	-0.030	-0.080	-0.120	-0.130	-0.130	-0.130	-0.050	0.080	0.080	13.007	
12.816	0.180	0.580	0.970	1.390	1.680	1.750	1.660	1.660	1.660	1.660	1.640	1.570	1.450	1.350	1.280	1.270	1.280	1.320	1.380	1.380	12.816	
12.470	0.440	0.620	0.620	0.720	0.760	0.750	0.700	0.700	0.690	0.700	0.810	0.910	1.050	1.170	1.250	1.290	1.250	1.130	0.840	0.840	12.470	
12.420	1.630	2.420	2.340	2.420	2.430	2.400	2.350	2.350	2.280	2.300	2.370	2.420	2.480	2.540	2.610	2.720	2.780	2.010	1.710	1.710	12.420	
12.359	0.030	0.570	0.660	0.680	0.730	0.710	0.660	0.660	0.680	0.680	0.670	0.660	0.650	0.630	0.630	0.630	0.650	0.870	0.910	0.910	12.359	
12.042	-0.220	-1.770	-2.260	-2.390	-2.510	-2.660	-2.770	-2.770	-2.770	-2.790	-2.800	-2.810	-2.810	-2.810	-2.810	-2.830	-2.850	-2.580	-2.380	-2.370	12.042	
11.847	0.170	0.220	0.050	-0.040	-0.210	-0.340	-0.340	-0.340	-0.330	-0.350	-0.380	-0.390	-0.440	-0.480	-0.520	-0.560	-0.570	-0.470	-0.350	-0.350	11.847	
11.557	-0.260	-1.010	-0.910	-0.760	-0.480	-0.330	-0.220	-0.220	-0.160	-0.170	-0.230	-0.300	-0.370	-0.430	-0.470	-0.480	-0.470	-0.250	0.130	0.140	11.557	
11.428	-0.480	-0.350	-0.050	0.270	0.610	0.880	1.050	1.050	1.060	1.070	1.060	1.040	1.000	0.950	0.920	0.900	0.880	0.890	0.990	0.990	11.428	
11.029	0.080	0.870	1.070	1.260	1.530	1.760	1.910	1.910	1.910	1.920	1.980	2.040	2.100	2.140	2.160	2.170	2.160	2.100	2.020	2.020	11.029	
10.846	-0.040	0.030	0.130	0.240	0.370	0.480	0.610	0.610	0.610	0.610	0.570	0.550	0.540	0.520	0.490	0.460	0.480	0.560	0.700	0.700	10.846	
10.752	0.010	0.210	0.380	0.450	0.590	0.720	0.830	0.830	0.840	0.830	0.810	0.790	0.770	0.760	0.750	0.730	0.730	0.760	0.810	0.810	10.752	
10.538	0.020	-0.020	0.010	0.030	0.070	0.130	0.200	0.200	0.200	0.210	0.260	0.300	0.340	0.380	0.410	0.430	0.420	0.360	0.250	0.250	10.538	
10.343	-0.350	-1.030	-0.990	-0.960	-0.910	-0.870	-0.810	-0.810	-0.800	-0.810	-0.840	-0.860	-0.880	-0.900	-0.900	-0.910	-0.910	-0.860	-0.770	-0.770	10.343	
10.167	0.090	0.170	0.260	0.310	0.380	0.490	0.550	0.550	0.550	0.550	0.560	0.560	0.550	0.550	0.550	0.570	0.580	0.580	0.590	0.590	10.167	
9.885	-0.090	-0.320	-0.420	-0.410	-0.410	-0.380	-0.360	-0.360	-0.360	-0.360	-0.350	-0.340	-0.320	-0.300	-0.290	-0.300	-0.300	-0.330	-0.370	-0.370	9.885	
9.696	-0.040	0.000	0.040	0.050	0.060	0.090	0.110	0.110	0.110	0.110	0.100	0.100	0.110	0.120	0.120	0.100	0.080	0.060	0.050	0.050	9.696	
9.435	0.060	0.240	0.320	0.270	0.200	0.180	0.190	0.190	0.190	0.180	0.150	0.120	0.090	0.070	0.060	0.070	0.070	0.070	0.090	0.090	9.435	
9.266	0.150	0.430	0.420	0.270	0.140	0.070	0.050	0.050	0.050	0.040	0.030	0.030	0.020	0.020	0.010	0.010	0.000	-0.020	-0.050	-0.050	9.266	
8.992	-0.050	-0.310	-0.600	-0.930	-1.130	-1.240	-1.300	-1.300	-1.300	-1.280	-1.260	-1.250	-1.250	-1.250	-1.250	-1.240	-1.230	-1.280	-1.350	-1.350	8.992	
8.768	-0.480	-1.470	-1.720	-1.860	-1.970	-2.030	-2.080	-2.080	-2.080	-2.100	-2.140	-2.200	-2.260	-2.310	-2.360	-2.400	-2.410	-2.380	-2.280	-2.280	8.768	
8.433	-0.070	-0.100	-0.080	-0.020	0.030	0.050	0.070	0.070	0.070	0.060	0.000	-0.030	-0.060	-0.070	-0.080	-0.090	-0.090	-0.080	-0.060	-0.060	8.433	
8.198	-0.020	-0.050	0.100	0.360	0.560	0.680	0.730	0.730	0.730	0.740	0.750	0.770	0.780	0.760	0.750	0.730	0.720	0.720	0.720	0.720	8.198	
8.105	-0.270	-0.210	0.050	0.320	0.540	0.660	0.710	0.710	0.710	0.730	0.830	0.890	0.980	1.020	1.030	0.990	0.960	0.920	0.870	0.870	8.105	
8.000	0.760	1.250	1.510	1.770	1.990	2.130	2.180	2.180	2.180	2.200	2.300	2.390	2.480	2.500	2.480	2.430	2.370	2.290	2.250	2.240	8.000	
7.990	0.540	1.020	1.310	1.590	1.810	1.960	2.010	2.020	2.010	1.990	2.030	2.060	2.050	2.070	2.050	2.150	2.110	2.100	2.090	2.090	7.990	
7.988	0.200	0.810	1.190	1.480	1.750	1.910	1.980	1.980	1.980	1.980	1.990	2.000	2.000	2.000	2.020	2.030	2.030	2.030	2.040	2.040	7.988	
7.490	0.030	-0.070	-0.230	-0.270	-0.260	-0.260	-0.250	-0.250	-0.250	-0.250	-0.280	-0.290	-0.320	-0.350	-0.350	-0.360	-0.350	-0.340	-0.340	-0.340	7.490	
6.990	-0.370	-0.800	-0.840	-0.830	-0.810	-0.790	-0.790	-0.790	-0.790	-0.800	-0.830	-0.860	-0.900	-0.930	-0.940	-0.930	-0.940	-0.930	-0.910	-0.910	6.990	
6.930	0.020	-0.120	-0.160	-0.140	-0.130	-0.140	-0.130	-0.130	-0.140	-0.120	-0.070	-0.100	-0.090	-0.070	-0.060	-0.040	-0.150	-0.170	-0.160	-0.160	6.930	
6.910	-0.430	-0.590	-0.640	-0.650	-0.630	-0.630	-0.630	-0.620	-0.600	-0.670	-0.750	-0.800	-0.780	-0.910	-0.720	-0.920	-0.910	-0.810	-0.670	-0.670	6.910	
6.890	0.010	0.020	0.010	0.020	0.020	0.010	0.010	0.010	0.010	0.000	0.410	0.000	0.590	0.000	0.740	0.000	0.050	0.000	0.000	0.060	6.890	
6.888	0.040	0.060	0.030	0.060	0.060	0.030	0.030	0.030	0.000	0.110	0.020	0.380	0.020	0.420	0.040	0.390	0.000	0.010	0.040	0.000	6.888	
6.820	-0.220	-0.620	-0.620	-0.620	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.610	-0.600	-0.610	-0.610	-0.610	6.820	
6.430	0.170	0.220	0.070	0.030	0.060	0.150	0.220	0.220	0.230	0.220	0.230	0.210	0.240	0.230	0.220	0.200	0.260	0.250	0.230	0.230	6.430	
6.070	0.310	0.730	0.870	0.910	0.980	1.050	1.090	1.090	1.100	1.100	1.090	1.080	1.070	1.050	1.060	1.050	1.060	1.060	1.070	1.070	6.070	
6.068	0.290	0.760	0.890	0.920	0.990	1.050	1.100	1.100	1.100	1.110	1.100	1.090	1.080	1.070	1.070	1.060	1.070	1.070	1.070	1.060	6.068	
5.900	-0.010	0.270	0.450	0.520	0.590	0.650	0.680	0.680	0.680	0.680	0.670	0.660	0.650	0.630	0.620	0.620	0.610	0.610	0.610	0.610	5.900	
5.750	0.050	0.350	0.530	0.620	0.690	0.740	0.760	0.760	0.760	0.750	0.720	0.680	0.640	0.620	0.600	0.600	0.610	0.630	0.630	0.630	5.750	
5.689	0.330	0.850	1.070	1.180	1.260	1.300	1.320	1.320	1.320	1.320	1.300	1.280	1.260	1.230	1.210	1.200	1.200	1.200	1.200	1.200	5.689	
5.380	-0.340	-0.710	-0.680	-0.630	-0.610	-0.570	-0.560	-0.560	-0.560	-0.560	-0.560	-0.560	-0.570	-0.580	-0.580	-0.580	-0.590	-0.600	-0.580	-0.580	5.380	
5.290	-0.190	-0.400	-0.380	-0.360	-0.340	-0.310	-0.310	-0.310	-0.310	-0.320	-0.370	-0.400	-0.410	-0.410	-0.410	-0.410	-0.410	-0.400	-0.360	-0.360	5.290	
5.203	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.020	0.150	0.020	0.220	0.020	0.010	0.000	0.000	0.010	5.203	
5.201	0.050	0.090	0.050	0.100	0.110	0.060	0.050	0.050	0.000	0.130	0.060	0.390	0.110	0.480	0.160	0.430	0.000	0.010	0.040	0.000	5.201	
5.150	-0.190	-1.610	-3.960	-4.470	-4.610	-4.640	-4.630	-4.630	-4.630	-4.640	-4.640	-4.650	-4.590	-4.510	-4.630	-4.650	-4.640	-4.640	-4.640	-4.640	5.150	
4.790	-0.140	0.710	2.060	2.190	2.360	2.530	2.610	2.610	2.620	2.630	2.760	2.860	2.920	2.920	3.060	3.070	3.080	3.020	2.890	2.890	4.790	
4.754	1.710	2.550	3.350	3.530	3.690	3.850	3.920	3.920	3.920	3.910	3.890	3.920	3.970	3.980	4.040	4.090	4.120	4.150	4.150	4.150	4.754	
4.700	0.530	1.800	2.790	3.090	3.270	3.480	3.560	3.560	3.560	3.560	3.550	3.560	3.590	3.610	3.650	3.690	3.720	3.720	3.700	3.700	4.700	
4.300	0.060	0.710	1.450	1.780	1.940	2.110	2.180	2.180	2.190	2.170	2.080	1.990	1.890	1.820	1.780	1.780	1.800	1.840	1.930	1.930	4.300	
4.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.000	0.130	0.000	0.190	0.000	0.010	0.000	0.000	0.010	4.094	
4.092	0.010	0.020	0.010	0.020	0.020	0.010	0.010	0.010	0.000	0.030	0.000	0.120	0.000	0.150	0.000	0.140	0.000	0.000	0.010	0.000	4.092	
3.767	-0.880	-1.780	-1.890	-1.830	-1.630	-1.180	-0.940	-0.930	-0.920	-0.940	-0.890	-0.930	-0.850	-0.910	-0.830	-0.840	-0.710	-0.770	-0.870	-0.870	3.767	
3.757	-0.010	-1.130	-1.190	-1.100	-0.780	-0.480	-0.260	-0.260	-0.260	-0.260	-0.270	-0.270	-0.280	-0.240	-0.240	-0.170	-0.120	-0.220	-0.270	-0.270	3.757	
3.734	-0.500	-1.280	-1.360	-1.270	-0.980	-0.640	-0.420	-0.420	-0.410	-0.360	-0.250	-0.180	-0.140	-0.110	-0.160	-0.140	-0.150	-0.400	-0.630	-0.640	3.734	
3.729	-0.610	-1.220	-1.250	-1.170	-1.050	-0.700	-0.470	-0.470	-0.460	-0.460	-0.420	-0.400	-0.370	-0.350	-0.350	-0.330	-0.310	-0.290	-0.380	-0.380	3.729	
3.430	0.080	0.030	0.180	0.350	0.410	0.380	0.490	0.490	0.490	0.490	0.510	0.520	0.540	0.560	0.560	0.580	0.600	0.670	0.850	0.860	3.430	
3.370	1.020	1.250	1.470	1.690	1.740	1.660	1.750	1.750	1.750	1.740	1.640	1.580	1.500	1.460	1.460	1.500	1.540	1.630	1.750	1.750	3.370	
3.270	0.170	0.590	0.820	0.970	1.090	1.200	1.250	1.250	1.250	1.250	1.260	1.270	1.290	1.300	1.300	1.300	1.300	1.290	1.280	1.280	3.270	
2.800	0.030	-0.020	-0.160	-0.310	-0.540	-0.590	-0.590	-0.590	-0.590	-0.590	-0.540	-0.490	-0.420	-0.360	-0.340	-0.340	-0.350	-0.380	-0.420	-0.420	2.800	
2.600	-0.090	-0.460	-0.850	-1.190	-1.410	-1.410	-1.410	-1.410	-1.410	-1.410	-1.420	-1.440	-1.480	-1.490	-1.510	-1.520	-1.510	-1.510	-1.510	-1.510	2.600	
2.020	-0.230	-0.530	-0.720	-0.890	-1.050	-1.280	-1.350	-1.360	-1.360	-1.360	-1.350	-1.350	-1.340	-1.330	-1.320	-1.320	-1.310	-1.310	-1.300	-1.300	2.020	
1.710	0.340	0.590	0.430	0.210	0.010	-0.070	-0.210	-0.220	-0.220	-0.220	-0.200	-0.190	-0.170	-0.160	-0.150	-0.140	-0.150	-0.170	-0.220	-0.220	1.710	
1.330	-0.720	-1.630	-2.060	-2.360	-2.650	-3.050	-3.240	-3.240	-3.240	-3.270	-3.380	-3.450	-3.550	-3.640	-3.710	-3.760	-3.780	-3.730	-3.650	-3.640	1.330	
1.250	0.320	0.060	-0.260	-0.520	-0.760	-1.070	-1.330	-1.330	-1.330	-1.400	-1.780	-1.850	-1.850	-1.850	-1.850	-1.830	-1.790	-1.710	-1.590	-1.580	1.250	
1.170	-0.070	-0.380	-0.690	-0.940	-1.170	-1.450	-1.690	-1.700	-1.700	-1.670	-1.550	-1.650	-1.780	-1.870	-1.900	-1.880	-1.870	-1.880	-1.900	-1.900	1.170	
1.100	0.300	0.260	-0.030	-0.250	-0.450	-0.680	-0.920	-0.920	-0.930	-0.900	-0.770	-0.690	-0.640	-0.610	-0.620	-0.630	-0.650	-0.740	-0.860	-0.860	1.100	
1.010	-0.080	-0.270	-0.580	-0.790	-0.970	-1.150	-1.340	-1.340	-1.350	-1.350	-1.340	-1.330	-1.310	-1.300	-1.290	-1.300	-1.310	-1.310	-1.310	-1.310	1.010	
0.730	0.070	-0.070	-0.220	-0.320	-0.430	-0.530	-0.630	-0.630	-0.630	-0.650	-0.670	-0.670	-0.670	-0.670	-0.670	-0.670	-0.680	-0.660	-0.660	-0.660	0.730	
0.630	-0.360	-0.810	-0.880	-0.940	-1.050	-1.130	-1.240	-1.240	-1.240	-1.240	-1.230	-1.230	-1.230	-1.250	-1.260	-1.270	-1.260	-1.260	-1.250	-1.250	0.630	
0.440	-0.020	-0.050	-0.050	-0.050	-0.050	-0.050	-0.050	-0.050	-0.050	-0.050	-0.040	-0.040	-0.030	-0.020	-0.010	-0.010	-0.020	-0.040	-0.060	-0.060	0.440	
0.160	-0.340	-0.490	-0.520	-0.550	-0.560	-0.560	-0.610	-0.610	-0.610	-0.640	-0.720	-0.820	-0.940	-1.030	-1.030	-0.990	-0.940	-0.860	-0.750	-0.750	0.160	

Table 11.6. Comparison of Thalweg Elevations at Peak of 100-Year Hydrology (Original vs Enchadd.dat Encroachment Models).

Section Number	Original Encroachment Results (ft)	Revised Encroachment Results (ft)	Difference (ft)	Comments
33.820	1386.93	1386.93	0.00	
33.410	1387.01	1387.01	0.00	
32.998	1378.80	1378.80	0.00	Morgan City Wash
32.984	1378.51	1378.51	0.00	State Rte 74
32.920	1376.53	1376.53	0.00	
32.860	1372.00	1372.01	0.01	
32.720	1365.02	1365.02	0.00	
32.430	1359.97	1359.98	0.01	
31.860	1357.63	1357.63	0.00	
31.390	1348.33	1348.29	-0.04	
30.820	1340.82	1340.81	-0.01	
30.730	1340.38	1340.37	-0.01	
30.260	1338.87	1338.87	0.00	
30.070	1332.77	1332.78	0.01	
29.800	1328.50	1328.51	0.01	
29.611	1325.41	1325.43	0.02	
29.540	1325.47	1325.57	0.10	
29.040	1316.86	1316.86	0.00	
28.950	1311.51	1311.51	0.00	
28.670	1310.88	1310.87	-0.01	
28.120	1303.02	1303.04	0.02	
27.940	1297.35	1297.37	0.02	
27.680	1292.11	1292.13	0.02	
27.480	1289.07	1289.09	0.02	
27.030	1282.00	1282.00	0.00	
26.730	1279.87	1279.86	-0.01	
26.630	1278.72	1278.67	-0.05	
26.290	1268.54	1268.53	-0.01	
25.940	1260.33	1259.85	-0.48	
25.860	1260.53	1260.41	-0.12	
25.666	1256.56	1256.56	0.00	
25.478	1254.46	1254.64	0.18	Jomax Road
24.996	1248.42	1249.60	1.18	
24.544		1237.49		Added Cross section
24.543	1236.58	1236.13	-0.45	
24.449	1235.89	1235.27	-0.62	Happy Valley Road
23.974	1228.78	1228.01	-0.77	
23.692	1223.34	1223.01	-0.33	
23.409	1216.30	1215.90	-0.40	Pinnacle Peak Road
22.935	1211.95	1211.73	-0.22	
22.745	1205.25	1205.20	-0.05	
22.462	1200.68	1200.68	0.00	
22.177	1194.63	1194.84	0.21	
21.894		1186.48		Added Cross section
21.893	1186.40	1186.22	-0.18	
21.431	1183.00	1183.20	0.20	
21.157	1177.24	1177.23	-0.01	
21.061	1176.54	1176.50	-0.04	Beardsley Road
20.958	1176.71	1176.67	-0.04	
20.579	1171.91	1171.92	0.01	
19.920	1162.15	1162.16	0.01	Union Hills Road
19.446	1156.16	1155.97	-0.19	
19.066	1148.96	1149.00	0.04	
18.962	1146.66	1146.72	0.06	Bell Road
18.960		1146.51		Added Cross section
18.839	1144.14	1144.17	0.03	
18.275	1130.52	1130.48	-0.04	
17.821	1129.22	1128.99	-0.23	
17.638	1127.45	1127.30	-0.15	
17.458	1118.42	1118.31	-0.11	
16.990	1111.13	1111.09	-0.04	
16.612	1105.34	1105.26	-0.08	
16.506	1104.84	1104.98	0.14	Grand Avenue
16.482	1104.79	1104.78	-0.01	
16.099	1101.02	1100.93	-0.09	
15.719	1093.93	1093.86	-0.07	Cactus Road - El Mirage Landfill
15.374	1092.39	1092.19	-0.20	
15.094	1089.99	1090.02	0.03	
15.000	1087.42	1087.46	0.04	
14.430	1080.39	1079.63	-0.76	
13.952	1071.77	1072.21	0.44	
13.467	1065.08	1067.87	2.79	Olive Ave
13.396		1063.23		Added Cross section
13.395		1064.59		Added Cross section
13.007	1061.93	1062.10	0.17	
12.816	1058.80	1058.29	-0.51	
12.470	1055.97	1055.60	-0.37	
12.420	1056.49	1056.10	-0.39	
12.359	1052.37	1052.08	-0.29	
12.042	1045.78	1045.67	-0.11	
11.847	1044.25	1044.12	-0.13	
11.557	1041.38	1041.04	-0.34	
11.428	1042.79	1042.56	-0.23	Glendale Ave
11.029	1036.81	1036.39	-0.42	
10.846	1032.13	1031.85	-0.28	
10.752	1032.09	1031.81	-0.28	
10.538	1031.56	1031.41	-0.15	
10.343	1025.83	1025.74	-0.09	
10.167	1023.89	1023.74	-0.15	
9.885	1020.79	1020.75	-0.04	
9.696	1018.83	1018.78	-0.05	D/S Glendale Airport
9.435	1015.31	1015.27	-0.04	U/S Camelback Road
9.266	1013.75	1013.72	-0.03	
8.992	1006.89	1006.87	-0.02	
8.768	1006.18	1006.17	-0.01	
8.433	1004.94	1004.97	0.03	
8.198	1002.19	1002.34	0.15	
8.105	1001.41	1001.54	0.13	
8.000	1001.60	1001.73	0.13	
7.990	1001.09	1001.23	0.14	Indian School Road
7.988	1001.02	1001.17	0.15	Grade control structure
7.490	994.85	994.90	0.05	
6.990	989.23	989.32	0.09	
6.930	989.76	989.76	0.00	
6.910	988.00	988.85	0.85	
6.890	989.81	990.02	0.21	Grade control structure
6.888	989.72	989.42	-0.30	
6.820	984.16	984.00	-0.16	
6.430	981.26	981.34	0.08	
6.070	977.75	977.78	0.03	Grade control structure
6.068	977.76	977.82	0.06	
5.900	976.03	976.11	0.08	
5.750	974.33	974.38	0.05	
5.689	975.09	975.13	0.04	McDowell Road
5.380	970.83	970.84	0.01	
5.290	971.10	971.09	-0.01	
5.203	970.17	970.14	-0.03	Grade control structure
5.201	969.10	969.20	0.10	
5.150	962.86	962.81	-0.05	
4.790	963.97	964.12	0.15	
4.754	964.22	964.32	0.10	
4.700	962.65	962.77	0.12	
4.300	959.48	959.55	0.07	
4.094	958.63	958.63	0.00	Grade control structure
4.092	955.20	955.20	0.00	
3.767	952.02	952.10	0.08	
3.757	951.79	951.85	0.06	
3.734	952.14	952.20	0.06	
3.729	951.80	951.85	0.05	
3.430	946.53	946.57	0.04	
3.370	944.91	944.94	0.03	
3.270	945.79	945.82	0.03	
2.800	941.61	941.61	0.00	
2.600	938.07	938.08	0.01	
2.020	931.33	931.28	-0.05	
1.710	928.03	928.06	0.03	
1.330	922.00	921.99	-0.01	
1.250	922.62	922.58	-0.04	
1.170	921.84	921.90	0.06	
1.100	921.86	921.85	-0.01	
1.010	919.94	919.87	-0.07	
0.730	916.21	916.23	0.02	
0.630	914.48	914.48	0.00	
0.440	912.77	912.77	0.00	
0.160	908.65	908.68	0.03	Gila River confluence

Table 11.7. Comparison of Thalweg Elevations at End of 100-Year Hydrology (Original vs Enchadd.dat Encroachment Model).

Section Number	Original Encroachment Results (ft)	Revised Encroachment Results (ft)	Difference (ft)	Comments
33.820	1386.93	1386.93	0.00	
33.410	1387.03	1387.03	0.00	
32.998	1378.86	1378.86	0.00	Morgan City Wash
32.984	1378.42	1378.42	0.00	State Rte 74
32.920	1376.45	1376.46	0.01	
32.860	1372.02	1372.03	0.01	
32.720	1365.04	1365.04	0.00	
32.430	1359.98	1359.99	0.01	
31.860	1357.54	1357.53	-0.01	
31.390	1348.28	1348.24	-0.04	
30.820	1340.62	1340.62	0.00	
30.730	1340.09	1340.08	-0.01	
30.260	1338.75	1338.77	0.02	
30.070	1332.82	1332.82	0.00	
29.800	1328.57	1328.57	0.00	
29.611	1325.40	1325.43	0.03	
29.540	1325.47	1325.57	0.10	
29.040	1316.81	1316.81	0.00	
28.950	1311.55	1311.55	0.00	
28.670	1310.81	1310.79	-0.02	
28.120	1302.95	1302.97	0.02	
27.940	1297.36	1297.39	0.03	
27.680	1292.08	1292.10	0.02	
27.480	1289.03	1289.05	0.02	
27.030	1282.01	1282.01	0.00	
26.730	1279.90	1279.89	-0.01	
26.630	1278.61	1278.54	-0.07	
26.290	1268.48	1268.49	0.01	
25.940	1260.23	1259.74	-0.49	
25.860	1260.57	1260.40	-0.17	
25.666	1256.63	1256.63	0.00	
25.478	1254.43	1254.64	0.21	Jomax Road
24.996	1248.42	1249.62	1.20	
24.544		1237.49		Added Cross section
24.543	1236.57	1236.15	-0.42	
24.449	1235.89	1235.23	-0.66	Happy Valley Road
23.974	1228.77	1228.03	-0.74	
23.692	1223.29	1222.96	-0.33	
23.409	1216.31	1215.89	-0.42	Pinnacle Peak Road
22.935	1212.02	1211.79	-0.23	
22.745	1205.26	1205.20	-0.06	
22.462	1200.59	1200.61	0.02	
22.177	1194.67	1194.87	0.20	
21.894		1186.36		Added Cross section
21.893	1186.30	1186.17	-0.13	
21.431	1183.16	1183.33	0.17	
21.157	1177.23	1177.21	-0.02	
21.061	1176.73	1176.67	-0.06	Beardsley Road
20.958	1176.73	1176.70	-0.03	
20.579	1171.90	1171.91	0.01	
19.920	1162.16	1162.16	0.00	Union Hills Road
19.446	1156.15	1155.96	-0.19	
19.066	1148.95	1148.99	0.04	
18.962	1146.63	1146.61	-0.02	Bell Road
18.960		1146.53		Added Cross section
18.839	1144.09	1144.11	0.02	
18.275	1130.53	1130.49	-0.04	
17.821	1129.30	1129.06	-0.24	
17.638	1127.43	1127.29	-0.14	
17.458	1118.41	1118.31	-0.10	
16.990	1111.30	1111.23	-0.07	
16.612	1105.40	1104.87	-0.53	
16.506	1104.91	1105.04	0.13	Grand Avenue
16.482	1104.79	1104.79	0.00	
16.099	1100.88	1100.86	-0.02	
15.719	1093.88	1093.84	-0.04	Cactus Road - El Mirage Landfill
15.374	1092.41	1092.33	-0.08	
15.094	1090.00	1090.03	0.03	
15.000	1087.42	1087.46	0.04	
14.430	1080.35	1079.57	-0.78	
13.952	1071.47	1072.11	0.64	
13.467	1065.12	1067.83	2.71	Olive Ave
13.396		1063.75		Added Cross section
13.395		1064.59		Added Cross section
13.007	1062.10	1061.90	-0.20	
12.816	1058.75	1058.21	-0.54	
12.470	1055.76	1055.37	-0.39	
12.420	1055.76	1055.40	-0.36	
12.359	1052.66	1052.32	-0.34	
12.042	1046.14	1045.98	-0.16	
11.847	1044.33	1044.20	-0.13	
11.557	1041.94	1041.53	-0.41	
11.428	1042.80	1042.52	-0.28	Glendale Ave
11.029	1036.72	1036.27	-0.45	
10.846	1032.30	1031.98	-0.32	
10.752	1032.12	1031.82	-0.30	
10.538	1031.46	1031.30	-0.16	
10.343	1025.93	1025.83	-0.10	
10.167	1023.91	1023.74	-0.17	
9.885	1020.75	1020.70	-0.05	
9.696	1018.77	1018.72	-0.05	D/S Glendale Airport
9.435	1015.31	1015.27	-0.04	U/S Camelback Road
9.266	1013.67	1013.64	-0.03	
8.992	1006.80	1006.75	-0.05	
8.768	1006.19	1006.12	-0.07	
8.433	1004.94	1004.95	0.01	
8.198	1002.15	1002.32	0.17	
8.105	1001.31	1001.43	0.12	
8.000	1001.39	1001.50	0.11	
7.990	1001.13	1001.25	0.12	Indian School Road
7.988	1001.05	1001.19	0.14	Grade control structure
7.490	994.82	994.89	0.07	
6.990	989.18	989.31	0.13	
6.930	989.68	989.74	0.06	
6.910	988.71	988.86	0.15	
6.890	989.43	989.43	0.00	Grade control structure
6.888	989.41	989.42	0.01	
6.820	984.16	984.00	-0.16	
6.430	981.25	981.34	0.09	
6.070	977.77	977.78	0.01	Grade control structure
6.068	977.77	977.79	0.02	
5.900	976.01	976.06	0.05	
5.750	974.33	974.36	0.03	
5.689	975.04	975.07	0.03	McDowell Road
5.380	970.81	970.82	0.01	
5.290	971.15	971.13	-0.02	
5.203	970.01	970.01	0.00	Grade control structure
5.201	969.10	969.10	0.00	
5.150	962.81	962.76	-0.05	
4.790	963.94	964.09	0.15	
4.754	964.41	964.55	0.14	
4.700	962.75	962.90	0.15	
4.300	959.51	959.60	0.09	
4.094	958.51	958.51	0.00	Grade control structure
4.092	955.20	955.20	0.00	
3.767	952.00	952.10	0.10	
3.757	951.80	951.87	0.07	
3.734	951.63	951.72	0.09	
3.729	951.79	951.87	0.08	
3.430	946.84	946.90	0.06	
3.370	945.15	945.21	0.06	
3.270	945.78	945.81	0.03	
2.800	941.59	941.60	0.01	
2.600	938.03	938.04	0.01	
2.020	931.37	931.33	-0.04	
1.710	927.99	928.01	0.02	
1.330	921.89	921.87	-0.02	
1.250	922.85	922.75	-0.10	
1.170	921.73	921.81	0.08	
1.100	921.67	921.66	-0.01	
1.010	919.93	919.89	-0.04	
0.730	916.23	916.24	0.01	
0.630	914.47	914.47	0.00	
0.440	912.70	912.73	0.03	
0.160	908.89	908.87	-0.02	Gila River confluence

Figure 11.9. Channel Bed Thalweg Profiles Peak of 100-Year Hydrograph
(Original vs Enchadd.dat Encroachment Models)

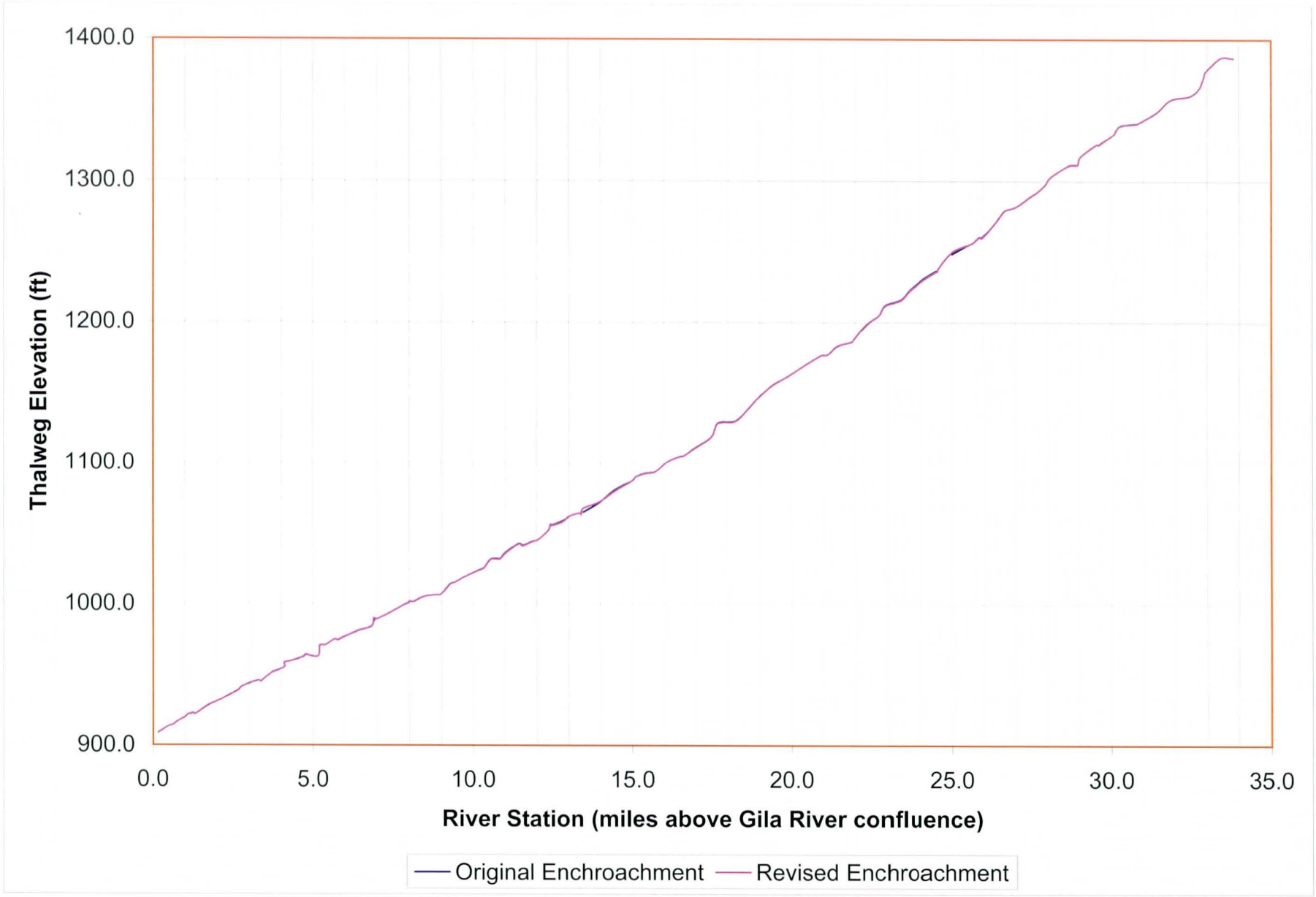


Figure 11.10. Channel Bed Thalweg Profiles End of 100-Year Hydrograph
(Original vs Enchadd.dat Encroachment Models)

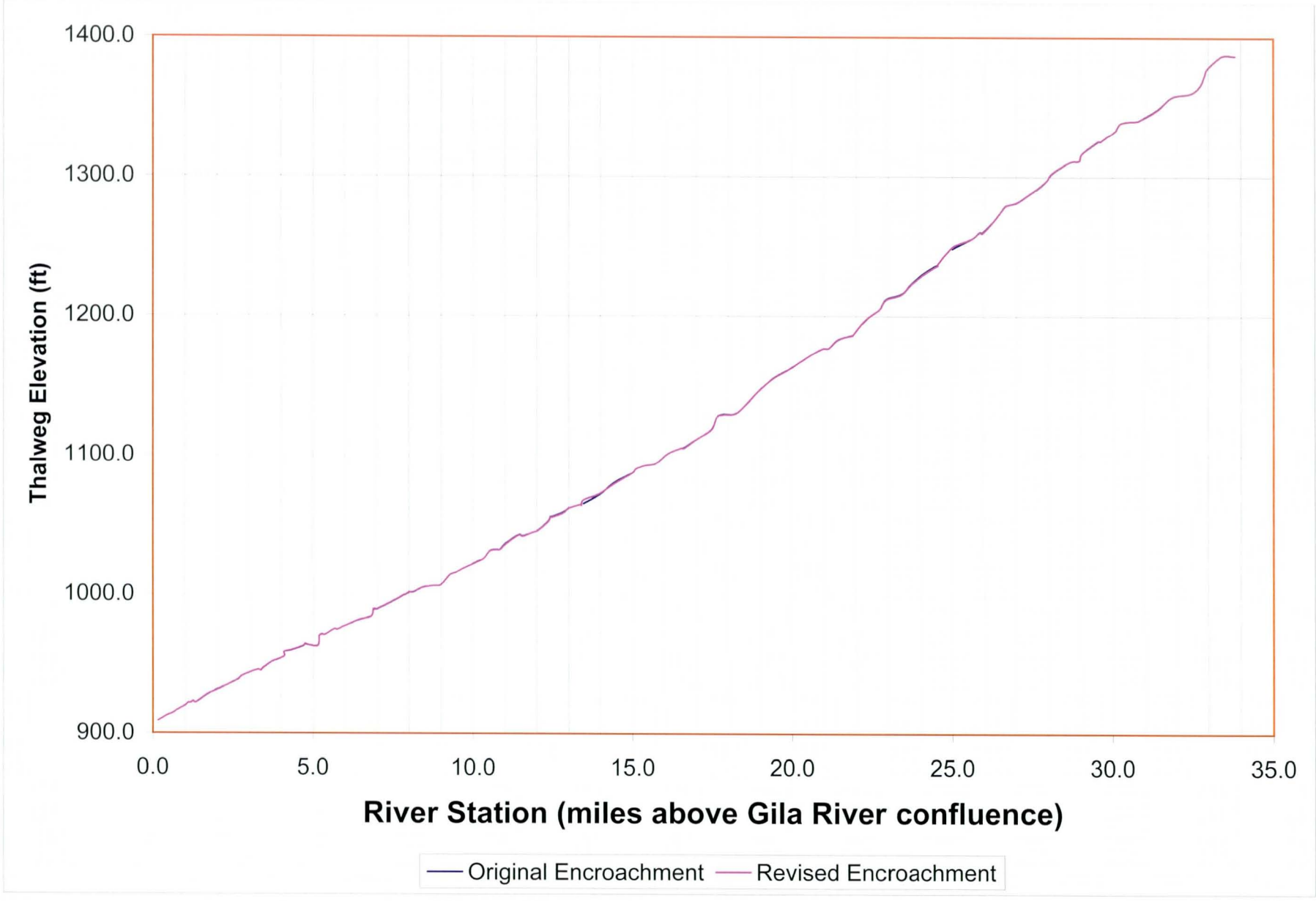


Table 11.9. Comparison of Bed Elevation Profiles for End of 100-Year Hydrograph (Enchadd.dat Encroachment vs Grade Control Model).

Section Number	Revised Enroachment Model Thalweg (ft)	Grade Control Model Thalweg (ft)	Difference (ft)	Grade Control Location
33.820	1386.93	1386.93	0.00	
33.410	1387.03	1387.03	0.00	
32.998	1378.86	1378.86	0.00	
32.984	1378.42	1378.42	0.00	
32.920	1376.46	1376.52	0.06	
32.860	1372.03	1372.34	0.31	
32.720	1365.04	1365.07	0.03	
32.430	1359.99	1360.00	0.01	
31.860	1357.53	1357.49	-0.04	
31.390	1348.24	1348.24	0.00	
30.820	1340.62	1340.59	-0.03	
30.730	1340.08	1340.08	0.00	
30.260	1338.77	1338.64	-0.13	
30.070	1332.82	1332.68	-0.14	
29.800	1328.57	1328.63	0.06	
29.611	1325.43	1325.46	0.03	
29.540	1325.57	1325.49	-0.08	
29.040	1316.81	1316.83	0.02	
28.950	1311.55	1311.56	0.01	
28.670	1310.79	1310.81	0.02	
28.120	1302.97	1303.01	0.04	
27.940	1297.39	1297.38	-0.01	
27.680	1292.10	1292.10	0.00	
27.480	1289.05	1289.06	0.01	
27.030	1282.01	1282.00	-0.01	
26.730	1279.89	1279.88	-0.01	
26.630	1278.54	1278.54	0.00	
26.290	1268.49	1268.47	-0.02	
25.940	1259.74	1259.69	-0.05	
25.860	1260.40	1260.33	-0.07	
25.666	1256.63	1256.46	-0.17	
25.478	1254.64	1254.30	-0.34	
24.996	1249.62	1247.92	-1.70	
24.544	1237.49	1240.96	3.47	Propsed New
24.543	1236.15	1240.92	4.77	Estrella Parkway
24.449	1235.23	1235.76	0.53	
23.974	1228.03	1228.56	0.53	
23.692	1222.96	1223.20	0.24	
23.409	1215.89	1216.22	0.33	
22.935	1211.79	1211.93	0.14	
22.745	1205.20	1205.21	0.01	
22.462	1200.61	1200.49	-0.12	
22.177	1194.87	1194.23	-0.64	
21.894	1186.36	1191.12	4.76	U/S Beardsley
21.893	1186.17	1191.03	4.86	
21.431	1183.33	1182.54	-0.79	
21.157	1177.21	1177.24	0.03	
21.061	1176.67	1176.68	0.01	
20.958	1176.70	1176.72	0.02	
20.579	1171.91	1171.88	-0.03	
19.920	1162.16	1162.13	-0.03	
19.446	1155.96	1156.04	0.08	
19.066	1148.99	1148.34	-0.65	
18.962	1146.61	1148.85	2.24	D/S Bell Road
18.960	1146.53	1148.29	1.76	
18.839	1144.11	1144.14	0.03	
18.275	1130.49	1130.53	0.04	
17.821	1129.06	1129.25	0.19	
17.638	1127.29	1127.41	0.12	
17.458	1118.31	1118.36	0.05	
16.990	1111.23	1111.28	0.05	
16.612	1104.87	1105.77	0.90	
16.506	1105.04	1105.06	0.02	
16.482	1104.79	1104.81	0.02	
16.099	1100.86	1100.88	0.02	
15.719	1093.84	1093.87	0.03	
15.374	1092.33	1092.41	0.08	
15.094	1090.03	1090.06	0.03	
15.000	1087.46	1087.69	0.23	
14.430	1079.57	1080.10	0.53	
13.952	1072.11	1071.28	-0.83	
13.467	1067.83	1064.85	-2.98	
13.396	1063.75	1068.71	4.96	D/S Olive Ave
13.395	1064.59	1068.89	4.30	

Section Number	Revised Enroachment Model Thalweg (ft)	Grade Control Model Thalweg (ft)	Difference (ft)	Grade Control Location
13.007	1061.90	1062.08	0.18	
12.816	1058.21	1058.78	0.57	
12.470	1055.37	1055.74	0.37	
12.420	1055.40	1055.71	0.31	
12.359	1052.32	1052.61	0.29	
12.042	1045.98	1046.13	0.15	
11.847	1044.20	1044.25	0.05	
11.557	1041.53	1041.84	0.31	
11.428	1042.52	1042.79	0.27	
11.029	1036.27	1036.72	0.45	
10.846	1031.98	1032.30	0.32	
10.752	1031.82	1032.11	0.29	
10.538	1031.30	1031.45	0.15	
10.343	1025.83	1025.93	0.10	
10.167	1023.74	1023.89	0.15	
9.885	1020.70	1020.73	0.03	
9.696	1018.72	1018.75	0.03	
9.435	1015.27	1015.29	0.02	
9.266	1013.64	1013.65	0.01	
8.992	1006.75	1006.75	0.00	
8.768	1006.12	1006.12	0.00	
8.433	1004.95	1004.94	-0.01	
8.198	1002.32	1002.22	-0.10	
8.105	1001.43	1001.37	-0.06	
8.000	1001.50	1001.44	-0.06	
7.990	1001.25	1001.19	-0.06	
7.988	1001.19	1001.14	-0.05	
7.490	994.89	994.86	-0.03	
6.990	989.31	989.29	-0.02	
6.930	989.74	989.74	0.00	
6.910	988.86	988.83	-0.03	
6.890	989.43	989.46	0.03	
6.888	989.42	989.40	-0.02	
6.820	984.00	984.19	0.19	
6.430	981.34	981.23	-0.11	
6.070	977.78	977.77	-0.01	
6.068	977.79	977.76	-0.03	
5.900	976.06	976.01	-0.05	
5.750	974.36	974.33	-0.03	
5.689	975.07	975.05	-0.02	
5.380	970.82	970.82	0.00	
5.290	971.13	971.14	0.01	
5.203	970.01	970.01	0.00	
5.201	969.10	969.10	0.00	
5.150	962.76	962.76	0.00	
4.790	964.09	963.99	-0.10	
4.754	964.55	964.45	-0.10	
4.700	962.90	962.80	-0.10	
4.300	959.60	959.53	-0.07	
4.094	958.51	958.51	0.00	
4.092	955.20	955.20	0.00	
3.767	952.10	952.03	-0.07	
3.757	951.87	951.83	-0.04	
3.734	951.72	951.66	-0.06	
3.729	951.87	951.82	-0.05	
3.430	946.90	946.86	-0.04	
3.370	945.21	945.15	-0.06	
3.270	945.81	945.78	-0.03	
2.800	941.60	941.58	-0.02	
2.600	938.04	938.09	0.05	
2.020	931.33	931.40	0.07	
1.710	928.01	927.98	-0.03	
1.330	921.87	921.86	-0.01	
1.250	922.75	922.82	0.07	
1.170	921.81	921.70	-0.11	
1.100	921.66	921.64	-0.02	
1.010	919.89	919.89	0.00	
0.730	916.24	916.24	0.00	
0.630	914.47	914.45	-0.02	
0.440	912.73	912.74	0.01	
0.160	908.86	908.85	-0.01	

Table 11. 8. Comparison of Bed Elevation Profiles for Peak of 100-year Hydrograph (Enchadd.dat Encroachment vs Grade Control Model).

Section Number	Revised Enroachment Model Thalweg (ft)	Grade Control Model Thalweg (ft)	Difference (ft)	Grade Control Location
33.820	1386.93	1386.93	0.00	
33.410	1387.01	1387.01	0.00	
32.998	1378.80	1378.80	0.00	
32.984	1378.51	1378.51	0.00	
32.920	1376.53	1376.56	0.03	
32.860	1372.01	1372.34	0.33	
32.720	1365.02	1365.05	0.03	
32.430	1359.98	1359.99	0.01	
31.860	1357.63	1357.58	-0.05	
31.390	1348.29	1348.30	0.01	
30.820	1340.81	1340.78	-0.03	
30.730	1340.37	1340.42	0.05	
30.260	1338.87	1338.75	-0.12	
30.070	1332.78	1332.70	-0.08	
29.800	1328.51	1328.51	0.00	
29.611	1325.43	1325.46	0.03	
29.540	1325.57	1325.53	-0.04	
29.040	1316.86	1316.90	0.04	
28.950	1311.51	1311.52	0.01	
28.670	1310.87	1310.87	0.00	
28.120	1303.04	1303.04	0.00	
27.940	1297.37	1297.36	-0.01	
27.680	1292.13	1292.12	-0.01	
27.480	1289.09	1289.09	0.00	
27.030	1282.00	1281.99	-0.01	
26.730	1279.86	1279.86	0.00	
26.630	1278.67	1278.66	-0.01	
26.290	1268.53	1268.51	-0.02	
25.940	1259.85	1259.79	-0.06	
25.860	1260.41	1260.34	-0.07	
25.666	1256.56	1256.40	-0.16	
25.478	1254.64	1254.31	-0.33	
24.996	1249.60	1247.97	-1.63	
24.544	1237.49	1240.92	3.43	Propsed New
24.543	1236.13	1241.02	4.89	Estrella Parkway
24.449	1235.27	1235.75	0.48	
23.974	1228.01	1228.56	0.55	
23.692	1223.01	1223.25	0.24	
23.409	1215.90	1216.22	0.32	
22.935	1211.73	1211.85	0.12	
22.745	1205.20	1205.20	0.00	
22.462	1200.68	1200.60	-0.08	
22.177	1194.84	1194.16	-0.68	
21.894	1186.48	1191.22	4.74	U/S Beardsley
21.893	1186.22	1191.09	4.87	
21.431	1183.20	1182.28	-0.92	
21.157	1177.23	1177.35	0.12	
21.061	1176.50	1176.56	0.06	
20.958	1176.67	1176.71	0.04	
20.579	1171.92	1171.89	-0.03	
19.920	1162.16	1162.12	-0.04	
19.446	1155.97	1156.07	0.10	
19.066	1149.00	1148.34	-0.66	
18.962	1146.72	1149.09	2.37	D/S Bell Road
18.960	1146.51	1148.24	1.73	
18.839	1144.17	1144.20	0.03	
18.275	1130.48	1130.51	0.03	
17.821	1128.99	1129.18	0.19	
17.638	1127.30	1127.43	0.13	
17.458	1118.31	1118.37	0.06	
16.990	1111.09	1111.12	0.03	
16.612	1105.26	1105.75	0.49	
16.506	1104.98	1105.00	0.02	
16.482	1104.78	1104.82	0.04	
16.099	1100.93	1101.01	0.08	
15.719	1093.86	1093.91	0.05	
15.374	1092.19	1092.32	0.13	
15.094	1090.02	1090.05	0.03	
15.000	1087.46	1087.70	0.24	
14.430	1079.63	1080.11	0.48	
13.952	1072.21	1071.49	-0.72	
13.467	1067.87	1064.75	-3.12	
13.396	1063.23	1069.05	5.82	D/S Olive Ave
13.395	1064.59	1068.93	4.34	

Section Number	Revised Enroachment Model Thalweg (ft)	Grade Control Model Thalweg (ft)	Difference (ft)	Grade Control Location
13.007	1062.10	1061.92	-0.18	
12.816	1058.29	1058.85	0.56	
12.470	1055.60	1055.95	0.35	
12.420	1056.10	1056.48	0.38	
12.359	1052.08	1052.35	0.27	
12.042	1045.67	1045.69	0.02	
11.847	1044.12	1044.16	0.04	
11.557	1041.04	1041.33	0.29	
11.428	1042.56	1042.80	0.24	
11.029	1036.39	1036.80	0.41	
10.846	1031.85	1032.14	0.29	
10.752	1031.81	1032.07	0.26	
10.538	1031.41	1031.54	0.13	
10.343	1025.74	1025.82	0.08	
10.167	1023.74	1023.85	0.11	
9.885	1020.75	1020.78	0.03	
9.696	1018.78	1018.81	0.03	
9.435	1015.27	1015.29	0.02	
9.266	1013.72	1013.72	0.00	
8.992	1006.87	1006.85	-0.02	
8.768	1006.17	1006.14	-0.03	
8.433	1004.97	1004.94	-0.03	
8.198	1002.34	1002.28	-0.06	
8.105	1001.54	1001.48	-0.06	
8.000	1001.73	1001.68	-0.05	
7.990	1001.23	1001.15	-0.08	
7.988	1001.17	1001.10	-0.07	
7.490	994.90	994.88	-0.02	
6.990	989.32	989.30	-0.02	
6.930	989.76	989.81	0.05	
6.910	988.85	988.72	-0.13	
6.890	990.02	989.99	-0.03	
6.888	989.42	989.42	0.00	
6.820	984.00	984.19	0.19	
6.430	981.34	981.24	-0.10	
6.070	977.78	977.77	-0.01	
6.068	977.82	977.78	-0.04	
5.900	976.11	976.05	-0.06	
5.750	974.38	974.34	-0.04	
5.689	975.13	975.11	-0.02	
5.380	970.84	970.83	-0.01	
5.290	971.09	971.09	0.00	
5.203	970.14	970.15	0.01	
5.201	969.20	969.21	0.01	
5.150	962.81	962.81	0.00	
4.790	964.12	964.02	-0.10	
4.754	964.32	964.27	-0.05	
4.700	962.77	962.69	-0.08	
4.300	959.55	959.49	-0.06	
4.094	958.63	958.63	0.00	
4.092	955.20	955.20	0.00	
3.767	952.10	952.05	-0.05	
3.757	951.85	951.82	-0.03	
3.734	952.20	952.16	-0.04	
3.729	951.85	951.83	-0.02	
3.430	946.57	946.54	-0.03	
3.370	944.94	944.90	-0.04	
3.270	945.82	945.79	-0.03	
2.800	941.61	941.58	-0.03	
2.600	938.08	938.12	0.04	
2.020	931.28	931.36	0.08	
1.710	928.06	928.03	-0.03	
1.330	921.99	921.95	-0.04	
1.250	922.58	922.55	-0.03	
1.170	921.90	921.82	-0.08	
1.100	921.85	921.86	0.01	
1.010	919.87	919.89	0.02	
0.730	916.23	916.23	0.00	
0.630	914.48	914.47	-0.01	
0.440	912.77	912.77	0.00	
0.160	908.68	908.66	-0.02	

Figure 11.11. Comparison of Bed Elevation Profiles for Peak of 100-Year Hydrograph (Enchadd.dat Encroachment vs Grade Control Model).

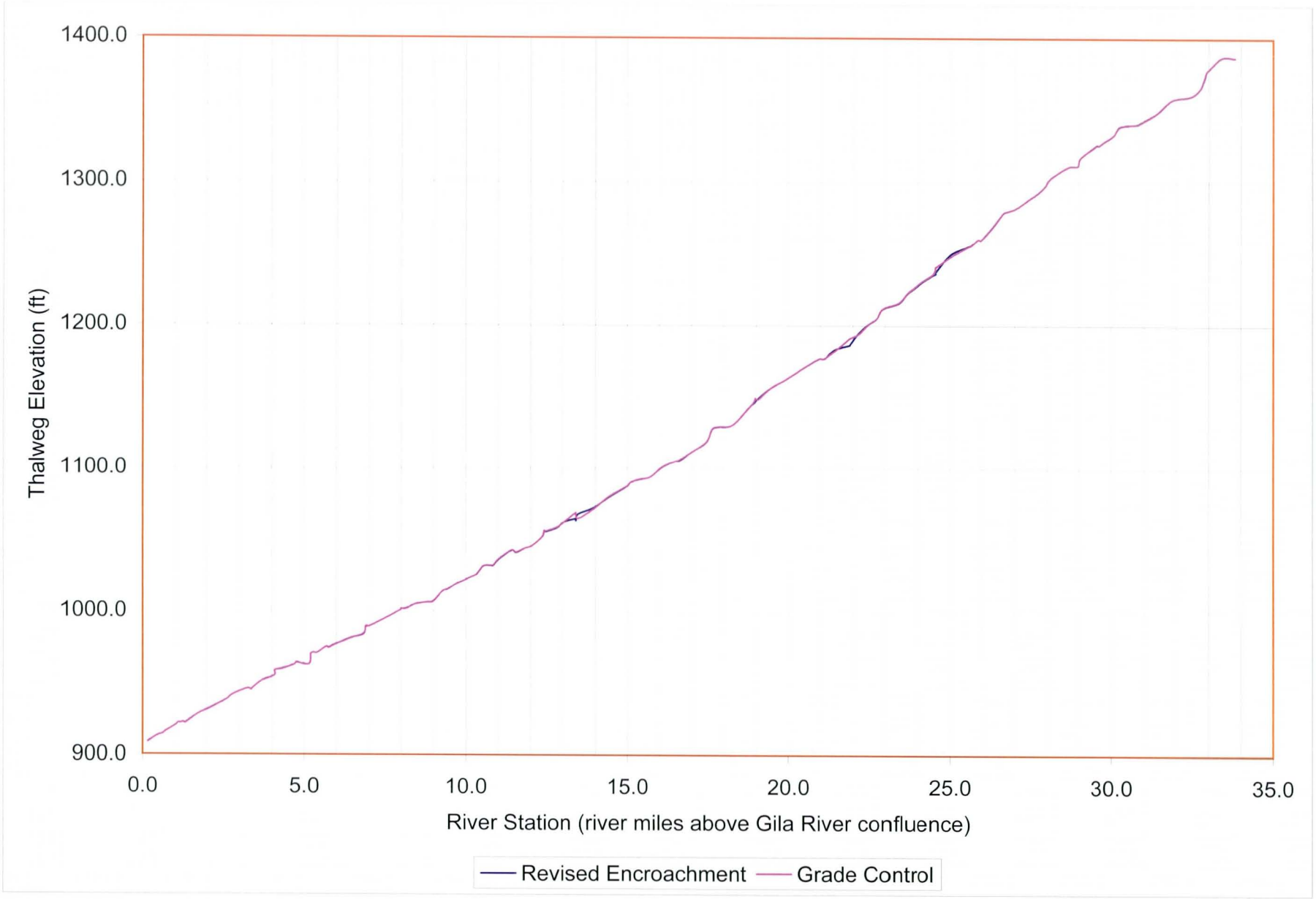
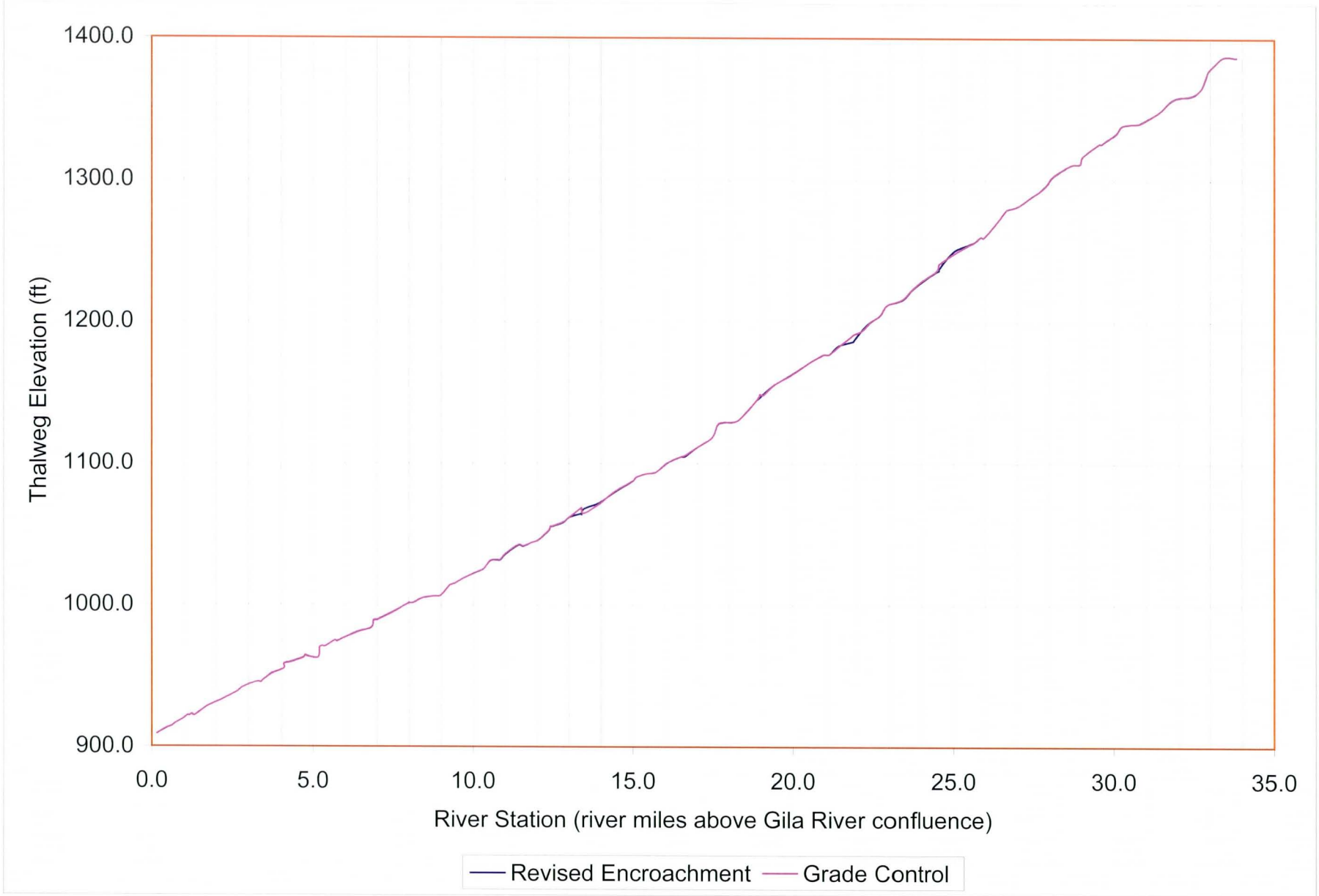


Figure 11.12. Comparison of Bed Elevation Profiles for End of 100-year Hydrograph Enchadd.dat Encroachment vs Grade Control Model).



SECTION 12 COMPARISON OF PREVIOUS HEC-6 SEDIMENT TRANSPORT STUDIES

12. COMPARISON OF PREVIOUS HEC- 6SEDIMENT TRANSPORT STUDIES

This section of the report compares the results of the Agua Fria River Watercourse Master Plan Sediment Trend Analysis with the Arizona State University (ASU) Agua Fria River Sediment Transport Study. The ASU study was conducted by the Civil Engineering Department on behalf of the Flood Control District of Maricopa County. The ASU study was completed in February 1994. The ASU study is a previous system sediment transport study of the river that covers the same limits as the Watercourse Master Plan. Other studies cover the lower reach of the river (specifically the levee reach from Camelback downstream to Lower Buckeye Road) and individual studies of bridges and sand and gravel operations. Table 12.1 provides a summary of the study elements of the Watercourse Master Plan and the ASU study.

Table 12.1 Summary of Study Major Elements.

Study Element	Agua Fria River Watercourse Master Plan (KHA)	Agua Fria River Sediment Transport Study (ASU)
Limits of Study	Gila River to New Waddell Dam	Gila River to New Waddell Dam
Sediment Transport Model	HEC-6 FixedS95	HEC-6 1991
Sediment Transport Function	Yang's Streampower	Toffaleti-Schoklitsch
Derivation of Project Hydrology	Agua Fria River Study New Waddell Dam to Gila River Confluence, Arizona Hydrologic Evaluation of Impacts of New Waddell Dam on Downstream Peak Discharges in the Agua Fria River (U.S. Army Corps of Engineers – July 1995).	Hydrology for the Evaluation of Flood Reduction by New Waddell Dam, Agua Fria River Below New Waddell Dam to the New River Confluence (U.S. Army Corps of Engineers – September 1988).
Project Hydrographs	30-days of 9,000 cfs followed by 100-year flood event (time base of 100-year flood is 1.1 days). 100-year hydrograph developed using Corps peak discharges and SPF hydrograph shape	Four hydrologic data under post-New Waddell conditions were used for the 50-, 100-, 200-, and 500-year floods. The duration of the hydrographs was equivalent to the duration of the 1980 flood event of approximately 8.79 days. Triangular-shaped hydrograph.
Base Hydraulics Models	1996 Coe and Van Loo Flood Insurance Study of the Agua Fria River (HEC-2)	1989 Jerry Jones & Associates Flood Insurance Study of the Agua Fria River (HEC-2)
HEC-6 Sediment Transport Models Developed	Model 1 – Fixed Bed Model 2 - Existing Conditions Model 3 – Sand and Gravel Model 4 – Full Encroachment Model 5 – Grade Control Model	Model 1 – Existing Conditions Model 2 – Sand and Gravel Model 3 – Low Flow
Sand and Gravel Model Approach	Utilize HEC-6 Dredging Routine prior to 100-year hydrograph	Hardcoded sand and gravel cross mining limits
Peak Flow from New Waddell Dam	9,000 cfs	32,000 cfs

The Agua Fria River Watercourse Master Plan Sediment Trend Analysis (Kimley-Horn and Associates, Inc.) and the ASU Sediment Transport Study of the Agua Fria River have similar purposes and scopes. Both studies were initiated to investigate the

response or behavior of the riverbed to input hydrology and to develop sediment transport models that may subsequently be used for the District's floodplain and erosion management activities for the river. Both studies used the U.S. Army Corps of Engineers HEC-6 computer program "Sedimentation and Deposition in Rivers and Reservoirs". The limits of each study were the same: from the Gila River confluence upstream to the New Waddell Dam for a river distance of approximately 33.8 miles.

Sediment Transport Function: The sediment transport function selected for the Watercourse Master Plan Sediment Trend Analysis was Yang's Streampower function (see Section 6 of this report). The selection of Yang's Streampower function was based on published guidelines regarding the selection of appropriate sediment transport functions for sand and gravel rivers, the grain size distribution of the sediment samples collected and analyzed as part of the Watercourse Master Plan (D_{50} less than 10mm), and previous KHA sediment trend analysis experience with the Salt River.

The ASU study conducted a similar analysis for the selection of an appropriate sediment transport function as did Kimley-Horn. Both studies used a test reach of the Agua Fria River to evaluate several transport functions on the test reach. ASU, however, evaluated ten transport functions that are available in the HEC-6 model, whereas, KHA limited their evaluation to a narrower selection (four functions). ASU conducted a statistical analysis to assist in their selection of a study sediment transport function based on the results from each function on the test reach. The sediment transport function used by ASU in their study was Toffaleti-Schoklitsch.

Project Hydrology: Kimley-Horn developed the Agua Fria River and New River hydrographs based on the Corps of Engineers 1995 Hydrologic Impact Study of the Agua Fria River. From this study, KHA derived a 100-year hydrograph for the Agua Fria River downstream of the New River confluence (see Figure 5.6 in Section 5 of this report). The peak flow in the Agua Fria River below the New River confluence is 54,400-cfs based on the Corps study. KHA prepared a computational hydrograph for the 100-year flood event and is depicted in Figure 5.6. The computational hydrograph is used as the project hydrology simulation in the HEC-6 models.

ASU also utilized a previous Corps of Engineers study of New Waddell Dam that estimated the outflow from the dam as 32,000-cfs. ASU developed a design flood discharge for the Agua Fria River to simulate New Waddell dam conditions based on the Waddell Dam design flood discharges (pre-New Waddell dam). The ASU design flood discharges are provided in Table 12.2 for New Waddell dam conditions.

Kimley-Horn's 100-year hydrograph for the sediment trend analysis was based on a flow duration just over one-day. This duration was simulated after the Corps 1995 hydrology study of the Agua Fria River. The ASU study flood duration was based on a 1980 flood event in the river, which lasted 8.79 days. ASU prepared computational flood hydrographs based on this flood duration. The ASU study includes evaluation of the river response for the 50-, 100-, 200- and 500-year flood events.

The Watercourse Master Plan sediment trend analysis study included a project hydrology that was initiated with a flow of 9,000-cfs for a period of 30-days. The 100-year flood hydrograph was applied immediately after the 30-day flow of 9,000-cfs. The 30-days of flow was used to simulate a "long-term" channel forming flow event that was followed immediately by the 100-year flood. The ASU study conducted a single-event

analysis (i.e., routed the 100-year hydrograph through the river). The computational hydrograph for the 100-Year flood discharge used in the ASU study is provided in Table 12.3.

Table 12.2. ASU Design Flood Discharge at the Agua Fria River.

Location Along Agua Fria River	Peak 100-Year Discharge (cfs)
Outflow – New Waddell Dam	32,000
Bell Road	20,000
U/S New River confluence	16,000
D/S New River confluence	17,000
Camelback Road	16,500
Indian School Road	16,000
I-10 Freeway	15,500
Avondale	15,000
Gila River confluence	14,500

Table 12.3. ASU Hydrograph for 100-Year Discharge.

Time (Days)		New Waddell Release (Cfs)	New River Discharge (Cfs)	Total (Cfs)
Duration	Cumulative			
0.00	000	0	0	0
1.85	1.85	8,000	1,250	9,250
1.39	3.240	16,000	2,500	18,500
0.925	4.165	24,000	3,750	27,750
0.463	4.628	32,000	5,000	37,000
0.925	5.553	24,000	3,750	27,750
0.39	6.943	16,000	2,500	18,500
1.85	8.793	8,000	1,250	9,250
0.00	8.793	0	0	0

Base Hydraulic Model: Both the Watercourse Master Plan and the ASU study used previous flood insurance studies of the Agua Fria River as the base hydraulic models for subsequent development of the HEC-6 sediment transport models. The Master Plan used the 1996 Coe & Van Loo flood insurance study prepared for the District. The ASU study used the 1989 flood insurance study (Jerry Jones & Associates, Inc.) prepared for the District. The Coe & Van Loo study is the most recent and current regulatory model for the river. The Coe & Van Loo study was based on 100-year flood event from New Waddell Dam conditions. KHA and ASU used the HEC-2 models for each flood insurance study for their respective studies.

Sand and Gravel Models: Both studies took different approaches to modeling the permitted sand and gravel mining pit limits and geometry along the river. However, either approach is acceptable for defining the pit dimensions both in plan limits and pit depths. The Watercourse Master plan used the dredging option available in HEC-6 to define the pit limits and pit depths (see Section 9 of this report). This option is defined on the HD records and initialized by using the $DREDGE record in the hydrology HEC-6 data set. Essentially, the dredge routine defines the elevation of the pit bottom as well as the lateral limits at a pit cross section. A number of sequential cross sections so defined identify the upstream and downstream limits of a (or a group of) sand and gravel mine(s). The dredging routine was initialized after the passage of the 30-day of 9,000-cfs flow through the river and prior to the 100-year flood. This routine dredged the sand and gravel mines to their full mining plan limits and depth prior to the onset of the 100-year flood.

The ASU study however, took their existing conditions HEC-6 model and hardcoded (revised) the cross sections at each sand and gravel mining site to depict the full mining site lateral limits as well as the depth of the pits. Both the studies, the Master Plan study and the ASU study has full mining plans depicted in cross section geometry prior to the 100-year flood event. In this fashion both studies simulated the 100-year flood event in the river with full sand and gravel mining development.

The Master Plan study and the ASU study defined the moveable bed limits of the river for each cross section that included a sand and gravel mining site or pit. This approach allowed for aggradation only at the mining site or pit but allowed both scour and/or deposition to occur outside the mining limits but still within the moveable bed limits. This is a typical approach since large in-stream pits will capture sediment during a flood event as opposed to being subject to degradation.

Review of Study Results: The comparison of the results of the two studies will be limited to the two common models developed in each study. These two common models are the existing condition model and the sand and gravel model as depicted in Table 12.1. Note that the respective studies are based on different HEC-2 FIS hydraulic models as well as project hydrology, The comparison will examine the river response at the end of each study's hydrology simulation. The comparisons are made by cross section and at the major bridge crossings of the river and are presented in summary by Tables 12.2, 12.3, 12.4, 12.5 and Figures 12.1 and 12.2.

Existing Conditions: Tables 12.4, 12.6, and Figure 12.1 provides a summary comparison of the results for the existing conditions HEC-6 models between the Master Plan and the ASU study. A review of Figure 12.1 indicates a similar trend in river bed response in the reach of the Agua Fria River that includes the Corps of Engineers levees and existing grade control structures. From river station 13+50 downstream to the Gila River both sediment transport studies show similar trends in locations of aggradation and degradation of the river. The average bed change response is approximately plus or minus two feet in both studies.

Table 12.4 Existing Condition Model – Net Response of River at Bridge Locations.

Bridge	Watercourse Master Plan Bed Response	ASU Study Bed Response
Buckeye Road	Degradation	Aggradation
Southern Pacific Railroad	Degradation	Neither
Van Buren	Aggradation	Aggradation
Interstate 10	Degradation	Degradation
McDowell Road	Aggradation	Degradation
Indian School Road	Aggradation	Degradation
Camelback Road	Slight Aggradation	Degradation
Glendale Avenue	Aggradation	Aggradation
Olive Road	Aggradation	Degradation
Grand Avenue	Degradation	Aggradation
Santa Fe Railroad	Degradation	Degradation
Bell Road	Aggradation	Degradation
Beardsley Flume	Degradation	Degradation
Highway 74	No Change	Degradation

Table 12.5 Sand and Gravel Model – Net Bed Response of River at Bridge Locations.

Bridge	Watercourse Master Plan Bed Response	ASU Study Bed Response
Buckeye Road	Degradation	Aggradation
Southern Pacific Railroad	Degradation	Neither
Van Buren	Aggradation	Aggradation
Interstate 10	Degradation	Degradation
McDowell Road	Aggradation	Degradation
Indian School Road	Aggradation	Aggradation
Camelback Road	Degradation	Degradation
Glendale Avenue	Aggradation	Aggradation
Olive Road	Aggradation	Degradation
Grand Avenue	Degradation	Aggradation
Santa Fe Railroad	Degradation	Degradation
Bell Road	Degradation	Degradation
Beardsley Flume	Degradation	Degradation
Highway 74	No Change	Degradation

Table 12.6. Existing Conditions Net Bed Change End of Period Simulation.

Cross Section Number	Watercourse Master Plan* Bed Change (ft)	ASU Study Bed Change (ft)
33.820	-0.44	-2.50
33.410	0.16	-0.73
32.998	-2.42	-6.50
32.984	0.00	-4.60
32.920	-3.97	
32.860	-2.11	1.20
32.720	1.37	
32.430	0.01	0.31
31.860	-5.61	0.21
31.390	-4.29	-1.20
30.820	-6.08	0.12
30.730	-4.73	
30.260	0.45	-0.11
30.070	-4.63	-0.28
29.800	-0.45	1.70
29.611	-3.04	-0.42
29.540	-1.09	-0.44
29.040	-0.60	0.23
28.950	-0.71	
28.670	-1.09	-0.14
28.120	-0.74	-0.33
27.940	-0.35	
27.680	-4.83	-0.23
27.480	-3.57	
27.030	0.69	-0.12
26.730	0.15	-0.06
26.630	-0.34	
26.290	-2.95	-0.18
25.940	-2.86	
25.860	0.78	-0.46
25.666	0.78	
25.590		0.32
25.478	-0.94	
25.370		-0.05
24.996	1.21	
24.900		0.12
24.543	3.54	1.14
24.540		1.14
24.449	0.56	
24.350		-0.23
23.974	0.64	
23.890		-0.21
23.692	-0.84	
23.409	-0.96	
23.350		-0.07
22.935	2.36	
22.790		-0.17
22.745	-2.39	
22.462	-1.68	
22.320		-0.09
22.177	0.44	
21.893	-0.88	
21.760		0.00
21.431	1.78	-0.02
21.420		-0.02
21.157	0.47	
21.061	0.05	
21.010		1.00
20.958	-0.02	
20.920		0.16
20.579	-0.09	
20.450		-1.25
19.920	0.07	
19.890		-0.88
19.446	-0.74	-0.03
19.440		-0.03
19.066	-0.79	
18.962	0.70	
18.920		-1.80
18.839	-0.49	
18.275	0.34	
18.240		-0.05
17.821	-0.96	
17.760		0.75
17.638	-2.92	
17.458	1.72	
17.380		0.23
16.990	0.31	
16.910		-2.02
16.612	-3.29	
16.506	-0.33	
16.482	-0.64	
16.450		-3.93
16.446		-8.54
16.420		2.77
16.099	0.02	
15.980		1.16
15.510		2.05
15.719	0.08	
15.374	-1.47	
15.320		-0.75
15.094	0.09	

*based on Sbase50.dat

Cross Section Number	Watercourse Master Plan Bed Change (ft)	ASU Study Bed Change (ft)
15.000	-1.38	
14.940		0.86
14.850		-0.57
14.430	-3.40	
14.380		-0.18
13.952	-2.28	
13.810		-0.11
13.467	0.92	
13.330		-0.08
13.007	0.01	
12.816	1.24	
12.470	0.69	
12.420	1.68	
12.380		-0.01
12.359	0.84	
12.042	-2.42	
11.847	-0.86	
11.800		-2.35
11.557	0.03	
11.520		-4.39
11.428	0.87	
11.340		1.85
11.029	1.96	
11.010		3.04
10.846	0.68	
10.752	0.80	
10.720		0.32
10.538	0.22	-0.16
10.530		-0.16
10.343	-0.80	
10.167	0.57	
9.900		-0.22
9.885	-0.32	
9.696	0.04	
9.435	0.08	
9.266	-0.02	
9.130		-0.21
8.992	-1.27	
8.768	-2.04	
8.433	-0.32	
8.210		-0.06
8.198	0.60	
8.105	0.80	
8.100		1.12
8.000	2.04	0.98
7.990	1.89	
7.988	1.83	
7.490	-0.41	0.44
6.990	-0.87	-0.91
6.930	-0.17	
6.910	-0.68	
6.890	0.04	-0.58
6.888	0.01	
6.820	-0.67	
6.430	0.10	-0.17
6.070	0.99	
6.068	0.99	
5.900	0.56	0.27
5.750	0.60	-0.25
5.689	1.17	-0.02
5.380	-0.60	-1.57
5.290	-0.36	-1.73
5.203	0.01	
5.201	0.00	
5.150	-3.61	-0.19
4.790	2.65	0.69
4.754	3.97	2.65
4.700	3.50	1.50
4.300	1.81	
4.270		0.55
4.094	0.01	-1.90
4.092	0.00	
3.767	-1.15	0.00
3.757	-0.54	0.01
3.734	-0.90	0.08
3.729	-0.68	0.00
3.430	0.60	-6.80
3.400		2.58
3.370	1.67	
3.270	1.16	1.59
2.800	-0.39	0.72
2.600	-1.46	-0.17
2.020	-1.35	-0.16
1.710	-0.30	0.68
1.330	-3.56	-0.09
1.250	-1.69	
1.170	-2.11	
1.100	-0.36	
1.010	-1.99	
0.730	-1.00	-0.27
0.630	-1.40	
0.440	-0.35	-0.20
0.160	-0.97	0.00

Table 12.7. Sand and Gravel Net Bed Change End of Period Simulation.

Cross Section Number	Watercourse Master Plan* Bed Change (ft)	ASU Study Bed Change (ft)
33.820	-0.44	-2.65
33.410	0.16	-0.81
32.998	-2.42	-6.39
32.984	0.01	-5.22
32.920	-3.89	
32.860	-2.22	1.56
32.720	1.37	
32.430	-0.03	0.21
31.860	-5.55	0.23
31.390	-4.49	-1.13
30.820	-6.38	0.07
30.730	-4.83	
30.260	0.47	-0.11
30.070	-4.59	-0.32
29.800	-0.52	1.63
29.611	-3.08	-0.42
29.540	-1.10	-0.45
29.040	-0.62	0.24
28.950	-0.76	
28.670	-0.89	-0.14
28.120	-1.29	-0.33
27.940	0.15	
27.680	-1.74	-0.24
27.480	0.47	
27.030	0.83	-0.11
26.730	-0.77	-0.06
26.630	0.39	
26.290	-0.19	-0.19
25.940	0.19	
25.860	1.25	-0.46
25.666	0.71	
25.590		0.32
25.478	-0.70	
25.370		-0.18
24.996	1.71	
24.900		-1.99
24.543	3.13	
24.540		-9.50
24.491		-9.49
24.468		24.83
24.449	-1.09	
24.365		6.07
24.350		-5.48
24.193		-6.52
24.170		32.80
24.085		32.42
24.070		-5.78
23.974	0.73	
23.874		-9.50
23.851		10.22
23.694		18.97
23.692	-0.02	
23.571		0.06
23.409	-0.36	
23.365		0.00
23.350		-0.85
22.935	-0.08	
22.790		-1.69
22.745	-0.03	
22.462	-0.66	
22.365		-9.48
22.320		15.99
22.177	-1.09	
22.130		31.96
22.107		-6.02
21.893	1.57	
21.850		-9.50
21.818		-9.48
21.773		13.20
21.760		-8.92
21.680		13.75
21.657		-9.01
21.523		24.40
21.500		-6.08
21.431	0.20	
21.420		-3.36
21.157	0.00	
21.061	0.00	
21.010		-9.46
20.958	-0.36	
20.933		-9.49
20.920		-9.48
20.657		-4.15
20.640		-8.91
20.579	-0.20	
20.577		24.87
20.563		-9.50
20.550		-9.50
20.240		13.84
19.953		-0.32
19.944		-5.84
19.920	0.12	
19.890		-1.56
19.446	-0.67	
19.440		-0.77
19.066	-1.61	
18.962	-5.68	
18.920		-1.63
18.839	0.37	
18.275	-0.28	
18.240		-0.12
17.821	0.50	
17.760		-0.12
17.638	0.02	
17.458	0.00	
17.380		0.52
16.990	0.00	
16.910		-2.89
*based on Sbase50.dat		

Cross Section Number	Watercourse Master Plan* Bed Change (ft)	ASU Study Bed Change (ft)
16.612	-0.02	
16.506	-0.57	
16.482	-0.37	
16.450		-2.02
16.446		-3.12
16.420		2.32
16.099	0.00	
15.980		0.64
15.719	0.04	
15.510		-2.86
15.374	-1.49	
15.320		-6.38
15.303		9.04
15.094	0.10	
15.063		17.42
15.000	-1.27	
14.940		-1.13
14.932		0.12
14.850		-3.97
14.430	-3.20	
14.412		-8.88
14.380		7.98
13.952	-2.69	
13.855		7.00
13.810		-2.07
13.467	0.76	
13.330		-0.09
13.007	-0.13	
12.816	0.49	
12.470	-2.52	
12.420	-7.52	
12.380		-0.10
12.359	2.14	
12.042	0.38	
11.847	-0.09	
11.800		-3.49
11.557	0.02	
11.520		-4.03
11.428	-0.06	
11.340		0.78
11.029	1.10	
11.010		3.11
10.846	-0.97	
10.752	-1.70	
10.720		0.32
10.538	0.22	
10.530		-0.13
10.343	-0.13	
10.167	0.22	
9.900		-0.39
9.130		-0.22
9.885	0.08	
9.696	-0.28	
9.435	-0.37	
9.266	-1.80	
8.992	1.28	
8.768	-0.01	
8.433	0.59	
8.210		0.00
8.198	-0.11	
8.105	-0.48	
8.100		0.60
8.000	0.96	0.96
7.990	0.69	
7.988	0.96	
7.490	-0.34	0.24
6.990	-0.83	-0.89
6.930	-0.16	
6.910	-0.72	
6.890	0.04	-0.55
6.888	0.00	
6.820	-0.67	
6.430	0.01	-0.17
6.070	0.90	
6.068	0.90	
5.900	0.50	-0.09
5.750	0.55	0.20
5.689	1.13	-0.06
5.380	-0.61	-1.47
5.290	-0.36	-1.94
5.203	0.01	
5.201	0.01	
5.150	-3.55	-0.21
4.790	2.59	-0.33
4.754	3.92	2.71
4.700	3.45	1.45
4.300	1.78	
4.270		0.78
4.094	0.01	-1.92
4.092	0.00	
3.767	-1.15	0.00
3.757	-0.54	0.01
3.734	-0.90	0.09
3.729	-0.67	0.00
3.430	0.60	-7.07
3.400		2.91
3.370	1.67	
3.270	1.16	1.29
2.800	-0.40	0.88
2.600	-1.49	-0.17
2.020	-1.33	-0.14
1.710	-0.39	0.66
1.330	-6.18	-0.08
1.250	2.43	
1.170	5.62	
1.100	2.14	
1.010	-0.30	
0.730	-1.46	-0.30
0.630	-1.70	
0.440	-0.63	-0.19
0.160	-0.92	0.00

Figure 12.1. Existing Condtions Net Bed Change End of Period Simulation (Watecourse Master Plan vs ASU Study).

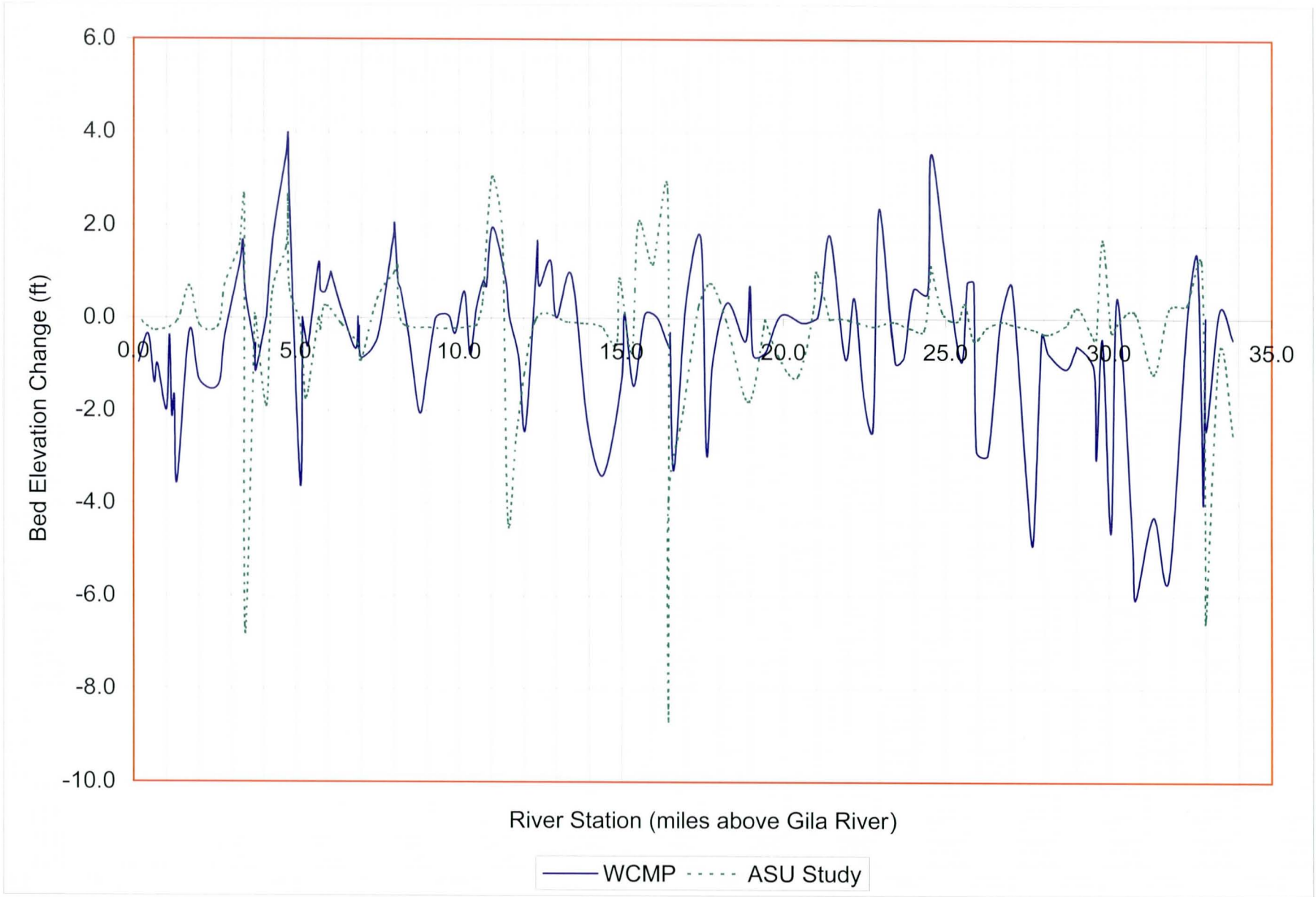
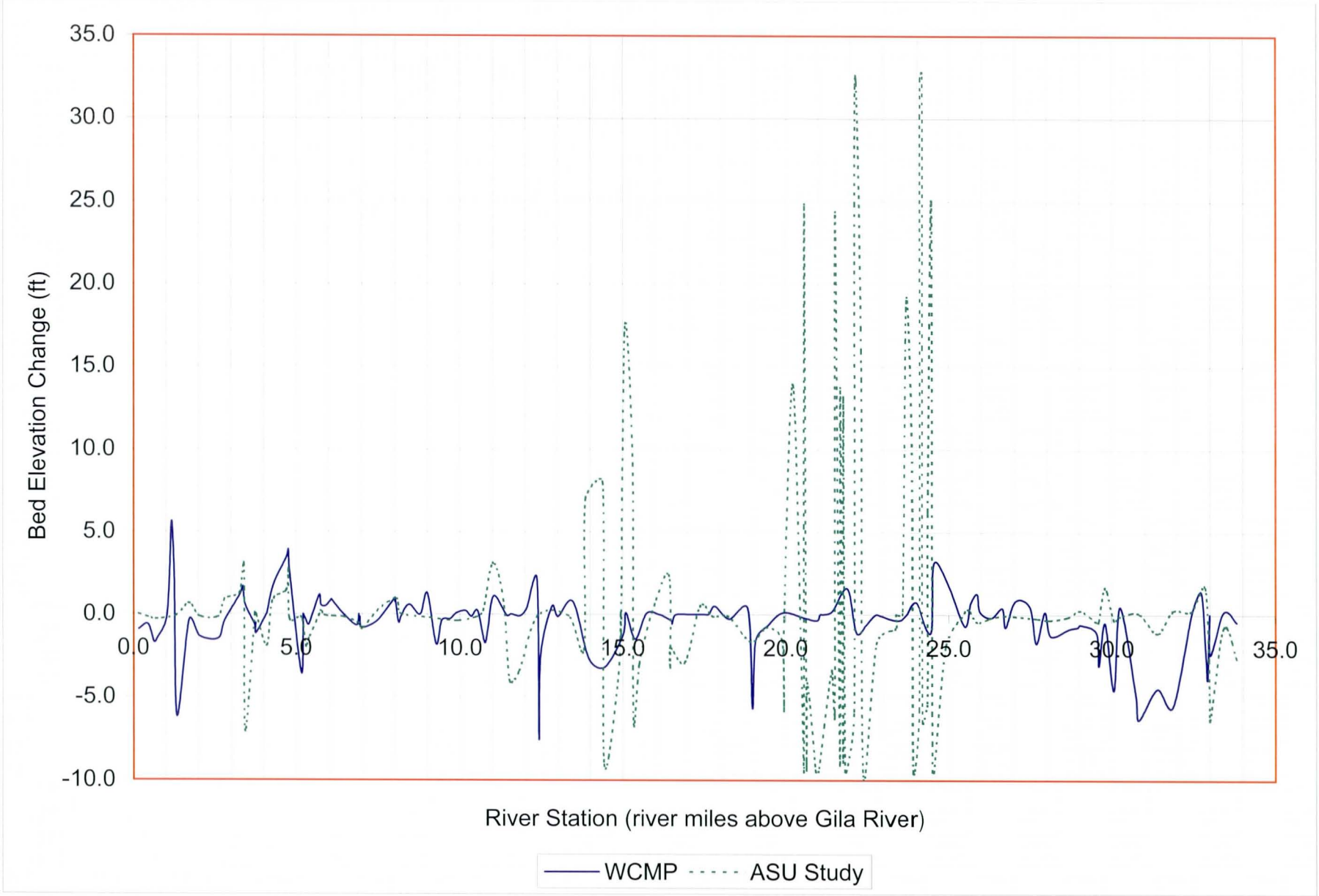


Figure 12.2. Sand and Gravel Net Bed Change End of Period Simulation (Watercourse Master Plan vs ASU Study).



In the river reach from station 15+00 upstream to approximately station 23+00 the two studies are similar in respect under existing conditions in that the range of aggradation and degradation is approximately from zero to plus or minus two feet. The ASU study however indicates a greater depth of degradation near the Grand Avenue bridge (river station 16+40) than the Master Plan. The Master Plan study indicates a greater depth of degradation in the upstream reach of the river defined from station 25+00 upstream to 33+80. Note that the Master Plan study used a reduced sediment inflow to the Agua Fria River which is reflected in the degradation exhibited in this reach of the river compared to the ASU study.

Table 12.4 indicates aggradation or degradation of the river bed channel at the bridged river crossings for each study. A review of Table 12.6 provides the degree of aggradation or degradation by river station and at each bridge crossing for comparison purposes. Note that if Table 12.6 has no entry for a river station for a study this means that the particular river station was not used in that study.

Sand and Gravel: Tables 12.5, 12.7, and Figure 12.2 provides a summary comparison of the results for the sand and gravel conditions HEC-6 models between the Master Plan and the ASU study. A review of Figure 12.2 indicates a similar trend in river bed response in the reach of the Agua Fria River that includes the Corps of Engineers levees and existing grade control structures. From river station 14+00 downstream to the Gila River both sediment transport studies show similar trends in locations of aggradation and degradation of the river. The average bed change response is approximately plus or minus two feet in both studies.

Figure 12.2 indicates two reaches of the river where major differences are exhibited in river bed response between the two studies in the sand and gravel results. These reaches are between river stations 14+00 upstream to 17+00 and between river station 20+00 upstream to 25+50. The ASU study shows a greater depth of aggradation in these two reaches of the river than the Master Plan study. A review of the ASU modeling approach and results for the sand and gravel mining sites indicates that the pits aggrading (filling with sediment). The filling of the sand and gravel mining site pits is the reason for the relatively greater aggradation in these two river reaches for the ASU study. Note that the ASU study hydrology has a 100-year flood flow duration of 8.8 days whereas the Master Plan 100-year flood event has a flow duration of just over one day. The Master Plan study initiated the dredging routine of the HEC-6 model at the beginning of the 100-year flood and after the 30-days of 9,000 cfs flow. The dredging routine dredges the sand and gravel mines to their full extents and pit depths just prior to the 100-year flood hydrology. The difference in flood flow duration of the 100-year flood event may account for the difference in aggradation exhibited between the two studies.

SECTION 13 RECOMMENDED ACTIONS FOR AGUA FRIA RIVER WATERCOURSE MASTER PLAN

13. RECOMMENDED ACTIONS FOR AGUA FRIA RIVER WATERCOURSE MASTER PLAN

Table 13.1 provides a summary of recommended District actions for floodplain and erosion management. The recommendations are limited to the scope of the sediment trend analysis of the Agua Fria River and the findings, results, and interpretations of the HEC-6 computer models, and the conclusions drawn from the analysis.

Table 13.1. Recommendations for Sediment Transport, Floodplain Management, and Erosion Management for the Agua Fria River.

Recommendation Number	Description	Planning Horizon
1.	**Inspection and Monitoring.** Inspection of flood control infrastructure and bridged river crossings should be conducted on an annual, periodic, and flood event basis. Of particular concern is the monitoring of existing headcuts in the river channel and the migration and expansion of the headcuts over time. These headcuts have been identified in the "Lateral Migration Report" prepared by JEFuller Hydrology and Geomorphology. Scour stabilization measures should be inspected and monitored at bridge river crossings for performance and stability. Impacts from sand and gravel mine activities (encroachment on floodway, bridges, and critical hydraulic controls) should be monitored.	Immediate
2.	**Grade control structures.** The sediment trend analysis indicates the requirement for one grade control structure to be located downstream of Olive Avenue. This grade control structure is recommended for stability of the invert of the river bed channel and to potentially mitigate the effects from downstream sand and gravel operations.	1 – 5 yrs
3.	**Floodway Encroachment.** The sediment trend analysis indicated that the floodplain and floodplain fringe may be encroached upon for potential sand and gravel development. The FIS floodway should not be encroached upon further by existing operations or by future sand and gravel mining activities. No future mining applications in the floodway should be granted.	District decision – pending approval of encroachment policy
4.	**Sand and Gravel Mining Operations.** Future sand and gravel mining applications for floodplain use permits should demonstrate no adverse impact on the sediment transport behavior of the Agua Fria River as characterized in this Master Plan Sediment Trend Analysis. Based on Recommendation No. 4, sand and gravel operations located outside the floodway which incorporate low-flow levees should permitted for floodplain use providing these mines meet District and watercourse master plan criteria. In-stream mining of the floodway should be discontinued and discouraged. Sand and gravel mining permit applications should include headcut analysis based on long-term flood flow duration and the 100-year flood event. Mining set-backs and pit slopes should be established to minimize the potential upstream migration of headcuts.	District decision - pending approval of sand and gravel policy
5.	**Sediment Transport Models.** The Agua Fria River Watercourse Master Plan Sediment Trend Analysis HEC-6 models for the existing, sand and gravel, encroachment, and grade control structure conditions could be used for further detailed analysis of proposed flood control improvements, bridge analyses, channelization, sand and gravel mine permits and mine expansions. These models are sufficient as base sediment transport models from which to develop site specific conditions. Additional engineering and geomorphic analyses will be required in support of the detailed site-specific analyses (see ADWR 1985).	Immediate

APPENDIX A
HYDRAULIC BASE MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

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T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      100-YEAR EVENT FIXED BED MODEL FILE NAME - AFFBREV.DAT MARCH 27, 2001
N  .045   0.064   0.035      .1      .3
X  0.16      52    9720   10184       0       0       0
GR 924.4  4925.0  924.2  5199.0  921.8  5600.0  919.5  5760.0  919.4  5959.0
GR 920.9  6245.0  920.8  6516.0  919.3  6554.0  919.8  6850.0  919.6  7271.0
GR 920.5  7535.0  919.6  8000.0  917.6  8136.0  917.4  8339.0  912.3  8356.0
GR 917.2  8376.0  916.4  8991.0  916.0  9030.0  914.0  9212.0  911.6  9231.0
GR 913.2  9494.0  911.2  9620.0  911.8  9720.0  910.7 10000.0  909.7 10120.0
GR 909.6  10136.  921.6 10167.0  923.0 10184.0  913.7 10213.0  913.7 10477.0
GR 917.1  10590.  916.6 10873.0  910.5 10909.0  910.5 11042.0  915.2 11068.0
GR 912.1  11265.  911.5 11500.0  911.5 11516.0  908.3 11664.0  910.4 11830.0
GR 916.1  11911.  914.1 12098.0  914.9 12628.0  922.1 12652.0  922.7 12725.0
GR 916.5  12758.  916.8 13671.0  916.2 14363.0  917.2 14971.0  917.8 15391.0
GR 913.5  15403.  920.3 15459.0
HD  0.16
NC 0.045    0.10   0.035
X1  0.44      44.0   9798   10420    1510    1465    1485
GR 927.5  3107.0  925.0  4575.0  922.8  5984.0  921.8  6974.0  920.3  7816.0
GR 923.1  7847.0  923.3  7915.0  919.1  7942.0  919.1  7995.0  923.7  8029.0
GR 919.5  8152.0  918.5  8300.0  916.2  8640.0  915.1  8999.0  916.8  9023.0
GR 916.7  9710.0  916.7  9798.0  913.9  9815.0  913.5  9842.0  912.8 10000.0
GR 917.6 10016.0  916.8 10120.0  916.2 10201.0  917.0 10263.0  917.7 10313.0
GR 917.7 10385.0  925.2 10420.0  917.7 10455.0  917.8 11076.0  920.3 11103.0
GR 916.9 11133.0  916.4 11365.0  919.1 11391.0  918.7 12229.0  918.8 12650.0
GR 920.6 12691.0  919.8 12785.0  919.6 13644.0  920.2 14200.0  920.4 14355.0
GR 921.0   16110  921.8   16630  922.9   17240  924.0   17640
HD  0.44
NC 0.048   0.074   0.035
X1  0.63      36.0   9888   10209    1055     985    1010
X3                    6600     930   16199     930
GR 927.8  3220.0  928.7  4462.0  927.0  5328.0  924.8  6127.0  923.4  6520.0
GR 925.1  6530.0  925.1  6553.0  917.7  6571.0  926.5  6600.0  923.7  6645.0
GR 923.1  7426.0  922.5  8068.0  921.2  8670.0  921.1  8772.0  917.5  8831.0
GR 920.1  9149.0  920.4  9522.0  919.9  9740.0  919.6  9888.0  915.7  9908.0
GR 916.1 10000.0  916.0 10095.0  929.0 10209.0  917.1 10273.0  916.6 10424.0
GR 919.7 10448.0  920.7 10644.0  926.6 10667.0  919.1 10704.0  921.3 11646.0
GR 921.5 12511.0  921.7 13595.0  921.7 14582.0  923.3   15500  923.8   15950
G  25.0   16200
H  0.63
NC 0.050   0.066   0.035
X1  0.73      39.0   9917   10162     510     490     500
GR 926.5  3285.0  926.3  3986.0  925.6  4737.0  925.2  5415.0  925.6  5760.0
GR 925.6  5797.0  925.7  5889.0  925.7  5945.0  924.5  6306.0  924.5  7206.0
GR 924.3  8340.0  921.6  8530.0  921.3  8800.0  921.1  8982.0  919.1  8999.0
GR 918.6  9126.0  921.0  9195.0  920.8  9760.0  920.0  9917.0  917.8  9927.0
GR 917.9 10000.0  916.9 10087.0  919.0 10100.0  928.8 10162.0  919.2 10205.0
GR 917.0 10479.0  919.8 10521.0  918.9 10591.0  928.7 10655.0  919.2 10697.0
GR 919.2 10771.0  922.2 10794.0  921.6 11725.0  922.6 11783.0  924.5 12394.0
GR 924.5 13563.0  924.0   14000  924.3   15050  926.0   15560
HD  0.73
NC 0.045   0.050   0.035
X1  1.33      32.0   9911   10456    3405    3325    3385
GR 934.6  6000.0  933.3  6025.0  932.9  6490.0  931.0  6748.0  931.3  7154.0
GR 931.8  7239.0  933.2  7837.0  934.0  8038.0  931.1  8083.0  930.0  8120.0
GR 929.8  8339.0  931.4  8777.0  929.3  8916.0  931.1  8945.0  929.8  9282.0
GR 929.1  9911.0  927.0  9920.0  927.0 10000.0  925.9 10122.0  925.5 10364.0
GR 932.0 10456.0  925.5 10490.0  931.1 10701.0  931.6 11006.0  930.6 11200.0
GR 930.4 11242.0  934.9 11261.0  931.9 11306.0  933.2 11377.0  934.8 11409.0
GR 936.3 12061.0  941.3 12490.0
HD  1.33
NC 0.045    0.05   0.035
X1  1.71        44   9091 10284.4    2000    2585    2480
GR 940.9  5684.9  943.3  5808.0  945.3  6004.6  945.1  6078.9  947.4  6100.1
GR 947.4  6117.9  939.1  6148.7  948.7  6187.8  948.6  6226.4  934.0  6296.9
GR 936.8  6795.4  942.6  6807.8  942.6  6816.3  935.2  6833.2  933.6  7016.1
GR 935.7  7029.0  935.7  7052.6  932.4  7065.5  932.0  7135.0  934.3  7164.7
GR 934.3  7198.3  931.9  7209.5  934.6  7333.9  933.3  7541.5  933.4  7601.4
GR 936.1  7704.9  936.0  8010.3  935.3  8305.9  935.8  8591.1  935.4  8888.0
GR 935.8  9091.0  933.0  9104.6  933.1  9230.9  931.1  9247.7  929.7  9534.8
GR 928.2  9542.9  928.2  9966.4  928.2 10000.0  930.4 10058.7  930.5 10277.8
GR 935.9 10284.4  941.2 10511.3  951.5 11351.7  952.3 11442.6
HD  1.71
X1  2.02       31 8839.4 10077.3     890    2065    1965
G  0.0  5981.1  948.6  6066.6  951.6  6121.6  954.7  6293.7  955.1  6434.3
GR 940.7  6514.7  939.9  6533.9  937.1  6557.3  936.4  6934.6  937.1  7244.1
GR 944.6  7260.1  944.6  7278.4  937.0  7304.1  936.3  7340.1  938.6  7388.3
GR 938.4  7687.8  936.3  7711.0  938.5  7824.6  938.8  7961.0  937.2  8390.4
GR 938.4  8544.9  938.1  8839.4  935.2  8854.5  935.2  9121.5  935.4  9418.2
GR 934.2  9860.0  932.7  9918.6  933.3 10000.0  934.5 10062.4  944.8 10077.3
GR 944.8 10079.1
HD  2.02
NC   .04     .04    .035
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X1  2.60      26    9437   10850    2700    2945    3320
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR [illegible]1.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR [illegible]3.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60
X1  2.80      19    9200   11222    1250     655    1000
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80
X1  3.27      17  9692.6 11130.5    2800    1995    2505
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27
X1  3.37      17  9716.5 10970.3     585     460     510
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37
X1  3.43      12  9758.5 10873.4     925     795     850
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43
X1 3.729     6.0    9420   10603    1575    1585    1580
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729
NC                          0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
G[illegible]2.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR[illegible]2.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734
X1 3.757     7.0    9425   10555     120     120     120
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757
X1 3.767      92  9428.1 10572.0      50      50      50
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR[illegible]67.2 10571.9   970.9 10572.0
H[illegible]767
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092
X1 4.094     7.0    9440   10578      10      10      10
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
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GR 973.0 10578.0   973.0 10582.0
HD 4.094
X1  4.27    15.0    9449   10588     925     925     925
GR 975.0  9440.0   974.9  9449.0   959.5  9466.0   958.0  9791.0   970.4  9807.0
GR 970.6  9818.0   968.3  9822.0   967.9  9877.0   971.5  9883.0   971.5  9891.0
GR 958.0  9910.0   957.1 10000.0   958.9 10317.0   959.7 10563.0   974.4 10588.0
HD  4.27
X1  4.70     9.0    9451   10579    2320    2180    2250
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70
X1 4.754    53.0  9402.5 10572.3     150     310     225
X3    10
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754
X1  4.79     6.0    9440   10590     357     187     277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79
X1  5.15     9.0    9291   10713    1780    1960    1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15
X1 5.290      82  9250.8 10672.4     695     865     775
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290
QT
X1 5.380    20.0  9266.0 10656.0     305     645     465
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380
X1 5.689      42  9371.3 10552.8    1320    1740    1620
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR973.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
GR973.85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689
X1 5.750    22.0  9426.0 10579.0     370     370     370
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
GR 973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750
X1 5.900    17.0  9429.0 10561.0     945     950     950
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900
X1 6.430    20.0  9452.0 10537.0    2960    2755    2855
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GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
G  983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
H  .430
X1 6.820    17.0  9444.0 10573.0    2145    1820    1980
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820
       -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0     357     357     357
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888
X1 6.890    16.0  9439.0 10577.0       8       8       8
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890
X1 6.910    17.0  9430.0 10579.0     105     115     110
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910
X1 6.930    17.0  9413.0 10573.0     105     105     105
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930
X1 6.990    19.0  9400.0 10559.0     315     355     335
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
G  991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
G  990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490
NC                        .3      .5
X1 8.000      85  9235.5  10725.    2865    2540    2685
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
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GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
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GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
G[redacted]46.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
G[redacted]46.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR1045.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR1045.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029
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GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
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GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
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GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428
NC  0.15   0.055   0.035     0.3     0.5
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GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557
X111.847       95  9914.3 10113.4    1530    1530 1531.67
X3                      7310    1062   10173    1062
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GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
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GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
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G[redacted]1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
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GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847
X112.359       73  9691.6 10061.0    2510    2730  2701.6
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
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GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359
X1 12.42       90  9014.1 10111.3     380     270  302.47
X3                     7000    1066 10782.8    1066
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
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GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
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GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
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GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
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GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42
NC  .045    .040    .035     0.1     0.3
X1 12.47       89  9382.2 10296.2     230     240     255
X3                     7298.5    1066 11052.3    1066
G[redacted]54.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
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GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
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GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47
NC  .045    .045    .035     0.3     0.5
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GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
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GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
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GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
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G[redacted]56.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
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HD13.467
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GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
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G  86.4   7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
G  85.7   7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR1083.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR1078.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952
X114.430       95  9171.4 10301.1     2175     2625 2523.57
X3                                    7800     1093    10984     1093
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
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GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
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GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
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GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
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GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
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GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
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NC  .040    .045    .035
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G[redacted]01.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
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GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR1101.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
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GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
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GR1105.1 10102.2  1105.6 10123.1  1105.3 10172.7  1105.7 10224.6  1104.9 10285.3
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GR1109.8 11078.1  1109.9 11130.6  1109.1 11168.2  1108.6 11181.1  1108.3 11181.6
GR1107.5 11220.8  1104.3 11235.1  1102.8 11283.3  1103.7 11301.1  1104.5 11331.3
GR1106.5 11371.9  1107.8 11386.7  1106.8 11396.5  1106.2 11416.0  1104.7 11430.3
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GR1108.6 12734.0  1108.5 12784.1  1109.0 12815.2  1109.8 12846.4
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GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR  19.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
    18.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR  18.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612
NC  0.05     0.05     0.04      0.1      0.3
X116.990       94  9810.0 10135.4     1990     1985     1993
X3                           9725     1130    10150     1130
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.4 11140.9
GR1128.0 11189.2  1127.6 11250.5  1126.3 11293.3  1127.0 11338.2  1126.5 11403.1
GR1127.4 11410.4  1126.6 11445.7  1127.3 11465.2  1127.6 11519.1  1128.1 11532.8
GR1127.6 11586.4  1126.8 11609.9  1126.7 11843.9  1126.8 11988.7  1129.0 12041.8
GR1125.8 12048.3  1128.5 12056.1  1127.1 12097.2  1127.8 12170.8  1124.8 12180.6
GR1119.2 12188.4  1116.2 12191.6  1111.2 12195.4  1090.6 12206.1  1092.1 12285.4
GR1093.9 12332.8  1101.0 12334.5  1112.0 12337.1  1125.2 12341.0  1125.1 12367.4
GR1125.8 12393.1  1124.4 12431.4  1123.9 12507.9  1123.2 12529.8  1123.6 12585.8
GR1127.2 12630.0  1136.9 12660.9  1128.6 12676.3  1127.0 12692.1  1125.9 12746.2
GR1127.9 12795.1  1130.4 12813.6  1130.5 12826.3  1128.3 12904.8  1129.2 12916.6
GR1127.6 12934.8  1125.7 12966.4  1126.6 12979.5  1125.4 13179.1  1126.4 13287.4
GR1124.9 13341.6  1125.6 13503.0  1125.2 13561.0  1120.4 13574.0  1121.1 13632.4
GR1128.6 13654.8  1128.6 13664.2  1130.6 13675.3  1130.2 13709.1
HD16.990
X117.458       92  9370.6 10225.3     3035     1705 2468.67
X3                           8808     1132    10334     1132
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR  18.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
    28.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR  25.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
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GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
H[illegible] 458
X[illegible].638      95  9774.7 10288.4     955     895  949.45
X3                          8744    1136   10386    1136
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4  1137.5 13723.0
GR1134.9 13943.6  1132.8 14141.9  1131.9 14149.9  1136.0 14166.5  1136.1 14187.2
HD17.638
NC 0.045    0.05   0.035
QT
X117.821      92  9764.8 10227.7     950     970  964.24
X3                          8350    1140   10270    1140
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
G[illegible]30.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR[illegible]30.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821
X118.275      92  9752.1 10210.5    2170    2440 2398.82
X3                          8750    1144   10715    1144
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0
HD18.275
NC                          0.3     0.5
X118.962      74    9840 10223.7    3175    3885 3627.72
X[illegible]                9391    1156   10535    1156
G[illegible]62.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
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GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
G[redacted]50.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
G[redacted]48.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962
NC 0.045   0.045   0.035     0.1     0.3
X119.446       91  9592.8 10078.6    2455    2490 2559.18
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446
X119.920       92  9744.6 10129.1    2510    2450 2499.03
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
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GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
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G[redacted]66.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
G[redacted]65.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
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GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920
X120.579       90  9825.6 10324.2    3420    3400 3482.23
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR1178.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
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HD20.579
X120.958       95  9787.3 10383.8    1815    2044 2006.06
X3                    8780    1188   10760    1188
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
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GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
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GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
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GR1176.6 10363.7  1181.5 10383.8  1183.9 10392.4  1183.9 10432.5  1184.6 10483.3
GR1184.6 10534.2  1184.4 10605.2  1182.1 10732.8  1182.1 10742.4  1194.0 10760.0
HD20.958
X121.061       91  9850.0 10325.4     340     655  542.53
X3                       9030    1188   11069    1188
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
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GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
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GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
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GR1201.2 11069.0
HD21.061
NC  .055    .055    .050
X121.157       94  9377.3 10376.3     340     630  509.07
X3                       9266.8    1190   11150    1190
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
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G[redacted]86.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
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GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157
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X3                       9350    1193   10343    1193
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GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193,7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
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GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
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HD21.431
NC  .045    .055    .035
X121.893       93  9558.8 10146.5    2525    2070 2442.15
X3                       9546    1200   11050    1200
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NC  .045    .045    .035
QT
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GR1217.8 13132.1  1225.6 13192.8
HD22.462
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X3                      9550    1226 12265.5    1226
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GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12177  1234.4 12219.3    1238 12265.5
HD23.409
NC  .055    .055    .050
X  .974       94  9716.2 10115.2    2880    2925 2982.25
X3                      9716    1238   11205    1238
GR1269.8  7466.3  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
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HD23.974
NC  .045    .045    .035
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GR1266.4 11355.0  1266.2 11372.5
HD24.449
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GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
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GR1259.5 11435.6
HD24.543
NC   .05     .05    .035
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GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
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GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
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HD24.996
NC  0.05    0.05    0.03
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G[redacted]3.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
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GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
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GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478
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GR1278.3 11195.3
HD25.666
X1 25.86      25    9940   10200    1575    1565    1585
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
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H[redacted]5.86
NC  0.06   0.065   0.035
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GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
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HD 26.29
NC  0.06    0.07   0.035
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GR1346.0 14190.0
HD 26.73
X1 27.03    23.0    9922   10079    1660    1020    1590
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
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GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
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GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03
NC 0.055   0.055   0.035
X1 27.68    35.0    9853   10078    4120    3200    3430
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G[redacted]2.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
H[redacted]7.68
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X1 27.94    24.0    9944   10187    1370    1415    1405
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GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
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GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
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G[redacted]09.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
G[redacted]10.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
HD 28.12
X1 28.67    37.0    9964   10192    2785    2925    2885
X3                         9450  1322.3   11203  1322.3
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67
X1 28.95    34.0    9946   10353    1550     940    1465
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95
X1 29.04    34.0    9828   10239     550     330     510
GR1360.0    9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04
X1 29.54    30.0    9846   10150    2750    2235    2640
X[redacted]  10
G[redacted]78.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD 29.54
X129.611    31.0    9791   10094     315     315     375
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80
X1 30.07    17.0    9925   10098    1425    1440    1420
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07
X1 30.26    12.0    9749   10135     870    1090    1005
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26
O[redacted]
X[redacted]0.73    14.0    9881   10075    2455    2470    2460
GR[redacted]69.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR1352.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73
X1 30.82    12.0    9924   10201     500     370     500
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
```

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HD 30.82
X1 31.39    17.0    9792   10080    2900    3165    2970
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39
X1 31.86    10.0    9894   10261    2550    2485    2505
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86
NC 0.045   0.050   0.045
X1 32.43    14.0    9852   10112    2885    2970    2980
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43
X1 32.72    28.0    9879   10150    1725    1145    1535
X3                  9435  1408.2   10524  1408.2
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72
X1 32.86    12.0    9928   10155     680     990     760
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86
X1 32.92     9.0    9891   10143     290     370     310
X3                  9680    1390   10180    1390
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92
X132.984      33    9962   10011     338     358     343
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984
X132.998     9.0    9851   10108      72      72      72
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998
NC 0.045   0.045   0.050
X1 33.41    12.0    9944   10366    1880    2270    2170
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41
QT
X1 33.82    20.0    9861   10068    2165    2220    2175
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82
EJ
$HYD
*   A      AGUA FRIA RIVER FIXED BED  DISCHARGE BASE FROM CVL 1996 FIS STUDY
Q  52000   -2400   24400   -5000   -1000    4000    4000    4000    4000   11000
R 916.83
T     60
W      1
$$END
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APPENDIX B
EXISTING CONDITION HEC-6 MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

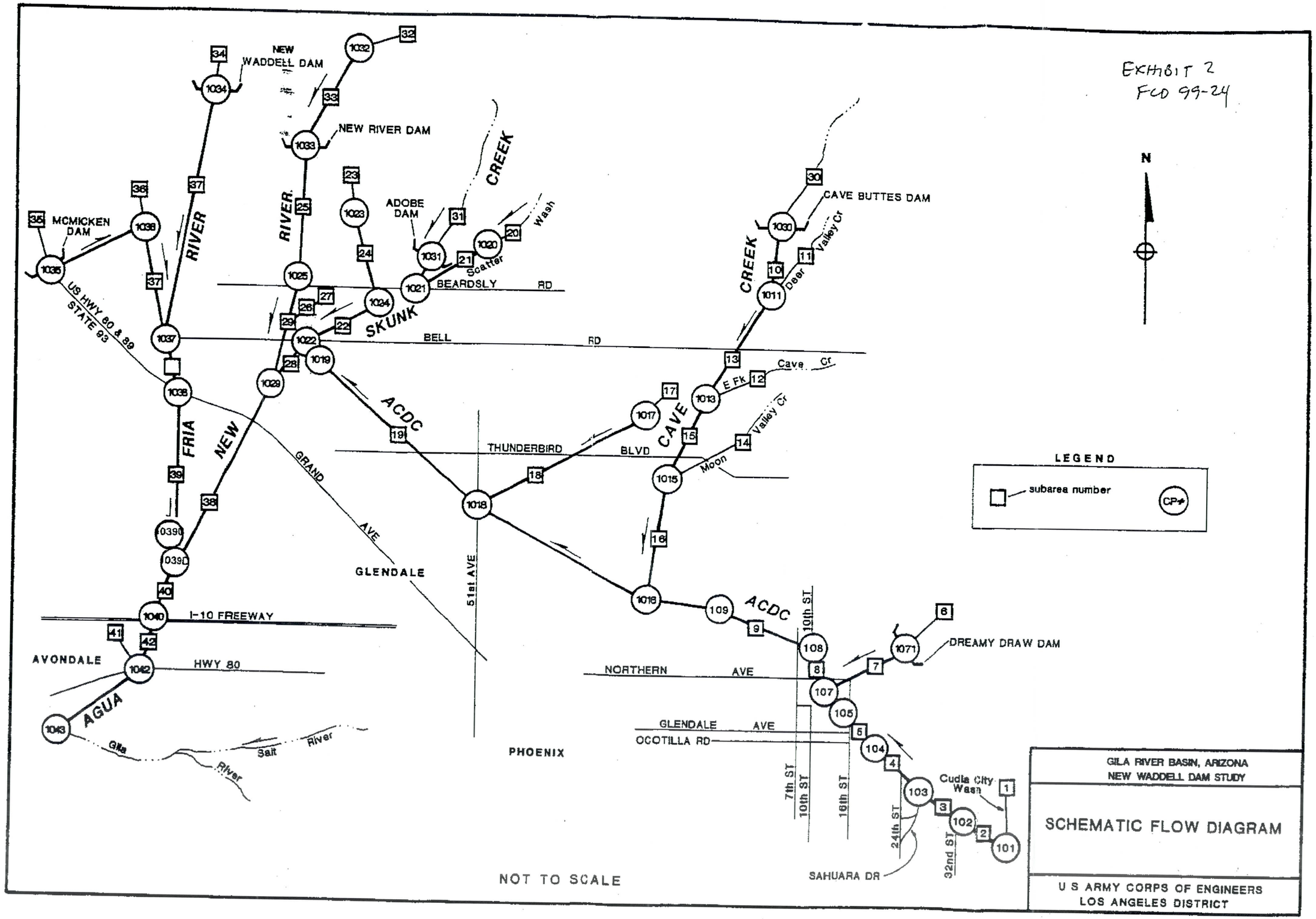
EXHIBIT 1
FCD 99-24

TABLE 1. SUMMARY OF DISCHARGES ON THE AGUA FRIA RIVER[1] - PRESENT CONDITIONS
With New Waddell Dam versus (Without New Waddell Dam)

LOCATION	DRAINAGE AREA[5], sq.mi.	DISCHARGE IN FT³/S WITH (WITHOUT) NEW WADDELL DAM								
		SPF[2,3]	500-YR	200-YR	100-YR	50-YR	25-YR	10-YR	5-YR	2-YR
U/S of New Waddell Dam	1459	158,000 (158,000)	182,000 (182,000)	155,000 (155,000)	135,000 (135,000)	110,000 (110,000)	90,000 (90,000)	48,000 (48,000)	16,000 (16,000)	0 (N/A)
D/S of New Waddell Dam	0	22,000 (158,000)	46,500 (182,000)	17,000 (155,000)	9000 (135,000)	9000 (110,000)	9000 (90,000)	0 (48,000)	0 (16,000)	0 (N/A)
@ Bell Rd. CP 1037	171	(N/A)	59,000 (182,000)	46,500 (152,000)	37,500 (115,000)	29,000 (87,000)	20,500 (64,000)	11,000 (23,000)	5200 (5200)	1200 (N/A)
@ Grand Ave CP 1038	183	(N/A)	53,000 (181,000)	43,000 (144,000)	34,500 (109,000)	26,500 (82,000)	19,000 (59,000)	10,000 (22,000)	4800 (4800)	780 (N/A)
U/S New R. CP 1039U	231	(N/A)	48,000 (177,000)	38,000 (120,000)	30,000 (90,000)	23,000 (66,000)	16,000 (45,000)	8700 (18,000)	4600 (4600)	820 (N/A)
DOWNSTREAM OF CONFLUENCE WITH NEW RIVER										
D/S New R. CP 1039D	392	94,000 102,000[4]	130,000 (N/A)	80,000 (N/A)	54,400 (95,000)	39,000 (N/A)	26,000 (N/A)	16,100 (N/A)	10,000 (N/A)	5500 (N/A)
@ I-10 Fwy CP 1040	474	90,000 99,000[4]	125,000 (N/A)	75,000 (N/A)	52,000 (91,000)	38,000 (N/A)	25,000 (N/A)	15,300 (N/A)	10,000 (N/A)	5400 (N/A)
@ Avondale CP 1042	485	88,000 97,000[4]	115,000 (N/A)	74,000 (N/A)	50,900 (90,000)	37,000 (N/A)	25,000 (N/A)	15,000 (N/A)	10,000 (N/A)	5300 (N/A)
Above Gila R. CP 1043	485	83,000 92,000[4]	110,000 (N/A)	70,000 (N/A)	48,200 (89,000)	35,000 (N/A)	23,000 (N/A)	14,200 (N/A)	9000 (N/A)	5000 (N/A)

Notes: (1) Starting Elevation for all flood routings is 1694 based upon USBR Standing Operating Procedures, Appendix C.
(2) SPF discharges D/S of New Waddell Dam based upon routing of flood produced by centering the August 1951 storm over the U/S drainage area. See reference 3.
(3) SPF discharges U/S of New Waddell Dam based upon centering of local storm (Queen Creek, Aug 19, 1954) over the area D/S of New Waddell Dam. See Appendix A.
(4) Future conditions SPF discharges from Appendix A.
(5) Effective drainage area. For locations D/S of New Waddell Dam the effective drainage area does not include the drainage areas controlled by the dams.
N/A Discharge not available.

EXHIBIT 2
FCD 99-24



GILA RIVER BASIN, ARIZONA
NEW WADDELL DAM STUDY

SCHEMATIC FLOW DIAGRAM

U S ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

FIGURE 2

Crossing Name	El Paso [24]	APS [22]	Cox Com [23]	SW Gas [63]	Reports	Bridges	Levee	Siphons
Buckeye Road Bridge (MC 85) & RR	DWG. No. 2041.0-1A	No UG APS		N9W4, N9W3, N8W4, N8W3	**65**-Scour	**65**-CorrectiveDesign		
Van Buren Street Bridge		No UG APS		N11W4, N11W3, N10W4, N10W3	**372**-Scour	**76**-AsBuilt		
I-10 Bridge		No UG APS			**352**-Scour	**77**-AsBuilt, **79**-AsBuilt, **92**-AsBuilt	**57**-AsBuilt	
McDowell Road Bridge		No UG APS			**373**-Scour	**80**-AsBuilt, **80A**-AsBuilt, **96**-AsBuilt	**57**-AsBuilt	
Roosevelt Irrigation District Canal		No UG APS						**61**-AsBuilt
Indian School Road Bridge	DWG. No. 1203.0-24A	No UG APS			**47**-Scour, **66**-Scour, **52**-Scour	**66**-CorrectiveDesign, **84**-AsBuilt, 380-Scour Plans	**61**-AsBuilt, **66**-AsBuilt	
SRP Grand Canal		No UG APS						**21**-AsBuilt
Camelback Road Bridge		No UG APS			**74**-Bridge Design Report	**74**-DesignCalculations, **82**-AsBuilt, **82A**-AsBuilt, **86**-AsBuilt		
Glendale Avenue Bridge		No UG APS		N23W2, N22W2	**89**-Scour	**81**-AsBuilt, **83**-AsBuilt, **83A**-AsBuilt		
Northern Avenue Bridge		No UG APS				**85**-AsBuilt		
Olive Avenue Bridge		No UG APS	27-02, 27-01, 26-02, 26-01	N27W2, N26W2		**85**-AsBuilt		
Grand Avenue Bridge (AZ 60) & RR		No UG APS		32-1	**351**-Scour Report	**37**-DrainageDesign, **91**-AsBuilt		
Bell Road Bridge		No UG APS	37-02, 37-01, 36-02, 36-01	N37W2, N37W1, N36W2, N36W1	**90**-Scour, **73**-Bridge Design	**73**-Replacement, **88**-AsBuilt		
Beardsley Canal		No UG APS			Report			**71**-Specifications
Central Arizona Project Canal		No UG APS						**71**-Specifications, **353**-AsBuilts
Highway 74						**348**-AsBuilt		

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T1       KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2       AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3       100-YEAR EVENT EXISTING CONDTIONS MODEL - ECAFRev.DAT JUNE 18 2001
           EC - EXISTING CONDITIONS
           AF - AGUA FRIA
           Rev - Revised from April 25, 2001 model titled EC100AF.DAT
         ***UPDATE***(1) CHANGE BED VOLUME RESERVOIR AT STATE ROUTE 74 X-SECTION 32.984
         TO 6 FT; (2) CHANGE MOVEABLE BED LEFT LIMIT FOR X-SECTION 24.542 TO STA. 9000.
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3    10
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6  10136.   913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1  10590.   916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1  11265.   911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1  11911.   914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5  12758.   916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5  15403.   920.3 15459.0
HD  0.16      10    8200   12250
NC 0.045    0.10   0.035
X1  0.44    44.0    9798   10420    1510    1465    1485
X3    10
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8100   12750
NC 0.048   0.074   0.035
X1  0.63    36.0    9888   10209    1055     985    1010
X3                  6600     925   16200     925
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8270   12400
NC 0.050   0.066   0.035
X1  0.73    39.0    9917   10162     510     490     500
X3    10
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8200   12400
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456    3405    3325    3385
X3    10
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8000   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X3    10
GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 937.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
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X1  2.02       31  8839.4 10077.3     890    2065    1965
X3    10
GR 950.0   5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7   6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6   7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4   7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4   8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2   9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8  10079.1
HD  2.02       10     8000   10070
NC   .04      .04     .035
X1  2.60       26     9437   10850     2700    2945    3320
X3    10
GR 967.1     7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7   8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9   9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1  10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2  10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6    11164
HD  2.60       10     9437   10850
X1  2.80       19     9200   11222     1250     655    1000
X3    10
GR 956.4   8817.0   952.8  8856.3   944.9  9060.9   943.4     9200   943.2  9214.4
GR 943.5   9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0  10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7  10820.4   942.3 10890.9   945.9 11203.4   956.6    11222
HD  2.80       10     9150   10850
X1  3.27       17  9692.6 11130.5     2800    1995    2505
X3    10
GR 961.5   7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5   9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8  10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5  11116.0   960.5 11130.5
HD  3.27       10     9300 11130.5
X1  3.37       17  9716.5 10970.3      585     460     510
X3    10
GR 961.6   7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1   9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1  10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 959.3  10945.1   961.9 10970.3
HD  3.37       10     9500 10970.3
X1  3.43       12  9758.5 10873.4      925     795     850
X3    10
GR 961.5   7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8   9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1  10849.9   963.7 10873.4
HD  3.43       10     9650 10873.4
X1 3.729      6.0     9420   10603     1575    1585    1580
X3    10
GR 972.0     9405      968     9420   952.2    9425   952.2    10588   967.2    10603
GR 967.2    10613
HD 3.729       10     9420   10603
NC                          0.3      0.5
X1 3.734     63.0  9400.9 10599.3       25      25      25
X3    10
GR 972.4   9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3   9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3   9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3   9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3   9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3   9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3   9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3  10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3  10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3  10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3  10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3  10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3  10585.2   967.6 10599.3   971.1 10599.4
HD 3.734       10  9400.9 10599.3
X1 3.757      7.0     9425   10555      120     120     120
X3    10
GR 968.3   9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1  10538.0   967.7 10555.0
HD 3.757       10     9425   10555
X1 3.767       92  9428.1 10572.0       50      50      50
X3    10
GR 970.9   9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9   9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9   9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9   9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9   9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9   9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9   9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9   9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
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GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
G  52.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
G  52.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767     10   9428.1   10572
NC  0.04   0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092    7.0    9440   10578    1760    1750    1755
X3    10
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0    9440   10578
X1 4.094    7.0    9440   10578      10      10      10
X3    10
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0    9440   10578
X1  4.30    7.0    9458   10594    1040    1040    1040
X3    10
GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205    2065    2135
X3    10
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10    9451   10579
X1 4.754    53.0  9402.5 10572.3     150     310     225
X3    10
XL                      9402.5 10572.3
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
G  60.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
G  60.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754      10  9402.5 10572.3
X1  4.79     6.0    9440   10590     357     187     277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79      10    9440   10590
X1  5.15     9.0    9291   10713    1780    1960    1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15      10    9291   10590
          ------------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201     9.0    9291   10713     180     360     270
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
GR 969.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
HD 5.201       0    9291   10713
X1 5.203     9.0    9291   10713      10      10      10
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203       0    9291   10713
X1 5.290      82  9250.8 10672.4     505     675     585
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
G  71.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
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HD 5.290       10  9250.8 10672.4
X1 5.380     20.0  9266.0 10656.0      305      645      465
GR 993.0   9214.0   987.7   9266.0   985.7   9342.0   972.8   9358.0   972.3   9413.0
GR 972.2   9565.0   972.2   9734.0   972.2   9889.0   972.2   9994.0   971.4  10000.0
GR 971.4  10062.0   971.4  10195.0   974.3  10208.0   974.2  10263.0   974.2  10420.0
GR 974.2  10582.0   974.2  10639.0   988.4  10656.0   988.6  10671.0   982.3  10702.0
HD 5.380       10    9266    10656
          ----------MCDOWELL ROAD------
X1 5.689       42  9371.3 10552.8     1320     1740     1620
GR 996.9   9371.2    990.8   9371.3  973.85   9399.5  973.85   9488.7  973.85   9488.8
GR973.85   9496.2  973.85    9496.3  973.85   9606.6  973.85   9606.7  973.85   9614.1
GR973.85   9614.2  973.85    9725.8  973.85   9725.9  973.85   9733.3  973.85   9733.4
GR973.85   9843.3  973.85    9843.4  973.85   9850.8  973.85   9850.9  973.85   9961.3
GR973.85   9961.4  973.85    9968.8  973.85   9968.9  973.85  10078.9  973.85  10079.0
GR973.85  10086.4  973.85   10086.5  973.85  10196.2  973.85  10196.3  973.85  10203.7
GR973.85  10203.8  973.85   10314.4  973.85  10314.5  973.85  10321.9  973.85  10322.0
GR973.85  10432.1  973.85   10432.2  973.85  10439.6  973.85  10439.7  973.85  10524.6
GR 990.8  10552.8    996.9  10552.9
HD 5.689       10  9371.3 10552.8
X1 5.750     22.0  9426.0 10579.0      370      370      370
GR 990.7   9287.0    990.7   9295.0   985.9   9330.0   983.9   9362.0   985.6   9388.0
GR 990.1   9416.0    990.3   9426.0   975.3   9477.0   975.3   9595.0   975.5   9715.0
GR 975.5   9864.0    975.5   9981.0   974.0   9994.0   973.7  10030.0   973.7  10095.0
GR 973.7  10244.0    975.6  10259.0   975.6  10349.0   975.7  10474.0   975.7  10565.0
GR 989.2  10579.0    989.6  10596.0
HD 5.750       10     9426    10579
X1 5.900     17.0  9429.0 10561.0      945      950      950
GR 993.0   9414.0    993.0   9429.0   977.5   9447.0   977.5   9506.0   977.5   9598.0
GR 977.5   9714.0    977.6   9829.0   977.4   9946.0   975.4   9958.0   975.5  10040.0
GR 975.5  10099.0    975.5  10230.0   977.4  10257.0   977.6  10344.0   977.6  10459.0
GR 977.6  10544.0    991.1  10561.0
HD 5.900       10     9429    10561
          -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068     15.0  9416.0 10545.0      907      897      902
GR 992.7   9416.0    979.3   9431.0   979.3   9490.0   979.2   9585.0   979.2   9712.0
GR 979.0   9831.0    978.7   9925.0   976.7   9971.0   976.7  10000.0   976.7  10114.0
GR 976.7  10208.0    977.8  10260.0   978.4  10376.0   978.6  10528.0   992.4  10545.0
HD 6.068       10  9416.0 10545.0
X1 6.070     15.0  9416.0 10545.0        8        8        8
GR 992.7   9416.0    979.3   9431.0   979.3   9490.0   979.2   9585.0   979.2   9712.0
GR 979.0   9831.0    978.7   9925.0   976.7   9971.0   976.7  10000.0   976.7  10114.0
GR 976.7  10208.0    977.8  10260.0   978.4  10376.0   978.6  10528.0   992.4  10545.0
HD 6.070        0  9416.0 10545.0
X1 6.430     20.0  9452.0 10537.0     2045     1850     1945
GR 996.1   9390.0    991.8   9409.0   991.6   9433.0   996.5   9443.0   996.5   9452.0
GR 984.1   9467.0    984.0   9528.0   984.3   9631.0   984.3   9768.0   984.1   9894.0
GR 983.2   9980.0    981.0  10000.0   981.0  10057.0   981.3  10156.0   981.9  10213.0
GR 983.2  10232.0    983.2  10359.0   982.5  10519.0   996.1  10537.0   996.1  10550.0
HD 6.430       10     9452    10537
X1 6.820     17.0  9444.0 10573.0     2145     1820     1980
GR1002.7   9434.0   1002.7   9444.0   989.2   9465.0   987.3   9582.0   985.9   9607.0
GR 985.7   9745.0    985.9   9860.0   984.8   9990.0   984.8  10000.0   985.9  10065.0
GR 988.4  10076.0    988.4  10157.0   988.0  10268.0   988.0  10400.0   988.0  10557.0
GR1001.0  10573.0   1001.0  10591.0
HD 6.820       10     9444    10573
                                      357      357      357
          -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888     16.0  9439.0 10577.0      357      357      357
GR1004.2   9428.0   1004.2   9439.0   989.9   9461.0   989.9   9574.0   989.9   9700.0
GR 989.8   9818.0    989.4   9954.0   989.4   9973.0   989.4  10000.0   989.4  10039.0
GR 989.4  10132.0    989.4  10266.0   989.4  10427.0   989.4  10558.0  1002.7  10577.0
GR1002.7  10588.0
HD 6.888       10     9439    10577
X1 6.890     16.0  9439.0 10577.0        8        8        8
GR1004.2   9428.0   1004.2   9439.0   989.9   9461.0   989.9   9574.0   989.9   9700.0
GR 989.8   9818.0    989.4   9954.0   989.4   9973.0   989.4  10000.0   989.4  10039.0
GR 989.4  10132.0    989.4  10266.0   989.4  10427.0   989.4  10558.0  1002.7  10577.0
GR1002.7  10588.0
HD 6.890        0     9439    10577
X1 6.910     17.0  9430.0 10579.0      105      115      110
GR1002.8   9417.0   1002.8   9430.0   989.5   9452.0   989.9   9524.0   989.9   9677.0
GR 989.9   9807.0    989.5   9970.0   989.5  10000.0   989.5  10018.0  1000.2  10037.0
GR1000.2  10125.0    989.8  10142.0   989.8  10236.0   989.8  10390.0   989.8  10561.0
GR1002.7  10579.0   1002.7  10589.0
HD 6.910       10     9430    10579
X1 6.930     17.0  9413.0 10573.0      105      105      105
GR1004.8   9405.0   1004.8   9413.0   999.9   9417.0   999.9   9426.0   989.9   9442.0
GR 989.9   9572.0    989.9   9706.0   990.0   9833.0   990.1   9955.0   989.9  10000.0
GR 989.9  10053.0    989.9  10201.0   989.9  10359.0   990.1  10545.0   990.9  10558.0
GR1003.9  10573.0   1003.9  10582.0
HD 6.930       10     9413    10573
X1 6.990     19.0  9400.0 10559.0      315      355      335
GR1003.3   9393.0   1003.4   9400.0   997.4   9411.0   997.3   9418.0   991.4   9429.0
GR 991.4   9534.0    991.1   9695.0   991.1   9871.0   991.1  10000.0   991.1  10072.0
```

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GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10     9400   10559
X[illegible].490    13.0  9509.0 10525.0    2645    2610    2595
G[illegible]009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10     9509   10525
         -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0    2805    2480    2625
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988      10  9293.0 10732.0
X1 7.990    37.0  9293.0 10732.0      10      10     105
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.990       0  9293.0 10732.0
NC                        .3      .5
         ---------INDIAN SCHOOL ROAD------
X1 8.000      85  9235.5  10725.      50      50      50
X3    10
XL                      9235.5   10725
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
G[illegible]999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
G[illegible]999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
G[illegible]999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000      10  9235.5   10725
NC                        0.1     0.3
X1 8.105      91  9493.9 10978.6     405     745  522.59
X3    10
XL                      9400 10978.6
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
G[illegible]010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
G[illegible]008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105      10     9400 10978.6
X1 8.198      92  9458.7 10971.0     420     620  490.43
X3                      9458.6    1010  109711    1010
XL                        9400   11100
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
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GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
G[redacted]05.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
G[redacted]03.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198      10  9458.7   10971
NC  .040    .040    .035
   ----------Gravel Mine Between Camelback Road and Indian School----------
X1 8.433      87  9583.1 10597.5    1155    1365 1241.36
X3                9009.5    1012   11000    1012
XL                  9000 10597.5
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
G[redacted]13.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
G[redacted]15.0 11376.3  1014.8 11586.0
HD 8.433      10    6300 10597.5
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768      73  9584.7 10102.8    1735    1765 1764.77
X3                8182.6    1018   11500    1018
XL                  9000   11000
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10    7000   11000
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                9300    1022   11545    1022
XL                9700 11458.9
GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
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NC  0.05    0.05   0.035     0.1     0.3
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XL                        9540   11150
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HD 9.435       10  9548.8 11146.3
QT
X1 9.696       91  9602.6 10996.2    1430    1330 1383.24
X3                        9015    1030   11702    1030
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HD 9.696       10    9600   11750
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X1 9.885       91  9327.8 10706.6    1090     825  996.40
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XL                       9327.8   12800
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GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10    9500 10227.2
NC  0.15   0.055   0.035     0.3     0.5
X111.557      95  9881.6 10100.9     675     675  677.68
X3                        8970    1058   10122    1058
XL                        9000 10100.9
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
G[redacted]042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
[redacted].557      10    8000 10100.9
X[redacted].847      95  9914.3 10113.4    1530    1530 1531.67
X3                        7310    1062   10173    1062
XL                      9914.3 10113.4
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    6000 10113.4
X112.359      73  9691.6 10061.0    2510    2730  2701.6
XL                      7600   10200
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
G[redacted]058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
G[redacted]58.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      10    6700   10200
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                        7000    1066 10782.8    1066
XL                        7950   10200
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GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8     6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
G[redacted]65.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
G[redacted]1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7     8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6     9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42       10    7200   10150
NC  .045     .040    .035     0.1     0.3
X1 12.47       89  9382.2 10296.2     230     240     255
X3                         7298.5    1066 11052.3    1066
XL                         9382.2 10296.2
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6     5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
G[redacted]65.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR[redacted]071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47       10    7500 10296.2

X112.816       94  9781.2 10376.3    1780    1850 1859.04
X3                         8483.3    1068   10488    1068
XL                         9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR1068.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
GR1069.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR1070.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816       10    7500   10375

   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007       94  9767.1 10186.1    1000    1030 1006.76
X3                         8750    1072   10239    1072
XL                         9150 10186.1
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR[redacted]073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
G[redacted]074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR[redacted]073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
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GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
GR1072.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR1070.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
G[redacted]71.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
G[redacted]64.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007      10    8800   10186

NC  .045    .045    .035     0.3     0.5
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467      89  8693.6 10286.7  2400.4  2425.4  2429.7
X3    10
GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467      10  8693.6 10286.7
NC                        0.1     0.3
X113.952      93  9432.8 10076.3    2525    2585 2566.36
X3    10
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR[redacted]82.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
G[redacted]84.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
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GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR1083.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR1078.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952      10    7200   10600
X114.430      95  9171.4 10301.1    2175    2625 2523.57
X3                    7800    1093  109841    1093
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
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GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
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GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
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GR[redacted]86.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
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HD14.430      10    8800 10301.1
X115.000      93  9346.3 10081.6    2700    3130  3009.7
X3    10
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GR1098.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
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GR1099.9 11593.7  1101.2 11685.2  1101.1 11736.6  1101.7 11756.7  1101.5 11782.1
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GR1098.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
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GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
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HD15.000      10  9346.3   10550
X115.094      93  9336.0 10125.1     495     495  496.49
X3                      9234.4    1102   11152    1102
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
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GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
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GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
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GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
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GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   10400
NC  .040    .045    .035
X115.374      92  9832.4 10085.5    1650    1260 1478.26
                        9822    1106   10770    1106
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
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GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
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GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
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GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   11650
NC  .040    .040    .035
          ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719      91  9885.3 10059.7    1950    1635 1824.01
X3                      9385.2    1111   10150    1111
GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
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GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
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GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
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GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
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NC                         0.3     0.5
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XL                         9600   10500
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GR1121.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
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HD16.482       10  9781.9   10220
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GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506       10    9700   10300
NC  0.05    0.05    0.04     0.1     0.3
X116.612       84  9808.2 10161.2     627     342     581
X3                         9793    1124   10286    1124
XL                       9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR1119.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
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GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      10  9808.2   10800
NC 0.045    0.05    0.04     0.1     0.3
X117.990      82  9810.0 10135.4    1990    1985    1993
X3                         9725    1130   10150    1130
XL                         9800   11000
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990      10    9800   12400
X117.458      92  9370.6 10225.3    3035    1705 2468.67
X3                         8808    1132   10334    1132
XL                         9000   10400
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
HD17.458      10    9000   11800
X117.638      89  9774.7 10288.4     955     895  949.45
X3                         8744    1136   10386    1136
XL                         9100 10288.4
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638      10    9000   11100
NC 0.045    0.05   0.035
X117.821      92  9764.8 10227.7     950     970  964.24
X3                         8350    1140   10270    1140
XL                         8600 10227.7
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
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GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821      10     8600   10800
X118.275      92  9752.1 10210.5    2170    2440 2398.82
X3                    8750    1144   10715    1144
XL                 9752.1   10650
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0
HD18.275      10     8800   10650
NC                     0.3     0.5
             -------------BELL ROAD-----------
X118.962      74     9840 10223.7    3175    3885 3627.72
X3                    9391    1156   10535    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962      10     9440   10480
NC  .045    .045    .035
X119.066      93  9885.7 10349.1     485     580  551.29
X3    10
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR1154.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066      10  9302.8   10398
NC 0.045  0.045   0.035     0.1     0.3
X119.446      91  9592.8 10078.6    1840    2400 2473.39
X3    10
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
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GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
         ---------UNION HILLS--------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X3    10
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3    10
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR1178.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
X120.958      90  9787.3 10383.8    1815    2044 2006.06
X3                       8780    1188   10760    1188
XL                       9250   10750
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      10    8800   10750
         ----------BEARDSLEY----------
X121.061      91  9850.0 10325.4     340     655  542.53
X3                       9200    1188   11045    1188
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XL                              9200   11000
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
G[redacted]70.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
G[redacted]82.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      10    9850 10655.8
NC  .055    .055    .050
X121.157      94  9377.3 10376.3     340     630  509.07
X3                      9266.8    1190   11150    1190
XL                        9300   10800
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR[redacted]80.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
G[redacted]82.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR[redacted]90.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157      10  9377.3 10398.0
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                      9350    1193   10343    1193
XL                      9100   11200
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      10  9190.7 10769.6
NC  .045    .055    .035
X121.893      93  9558.8 10146.5    2525    2070 2442.15
X3                      9546    1200   11050    1200
XL                      9604   12000
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
G[redacted]00.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
G[redacted]98.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
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GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
[redacted].893    10  9558.8 10758.1
      -------UPSTREAM OF DEER VALLEY ROAD--------
NC  .045    .045    .035
X122.462      77  9887.4 10318.9    2955    2920 3005.37
X3    10
XL                        9050   10800
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462      10  9050.4   11800
X122.935      94  9530.2 10351.6    2480    2125 2490.47
X3    10
XL                        8400   10750
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR[redacted]212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR[redacted]14.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   11750
       ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      95  9675.2 10060.2    2450    2360 2505.26
X3                        9550    1226 12265.5    1226
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12177  1234.4 12219.3    1238 12265.5
HD23.409      10  8173.3 10945.4
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X[redacted]                       9650    1230 11533.8    1230
[redacted]                        9670   11450
GR  1263  7983.5  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
GR1192.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
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GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR  226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR1228.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR1226.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR  1238 11521.1  1237.8 11533.8
HD23.692      10    8048   11450
NC  .055    .055    .050
X123.974      94  9716.2 10115.2    1420    1470 1489.37
X3                    9716    1238 11204.9    1238
XL                    9716   11200
GR1269.8  7466.3  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10  9693.0 10388.9
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
NC  .045    .045    .035
X1  4.449      92  9496.2 10169.3    2380    2560 2506.65
X3    10
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10  7898.5 11143.3
     ----------UPSTREAM OF HAPPY VALLEY ROAD----
X124.543      91  9646.7 10243.6     495     495  500.50
X3    10
XL                    9300   11430
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR  242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR  242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543      10    9000 11413.5
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NC   .05      .05    .035
X124.996       96  9774.0 10632.3    2320    2330 2388.18
X3    10
GR[illegible]54.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
GR1250.9 12975.2  1250.9 13009.4  1248.8 13019.0  1250.7 13059.6  1254.0 13074.1
GR1270.0 13110.8
HD24.996       10  9632.6 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478       93  9750.7 10127.1    2600    2485 2546.34
X3    10
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR[illegible]260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
[illegible]261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478       10  9750.7 10598.2
          ----------UPSTREAM OF JOMAX ----------
X125.666       66  9842.4 10115.1    1035     975  995.18
X3    10
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666       10  9854.2 10388.0
X1 25.86       25    9940   10200    1575    1565    1585
X3    10
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86       10    8300   10200
X[illegible]0.06   0.065   0.035
[illegible]6.29    26.0    9696   10120    2090    2295    2240
X3    10
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13190.0
HD 26.29       10    8200   12800
```

```
NC  0.06    0.07   0.035
X1 26.73    31.0    9898   10125    2320    2310    2330
X3    10
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73      10    9400   11200
X1 27.03    23.0    9922   10079    1660    1020    1590
X3    10
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03      10    9700   10600
NC 0.055   0.055   0.035
X1 27.68    35.0    9853   10078    4120    3200    3430
X3    10
XL                         7200   10200
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68      10    7400   10200
X1 27.94    24.0    9944   10187    1370    1415    1405
X3    10
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94      10    7850   10200
X1 28.12    27.0    9906   10076     990     960     950
X3    10
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
HD 28.12      10    8750   11300
X1 28.67    37.0    9964   10192    2785    2925    2885
X3                         9450  1322.3   11202  1322.3
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67      10    9900   11100
X1 28.95    34.0    9946   10353    1550     940    1465
X3    10
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95      10    9946   12000
X1 29.04    34.0    9828   10239     550     330     510
X3    10
GR1360.0    9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04      10    9800   11700
X1 29.54    30.0    9846   10150    2750    2235    2640
X3    10
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
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GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
[redacted]9.54       10     9210    10200
X[redacted]9.611     31.0     9791    10094      315      315      375
X3    10
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611       10     9000    10200
NC 0.055   0.055   0.040
X1 29.80     16.0     9882    10205      980     1025     1025
X3    10
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80       10     9882    10600
X1 30.07     17.0     9925    10098     1425     1440     1420
X3    10
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07       10     9600    10300
X1 30.26     12.0     9749    10135      870     1090     1005
X3    10
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26       10     9700    10250
X1 30.73     14.0     9881    10075     2455     2470     2460
X3    10
XL                      9850    10250
GR[redacted]69.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR[redacted]52.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73       10     9850    10250
X1 30.82     12.0     9924    10201      500      370      500
X3    10
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD 30.82       10     9900    10400
X1 31.39     17.0     9792    10080     2900     3165     2970
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39       10     9550    10400
X1 31.86     10.0     9894    10261     2550     2485     2505
X3    10
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86       10     9500    10300
NC 0.045   0.050   0.045
X1 32.43     14.0     9852    10112     2885     2970     2980
X3    10
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43       10     9450    10200
X1 32.72     28.0     9879    10150     1725     1145     1535
X3                      9435   1408.2    10524   1408.2
XL                      9600    10500
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
G[redacted]89.5 10710.0  1390.0 10780.0  1442.6 10849.0
[redacted]2.72       10     9600    10700
X1 32.86     12.0     9928    10155      680      990      760
X3    10
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86       10     9800    10200
X1 32.92      9.0     9891    10143      290      370      310
X3                      9680    1390    10180    1390
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GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92      10    9890   10180
      ------------STATE ROUTE 74---------
X1 32.984      33    9962   10011     338     358     343
X3    10
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       6    9962   10011
X132.998     9.0    9962   10108      72      72      72
      ------------**********************-------------
X3    10
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
        ------------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170
X3    10
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10    9900   10400
X1 33.82    20.0    9861   10068    2165    2220    2175
X3    10
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82      10    9600   10200
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T5    NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T6    BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1            1       0
I4            4       1      10
LQ         5000    7000   17000   55000
LT        12913   21760   66948  293920
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
LF    MS 0.21035 0.22940 0.21429 0.21542
LF    CS 0.23112 0.22521 0.22541 0.25124
LF   VCS 0.36207 0.32486 0.38978 0.39271
LF   VFG 0.00367 0.00255 0.00203 0.00119
LF    FG 0.00683 0.00452 0.00379 0.00284
LF    MG 0.01083 0.00681 0.00677 0.00652
LF    CG 0.00587 0.00134 0.00686 0.01048
LF   VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF         5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075       2
PF         5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
```

PFC 1.18	82	0.6	49	0.425	26	0.3	10	0.15	2
PFC0.075	1								
PF	8.000	1	19	12.5	99	9.5	98	6.3	96
[redacted]4.75	95	2.36	91	2	90	1.18	79	0.6	54
[redacted].425	37	0.3	22	0.15	5	0.075	3		
PF	8.992	1	50	37.5	98	25	97	19	95
PFC 12.5	94	9.5	91	6.3	88	4.75	85	2.36	80
PFC 2	78	1.18	67	0.6	44	0.425	29	0.3	18
PFC 0.15	8	0.075	5						
PF	9.885	1	50	37.5	99	25	94	19	92
PFC 12.5	90	9.5	89	6.3	87	4.75	86	2.36	82
PFC 2	79	1.18	65	0.6	30	0.425	16	0.3	11
PFC 0.15	7	0.075	5						
PF	11.029	1	50	37.5	99	25	96	19	93
PFC 12.5	88	9.5	83	6.3	77	4.75	73	2.36	66
PFC 2	62	1.18	46	0.6	18	0.425	9	0.3	6
PFC 0.15	2	0.075	0						
PF	11.428	1	37.5	25	98	19	93	12.5	86
PFC 9.5	81	6.3	73	4.75	67	2.36	61	2	59
PFC 1.18	48	0.6	33	0.425	27	0.3	24	0.15	20
PFC0.075	18								
PF	12.470	1	50	37.5	95	25	88	19	82
PFC 12.5	75	9.5	70	6.3	64	4.75	61	2.36	48
PFC 2	46	1.18	35	0.6	18	0.425	9	0.3	4
PFC 0.15	1	0.075	0						
PF	13.467	1	37.5	25	99	19	98.5	12.5	98
PFC 9.5	97	6.3	96.5	4.75	96.2	2.36	96.1	2	96
PFC 1.18	93	0.6	79	0.425	58	0.3	33	0.15	7
PFC0.075	1								
PF	14.430	1	37.5	25	99	19	99	12.5	99
PFC 9.5	99	6.3	99	4.75	98	2.36	95	2	93
PFC 1.18	80	0.6	46	0.425	25	0.3	13	0.15	4
PFC0.075	2								
PF	15.719	1	62.5	37.5	88	25	85	19	80
PFC 12.5	76	9.5	73	6.3	69	4.75	66	2.36	62
PFC 2	59	1.18	45	0.6	28	0.425	23	0.3	21
PFC 0.15	13	0.075	5						
PF	16.482	1	25	19	99	12.5	97	9.5	96
PFC 6.3	92	4.75	90	2.36	85	2	81	1.18	62
[redacted] 0.6	24	0.425	9	0.3	4	0.15	1	0.075	0
[redacted]	16.612	1	75	37.5	92	25	85	19	80
PFC 12.5	73	9.5	70	6.3	65	4.75	62	2.36	49
PFC 2	44	1.18	29	0.6	16	0.425	11	0.3	6
PFC 0.15	2	0.075	1						
PF	16.990	1	50	37.5	98	25	95	19	93
PFC 12.5	91	9.5	90	6.3	88	4.75	87	2.36	84
PFC 2	82	1.18	75	0.6	58	0.425	41	0.3	22
PFC 0.15	5	0.075	2						
PF	17.821	1	50	37.5	92	25	85	19	73
PFC 12.5	60	9.5	53	6.3	47	4.75	44	2.36	36
PFC 2	34	1.18	25	0.6	12	0.425	6	0.3	3
PFC 0.15	1	0.075	0						
PF	18.275	1	50	37.5	94	25	83	19	76
PFC 12.5	66	9.5	59	6.3	50	4.75	45	2.36	39
PFC 2	36	1.18	27	0.6	19	0.425	15	0.3	13
PFC 0.15	11	0.075	9						
PF	18.962	1	62.5	37.5	87	25	75	19	70
PFC 12.5	63	9.5	59	6.3	54	4.75	50	2.36	45
PFC 2	43	1.18	34	0.6	19	0.425	11	0.3	5
PFC 0.15	1	0.075	0						
PF	19.920	1	50	37.5	96	25	87	19	82
PFC 12.5	75	9.5	70	6.3	65	4.75	61	2.36	53
PFC 2	50	1.18	35	0.6	14	0.425	7	0.3	5
PFC 0.15	2	0.075	1						
PF	21.061	1	62.5	37.5	85	25	76	19	69
PFC 12.5	59	9.5	53	6.3	45	4.75	40	2.36	34
PFC 2	32	1.18	25	0.6	15	0.425	11	0.3	9
PFC 0.15	6	0.075	5						
PF	21.893	1	50	37.5	98	25	98	19	92
PFC 12.5	83	9.5	77	6.3	68	4.75	63	2.36	51
PFC 2	46	1.18	27	0.6	10	0.425	5	0.3	3
PFC 0.15	1	0.075	1						
PF	22.462	1	62.5	37.5	91	25	83	19	78
PFC 12.5	73	9.5	68	6.3	62	4.75	58	2.36	48
[redacted] 2	45	1.18	32	0.6	15	0.425	7	0.3	3
[redacted].15	0	0.075	0						
[redacted]	23.409	1	62.5	37.5	91	25	83	19	75
PFC 12.5	66	9.5	61	6.3	54	4.75	51	2.36	44
PFC 2	42	1.18	32	1.6	18	0.425	11	0.3	6
PFC 0.15	2	0.075	2						
PF	24.543	1	62.5	37.5	84	25	76	19	70
PFC 12.5	64	9.5	60	6.3	54	4.75	52	2.36	47
PFC 2	45	1.18	36	0.6	21	0.425	13	0.3	9
PFC 0.15	4	0.075	2						

```
PF        25.666       1      50    37.5      97      25      88      19      81
PFC 12.5      74     9.5      69     6.3      64    4.75      61    2.36      54
PFC    2      52    1.18      43     0.6      21   0.425       8     0.3       3
PFC 0.15       2   0.075       1
PF        25.860       1    37.5      25      98      19      96    12.5      91
PFC  9.5      87     6.3      80    4.75      74    2.36      56       2      46
PFC 1.18      27     0.6       7   0.425       3     0.3       2    0.15       2
PFC0.075       1
PF        26.290       1      19     9.5      98     6.3      97    4.75      92
PFC 2.36      84       2      80    1.18      22     0.6      18   0.425       6
PFC  0.3       3    0.15       2   0.075       2
PF        26.730       1      50    37.5      96      25      93      19      92
PFC 12.5      88     9.5      84     6.3      80    4.75      77    2.36      67
PFC    2      62    1.18      39     0.6      14   0.425       9     0.3       7
PFC 0.15       6   0.075       6
PF        27.680       1      50    37.5      99      25      97      19      92
PFC 12.5      88     9.5      85     6.3      78    4.75      73    2.36      61
PFC    2      56    1.18      34     0.6      10   0.425       5     0.3       3
PFC 0.15       3   0.075       3
PF        30.070       1      50    37.5      97      25      88      19      84
PFC 12.5      73     9.5      67     6.3      55    4.75      53    2.36      43
PFC    2      40    1.18      31     0.6      21   0.425      17     0.3      14
PFC 0.15      11   0.075       9
PF        30.820       1    37.5      25      99      19      97    12.5      95
PFC  9.5      94     6.3      90    4.75      89    2.36      86       2      85
PFC 1.18      76     0.6      61   0.425      50     0.3      35    0.15      11
PFC0.075       4
PF        31.860       1    37.5      25      94      19      92    12.5      91
PFC  8.5      90     6.3      89    4.75      88    2.36      88       2      88
PFC 1.18      86     0.6      74   0.425      60     0.3      43    0.15      17
PFC0.075       8
PF        32.430       1   32.64    2.36      99       2      98    1.18      95
PFC  0.6      84   0.425      69     0.3      52    0.15      25   0.075      12
PF        32.998       1    62.5    37.5      97      25      91      19      84
PFC 12.5      74     9.5      67     6.3      57    4.75      51    2.36      40
PFC    2      37    1.18      27     0.6      18   0.425      14     0.3      12
PFC 0.15      10   0.075       7
$LOCAL
LOI           0.1    1000    5000   10000   25000
L             0.1    1094    6855   16015   51300
LFL   VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL    FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL    MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL    CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL   VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL   VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL    FG 0.00076 0.00076 0.00197 0.00380 0.00293
LFL    MG 0.00056 0.00056 0.00028 0.00067 0.00050
LFL    CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL   VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$HYD
$RATING
RC            12    5000    5000          912.55  913.39   913.9  914.53   914.9
RC         915.38   915.8  916.05   916.3  916.70   917.0  917.24
*   AB  TIME STEP NO 1  RUN 30 DAYS OF 9,000 CFS TO AVERAGE CHANNEL
Q   9000
T     60
X           0.1       1
*   AB  TIME STEP NO 2
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 3
Q   9000
T     60
X         0.005       1
*       TIME STEP NO 4
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 5
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 6
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 7
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 8
Q   9000
```

```
T     60
X           0.01       1
*       TIME STEP NO 9
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 10
Q   9000
T     60
X          0.005       1
*       TIME STEP NO 11
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 12
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 13
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 14
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 15
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 16
Q   9000
T     60
X           0.01       1
*       TIME STEP NO  17
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 18
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 19
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 20
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 21
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 22
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 23
Q   9000
T     60
X           0.01       1
*       TIM STEP NO  24
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 25
Q   9000
T     60
X          0.005       1
*       TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 27
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 28
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 29
Q   9000
```

```
T     60
X           0.01       1
*    AB  TIME STEP NO 30
Q  [redacted]000
T     60
X           0.01       1
       -----100-YEAR HYDROGRAPH------
*    AB  TIME STEP NO 31
Q    5100     100
T      60      60
X           0.01    0.06
*       TIME STEP NO 32
Q    5100     100
W    0.01
*    AB  TIME STEP NO 33
Q    5800     800
X           0.01    0.08
*       TIME STEP NO 34
Q    5800     800
W    0.01
*    AB  TIME STEP NO 35
Q   18000    7000
X           0.01    0.04
*       TIME STEP NO 36
Q   18000    7000
W    0.01
*    AB  TIME STEP NO 37
Q   36000   17000
X           0.01    0.06
*       TIME STEP NO 38
Q   36000   17000
W    0.01
*    AB  TIME STEP NO 39
Q   44000   20000
X           0.01    0.04
*       TIME STEP NO 40
Q   44000   20000
W    0.01
*    AB  TIME STEP NO 41
Q  [redacted]000   24000
X           0.01    0.04
*       TIME STEP NO 42
Q   54000   24000
W    0.01
*    AB  TIME STEP NO 43
Q   52000   22000
X           0.01    0.04
*       TIME STEP NO 44
Q   52000   22000
W    0.01
*    AB  TIME STEP NO 45
Q   44000   18000
X           0.01    0.04
*       TIME STEP NO 46
Q   44000   18000
W    0.01
*    AB  TIME STEP NO 47
Q   30000   12000
X           0.01    0.06
*       TIME STEP NO 48
Q   30000   12000
W    0.01
*    AB  TIME STEP NO 49
Q   20000    8000
X           0.01    0.06
*       TIME STEP NO 50
Q   20000    8000
W    0.01
*    AB  TIME STEP NO 51
Q    9000    4000
X           0.01    0.13
*       TIME STEP NO 52
Q    9000    4000
W    0.01
*    AB  TIME STEP NO 53
Q  [redacted]500     500
X           0.01    0.33
*       TIME STEP NO 54
Q    5500     500
W    0.01
$$END
```

APPENDIX C
BACKUP DATA SEDIMENT TRANSPORT FUNCTION SELECTION

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

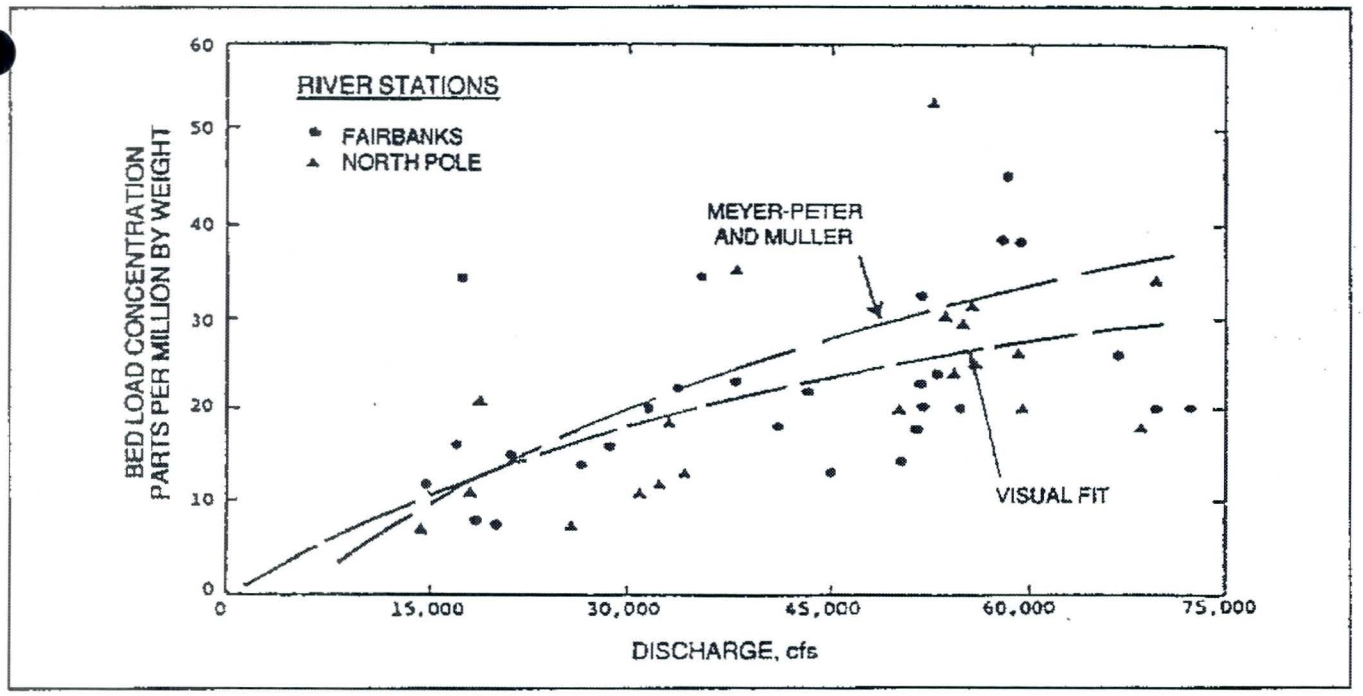


Figure 5-13. Comparison of computed and measured bed load in Tanana River near Fairbanks, Alaska (Buska et al. 1984)

Table 5-2
Sediment Transport Functions

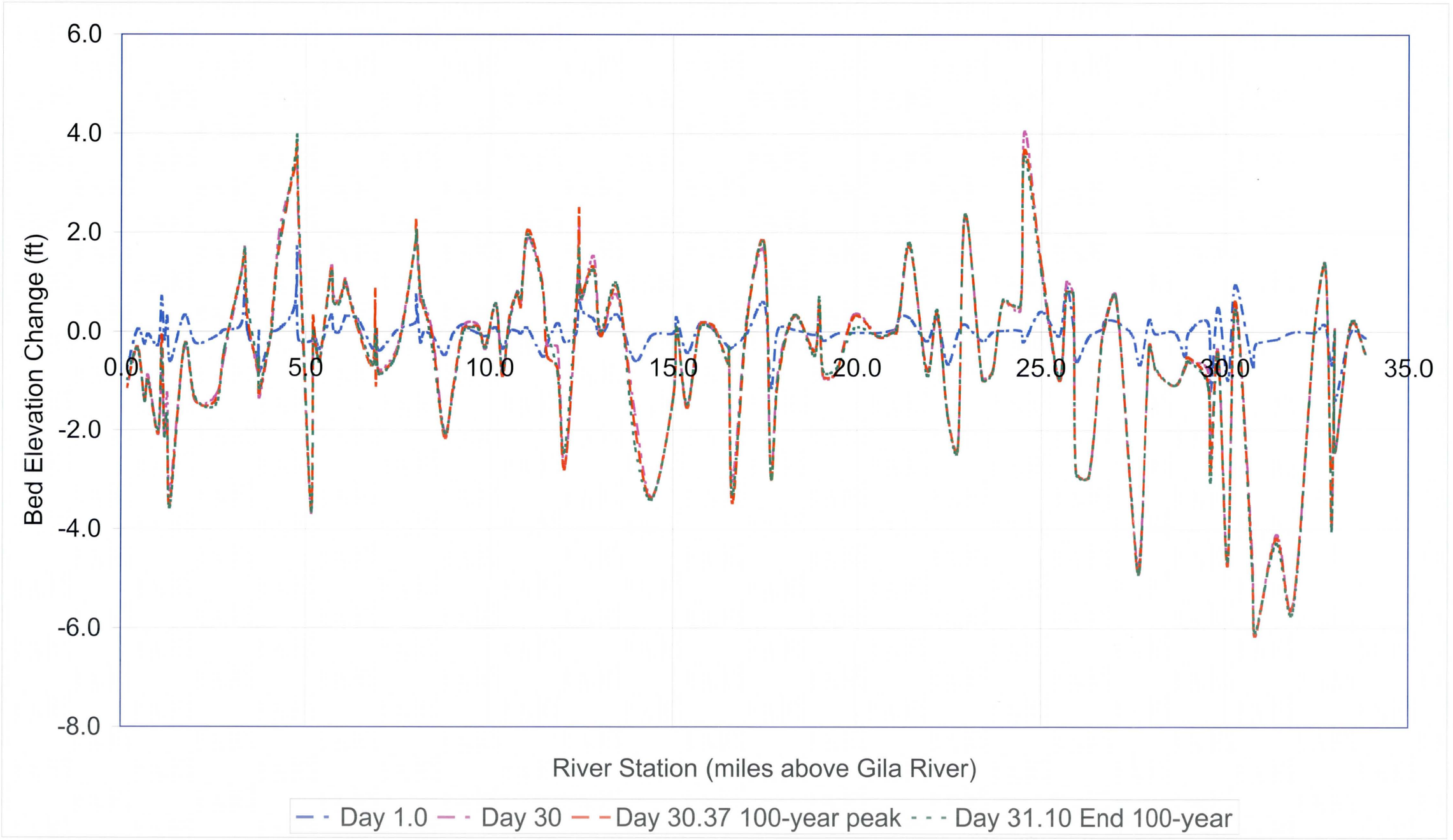
Class of Channel	Suggested Functions	Reference
Large sand-bed rivers	Laursen-Madden Toffaleti	U.S. Hydrologic Engineering Center (1993) Toffaleti (1968)
Intermediate-size sand-bed rivers	Laursen-Madden Yang unit stream power	U.S. Hydrologic Engineering Center (1993) Yang (1973, 1984)
Small sand-bed rivers	Yang unit stream power Colby for streams with high sediment concentration	Yang (1973, 1984) Colby (1964a, 1964b)
Sand- and gravel-bed rivers	Yang unit stream power Toffaleti combined with Meter-Peter and Müller	Yang (1973, 1984) See above and below
Gravel-bed rivers	Meyer-Peter and Müller	Meyer-Peter and Müller (1948)

Note: Tentative guidance is provided below for functions most appropriate to various classes of channels. This guidance is based on experience at the U.S. Army Engineer Waterways Experiment Station and various districts, primarily with simulations involving the HEC-6 computer program. In the HEC-6 program, the functions as originally published have been modified in most cases to compute transport by size classes and to allow for high wash load concentrations where necessary. Additional guidance for selection of sediment transport functions is available in the SAM computer program package (Thomas et al., in preparation). The distinctive hydraulic variables from the user's river are compared to a large data set developed by Brownlie (1981), and a river data set is selected from a river with the most similar characteristics. The guidance program then selects a sediment transport function that best reproduces the selected data set.

APPENDIX D
SAND AND GRAVEL HEC-6 MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

	HYDROGRAPH DAY										
	1	30.00	30.37	31.1	Condition at end			Maxchange	Maxchange		Comments
SECTION NUMBER	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	BED CHANGE (ft)	of 100-year flood	Max (ft)	Min (ft)	during event (ft)	during event	SECTION NUMBER	
33.820	-0.12	-0.43	-0.44	-0.44	scour	-0.12	-0.44	-0.44	scour	33.820	
33.410	-0.01	0.14	0.13	0.16	deposition	0.16	-0.01	0.16	deposition	33.410	
32.998	-1.38	-2.42	-2.44	-2.42	scour	-1.38	-2.44	-2.44	scour	32.998	Morgan City Wash
32.984	0.01	0.05	0.02	0.00	no change	0.05	0.00	0.05	deposition	32.984	State Rte 74
32.920	-0.66	-3.92	-3.86	-3.97	scour	-0.66	-3.97	-3.97	scour	32.920	
32.860	-0.56	-2.11	-2.10	-2.11	scour	-0.56	-2.11	-2.11	scour	32.860	
32.720	0.13	1.37	1.32	1.37	deposition	1.37	0.13	1.37	deposition	32.720	
32.430	-0.01	0.01	0.03	0.01	deposition	0.03	-0.01	0.03	deposition	32.430	
31.860	0.00	-5.49	-5.51	-5.61	scour	0.00	-5.61	-5.61	scour	31.860	
31.390	-0.15	-4.12	-4.19	-4.29	scour	-0.15	-4.29	-4.29	scour	31.390	
30.820	-0.26	-6.15	-6.15	-6.08	scour	-0.26	-6.15	-6.15	scour	30.820	
30.730	-0.67	-4.39	-4.57	-4.73	scour	-0.67	-4.73	-4.73	scour	30.730	
30.260	0.94	0.50	0.62	0.45	deposition	0.94	0.45	0.94	deposition	30.260	
30.070	-0.98	-4.70	-4.73	-4.63	scour	-0.98	-4.73	-4.73	scour	30.070	
29.800	0.49	-0.38	-0.43	-0.45	scour	0.49	-0.45	0.49	deposition	29.800	
29.611	-1.19	-2.63	-2.83	-3.04	scour	-1.19	-3.04	-3.04	scour	29.611	
29.540	0.18	-0.79	-1.03	-1.09	scour	0.18	-1.09	-1.09	scour	29.540	
29.040	-0.02	-0.61	-0.52	-0.60	scour	-0.02	-0.61	-0.61	scour	29.040	
28.950	-0.50	-0.70	-0.73	-0.71	scour	-0.50	-0.73	-0.73	scour	28.950	
28.670	-0.01	-1.09	-1.09	-1.09	scour	-0.01	-1.09	-1.09	scour	28.670	
28.120	-0.04	-0.76	-0.76	-0.74	scour	-0.04	-0.76	-0.76	scour	28.120	
27.940	0.23	-0.35	-0.30	-0.35	scour	0.23	-0.35	-0.35	scour	27.940	
27.680	-0.67	-4.66	-4.82	-4.83	scour	-0.67	-4.83	-4.83	scour	27.680	
27.480	-0.08	-3.64	-3.65	-3.57	scour	-0.08	-3.65	-3.65	scour	27.480	
27.030	0.21	0.72	0.68	0.69	deposition	0.72	0.21	0.72	deposition	27.030	
26.730	0.21	0.20	0.11	0.15	deposition	0.21	0.11	0.21	deposition	26.730	
26.630	0.05	-0.25	-0.25	-0.34	scour	0.05	-0.34	-0.34	scour	26.630	
26.290	-0.10	-2.94	-2.94	-2.95	scour	-0.10	-2.95	-2.95	scour	26.290	
25.940	-0.61	-2.85	-2.83	-2.86	scour	-0.61	-2.86	-2.86	scour	25.940	
25.860	0.13	0.73	0.75	0.78	deposition	0.78	0.13	0.78	deposition	25.860	
25.666	0.92	1.00	0.81	0.78	deposition	1.00	0.78	1	deposition	25.666	
25.478	-0.08	-0.98	-0.99	-0.94	scour	-0.08	-0.99	-0.99	scour	25.478	Jomax Road
24.996	0.41	1.26	1.37	1.21	deposition	1.37	0.41	1.37	deposition	24.996	
24.543	-0.20	4.04	3.67	3.54	deposition	4.04	-0.20	4.04	deposition	24.543	
24.449	0.02	0.46	0.54	0.56	deposition	0.56	0.02	0.56	deposition	24.449	Happy Valley Road
23.974	0.02	0.61	0.61	0.64	deposition	0.64	0.02	0.64	deposition	23.974	
23.692	-0.01	-0.82	-0.81	-0.84	scour	-0.01	-0.84	-0.84	scour	23.692	
23.409	-0.18	-0.91	-0.96	-0.96	scour	-0.18	-0.96	-0.96	scour	23.409	Pinnacle Peak Road
22.935	0.15	2.32	2.35	2.36	deposition	2.36	0.15	2.36	deposition	22.935	
22.745	-0.03	-2.36	-2.35	-2.39	scour	-0.03	-2.39	-2.39	scour	22.745	
22.462	-0.66	-1.63	-1.66	-1.68	scour	-0.66	-1.68	-1.68	scour	22.462	
22.177	0.27	0.34	0.36	0.44	deposition	0.44	0.27	0.44	deposition	22.177	
21.893	-0.19	-0.77	-0.79	-0.88	scour	-0.19	-0.88	-0.88	scour	21.893	
21.431	0.27	1.71	1.70	1.78	deposition	1.78	0.27	1.78	deposition	21.431	
21.157	0.31	0.40	0.48	0.47	deposition	0.48	0.31	0.48	deposition	21.157	
21.061	0.07	0.09	-0.02	0.05	deposition	0.09	-0.02	0.09	deposition	21.061	Beardsley Road
20.958	0.03	0.01	-0.01	-0.02	scour	0.03	-0.02	0.03	deposition	20.958	
20.579	-0.02	-0.10	-0.11	-0.09	scour	-0.02	-0.11	-0.11	scour	20.579	
19.920	-0.02	0.35	0.31	0.07	deposition	0.35	-0.02	0.35	deposition	19.920	Union Hills Road
19.446	-0.04	-0.81	-0.81	-0.74	scour	-0.04	-0.81	-0.81	scour	19.446	
19.066	-0.18	-0.90	-0.87	-0.79	scour	-0.18	-0.90	-0.9	scour	19.066	
18.962	0.13	0.52	0.57	0.70	deposition	0.70	0.13	0.7	deposition	18.962	Bell Road
18.839	-0.06	-0.38	-0.40	-0.49	scour	-0.06	-0.49	-0.49	scour	18.839	
18.275	0.04	0.31	0.33	0.34	deposition	0.34	0.04	0.34	deposition	18.275	
17.821	0.03	-0.85	-1.04	-0.96	scour	0.03	-1.04	-1.04	scour	17.821	
17.638	-1.14	-2.91	-2.92	-2.92	scour	-1.14	-2.92	-2.92	scour	17.638	
17.458	0.57	1.58	1.76	1.72	deposition	1.76	0.57	1.76	deposition	17.458	
16.990	-0.03	0.29	0.19	0.31	deposition	0.31	-0.03	0.31	deposition	16.990	
16.612	-0.31	-3.02	-3.47	-3.29	scour	-0.31	-3.47	-3.47	scour	16.612	
16.506	-0.36	-0.46	-0.39	-0.33	scour	-0.33	-0.46	-0.46	scour	16.506	Grand Avenue
16.482	-0.31	-0.65	-0.65	-0.64	scour	-0.31	-0.65	-0.65	scour	16.482	
16.099	0.03	0.03	0.10	0.02	deposition	0.10	0.02	0.1	deposition	16.099	
15.719	0.16	0.15	0.13	0.08	deposition	0.16	0.08	0.16	deposition	15.719	Cactus Road - El Mirage Landfill
15.374	-0.43	-1.52	-1.54	-1.47	scour	-0.43	-1.54	-1.54	scour	15.374	
15.094	0.28	0.07	0.09	0.09	deposition	0.28	0.07	0.28	deposition	15.094	
15.000	-0.03	-1.35	-1.36	-1.38	scour	-0.03	-1.38	-1.38	scour	15.000	
14.430	-0.07	-3.36	-3.36	-3.40	scour	-0.07	-3.40	-3.4	scour	14.430	
13.952	-0.59	-1.61	-1.90	-2.28	scour	-0.59	-2.28	-2.28	scour	13.952	
13.467	0.34	0.72	0.88	0.92	deposition	0.92	0.34	0.92	deposition	13.467	Olive Ave
13.007	-0.07	-0.01	-0.09	0.01	deposition	0.01	-0.09	-0.09	scour	13.007	
12.816	0.25	1.52	1.30	1.24	deposition	1.52	0.25	1.52	deposition	12.816	
12.470	0.49	0.65	0.82	0.69	deposition	0.82	0.49	0.82	deposition	12.470	
12.420	1.35	2.31	2.49	1.68	deposition	2.49	1.35	2.49	deposition	12.420	
12.359	0.01	0.62	0.65	0.84	deposition	0.84	0.01	0.84	deposition	12.359	
12.042	-0.21	-2.72	-2.77	-2.42	scour	-0.21	-2.77	-2.77	scour	12.042	
11.847	0.17	-0.33	-0.77	-0.86	scour	0.17	-0.86	-0.86	scour	11.847	
11.557	-0.26	-0.28	-0.48	0.03	deposition	0.03	-0.48	-0.48	scour	11.557	
11.428	-0.51	0.98	0.95	0.87	deposition	0.98	-0.51	0.98	deposition	11.428	Glendale Ave
11.029	0.07	1.88	2.05	1.96	deposition	2.05	0.07	2.05	deposition	11.029	
10.846	-0.04	0.60	0.52	0.68	deposition	0.68	-0.04	0.68	deposition	10.846	
10.752	0.01	0.82	0.77	0.80	deposition	0.82	0.01	0.82	deposition	10.752	
10.538	0.01	0.20	0.33	0.22	deposition	0.33	0.01	0.33	deposition	10.538	
10.343	-0.35	-0.81	-0.90	-0.80	scour	-0.35	-0.90	-0.9	scour	10.343	
10.167	0.08	0.54	0.54	0.57	deposition	0.57	0.08	0.57	deposition	10.167	
9.885	-0.09	-0.35	-0.28	-0.32	scour	-0.09	-0.35	-0.35	scour	9.885	
9.696	-0.04	0.11	0.09	0.04	deposition	0.11	-0.04	0.11	deposition	9.696	D/S Glendale Airport
9.435	0.06	0.20	0.09	0.08	deposition	0.20	0.06	0.2	deposition	9.435	U/S Camelback Road
9.266	0.15	0.08	0.06	-0.02	scour	0.15	-0.02	0.15	deposition	9.266	
8.992	-0.05	-1.23	-1.19	-1.27	scour	-0.05	-1.27	-1.27	scour	8.992	
8.768	-0.48	-2.02	-2.13	-2.04	scour	-0.48	-2.13	-2.13	scour	8.768	
8.433	-0.08	0.01	-0.07	-0.32	scour	0.01	-0.32	-0.32	scour	8.433	
8.198	-0.02	0.58	0.47	0.60	deposition	0.60	-0.02	0.6	deposition	8.198	
8.105	-0.21	0.63	0.88	0.80	deposition	0.88	-0.21	0.88	deposition	8.105	
8.000	0.72	2.02	2.22	2.04	deposition	2.22	0.72	2.22	deposition	8.000	
7.990	0.51	1.85	1.75	1.89	deposition	1.89	0.51	1.89	deposition	7.990	Indian School Road
7.988	0.19	1.83	1.82	1.83	deposition	1.83	0.19	1.83	deposition	7.988	Grade control structure
7.490	0.03	-0.32	-0.39	-0.41	scour	0.03	-0.41	-0.41	scour	7.490	
6.990	-0.39	-0.79	-0.84	-0.87	scour	-0.39	-0.87	-0.87	scour	6.990	
6.930	0.03	-0.12	0.05	-0.17	scour	0.05	-0.17	-0.17	scour	6.930	
6.910	-0.41	-0.61	-1.10	-0.68	scour	-0.41	-1.10	-1.1	scour	6.910	
6.890	0.01	0.02	0.00	0.04	deposition	0.04	0.00	0.04	deposition	6.890	Grade control structure
6.888	0.04	0.06	0.84	0.01	deposition	0.84	0.01	0.84	deposition	6.888	
6.820	-0.35	-0.67	-0.67	-0.67	scour	-0.35	-0.67	-0.67	scour	6.820	
6.430	0.23	0.12	0.03	0.10	deposition	0.23	0.03	0.23	deposition	6.430	
6.070	0.32	1.06	1.01	0.99	deposition	1.06	0.32	1.06	deposition	6.070	Grade control structure
6.068	0.30	1.06	1.03	0.99	deposition	1.06	0.30	1.06	deposition	6.068	
5.900	-0.01	0.62	0.60	0.56	deposition	0.62	-0.01	0.62	deposition	5.900	
5.750	0.05	0.74	0.61	0.60	deposition	0.74	0.05	0.74	deposition	5.750	
5.689	0.33	1.29	1.23	1.17	deposition	1.29	0.33	1.29	deposition	5.689	McDowell Road
5.380	-0.34	-0.58	-0.59	-0.60	scour	-0.34	-0.60	-0.6	scour	5.380	
5.290	-0.19	-0.32	-0.38	-0.36	scour	-0.19	-0.38	-0.38	scour	5.290	
5.203	0.00	0.00	0.32	0.01	deposition	0.32	0.00	0.32	deposition	5.203	Grade control structure
5.201	0.05	0.10	0.00	0.00	no change	0.10	0.00	0.1	deposition	5.201	
5.150	-0.19	-3.65	-3.59	-3.61	scour	-0.19	-3.65	-3.65	scour	5.150	
4.790	-0.14	2.33	2.61	2.65	deposition	2.65	-0.14	2.65	deposition	4.790	
4.754	1.71	3.76	3.76	3.97	deposition	3.97	1.71	3.97	deposition	4.754	
4.700	0.52	3.32	3.36	3.50	deposition	3.50	0.52	3.5	deposition	4.700	
4.300	0.06	2.04	1.78	1.81	deposition	2.04	0.06	2.04	deposition	4.300	
4.094	0.00	0.00	0.24	0.01	deposition	0.24	0.00	0.24	deposition	4.094	Grade control structure
4.092	0.01	0.02	0.00	0.00	no change	0.02	0.00	0.02	deposition	4.092	
3.767	-0.81	-1.33	-1.24	-1.15	scour	-0.81	-1.33	-1.33	scour	3.767	
3.757	0.00	-0.56	-0.65	-0.54	scour	0.00	-0.65	-0.65	scour	3.757	
3.734	-0.35	-0.76	-0.56	-0.90	scour	-0.35	-0.90	-0.9	scour	3.734	
3.729	-0.57	-0.84	-0.74	-0.68	scour	-0.57	-0.84	-0.84	scour	3.729	
3.430	0.03	0.36	0.34	0.60	deposition	0.60	0.03	0.6	deposition	3.430	
3.370	1.01	1.69	1.58	1.67	deposition	1.69	1.01	1.69	deposition	3.370	
3.270	0.15	1.16	1.18	1.16	deposition	1.18	0.15	1.18	deposition	3.270	
2.800	0.03	-0.52	-0.40	-0.39	scour	0.03	-0.52	-0.52	scour	2.800	
2.600	-0.09	-1.28	-1.37	-1.46	scour	-0.09	-1.46	-1.46	scour	2.600	
2.020	-0.23	-1.41	-1.39	-1.35	scour	-0.23	-1.41	-1.41	scour	2.020	
1.710	0.33	-0.34	-0.28	-0.30	scour	0.33	-0.34	-0.34	scour	1.710	
1.330	-0.61	-3.21	-3.49	-3.56	scour	-0.61	-3.56	-3.56	scour	1.330	
1.250	0.30	-1.26	-1.90	-1.69	scour	0.30	-1.90	-1.9	scour	1.250	
1.170	-0.17	-2.11	-1.94	-2.11	scour	-0.17	-2.11	-2.11	scour	1.170	
1.100	0.71	-0.50	-0.07	-0.36	scour	0.71	-0.50	0.71	deposition	1.100	
1.010	-0.26	-2.08	-2.05	-1.99	scour	-0.26	-2.08	-2.08	scour	1.010	
0.730	-0.05	-0.90	-0.99	-1.00	scour	-0.05	-1.00	-1	scour	0.730	
0.630	-0.25	-1.36	-1.39	-1.40	scour	-0.25	-1.40	-1.4	scour	0.630	
0.440	0.04	-0.35	-0.31	-0.35	scour	0.04	-0.35	-0.35	scour	0.440	
0.160	-0.76	-1.13	-1.13	-0.97	scour	-0.76	-1.13	-1.13	scour	0.160	Gila River confluence



HEC-6 Existing Condtions Model Results
Bed Elevation Change

Revised Existing Model

Sgbase50rev.xlx

SECTION NUMBER	HYDROGRAPH DAY 1.00 BED CHANGE (ft)	30.00 BED CHANGE (ft)	30.37 BED CHANGE (ft)	31.10 BED CHANGE (ft)	Condition at end of 100-year flood	Max (ft)	Min (ft)	Max change during event (ft)	Max change during event	SECTION NUMBER	Comments
33.820	-0.12	-0.43	-0.44	-0.44	scour	-0.12	-0.44	-0.44	scour	33.820	
33.410	-0.01	0.14	0.13	0.16	deposition	0.16	-0.01	0.16	deposition	33.410	
32.998	-1.38	-2.42	-2.44	-2.42	scour	-1.38	-2.44	-2.44	scour	32.998	Morgan City Wash
32.984	0.01	0.01	0.02	0.01	deposition	0.02	0.01	0.02	deposition	32.984	State Rte 74
32.920	-0.66	-3.83	-3.78	-3.89	scour	-0.66	-3.89	-3.89	scour	32.920	
32.860	-0.56	-2.18	-2.16	-2.22	scour	-0.56	-2.22	-2.22	scour	32.860	
32.720	0.13	1.36	1.31	1.37	deposition	1.37	0.13	1.37	deposition	32.720	
32.430	-0.01	-0.03	-0.01	-0.03	scour	-0.01	-0.03	-0.03	scour	32.430	
31.860	0.00	-5.31	-5.43	-5.55	scour	0.00	-5.55	-5.55	scour	31.860	
31.390	-0.15	-4.30	-4.37	-4.49	scour	-0.15	-4.49	-4.49	scour	31.390	
30.820	-0.26	-6.50	-6.48	-6.38	scour	-0.26	-6.50	-6.5	scour	30.820	
30.730	-0.67	-4.87	-4.90	-4.83	scour	-0.67	-4.90	-4.9	scour	30.730	
30.260	0.94	0.51	0.65	0.47	deposition	0.94	0.47	0.94	deposition	30.260	
30.070	-0.97	-4.61	-4.64	-4.59	scour	-0.97	-4.64	-4.64	scour	30.070	
29.800	0.47	-0.43	-0.47	-0.52	scour	0.47	-0.52	-0.52	scour	29.800	
29.611	-1.18	-2.70	-2.91	-3.08	scour	-1.18	-3.08	-3.08	scour	29.611	
29.540	0.18	-0.87	-0.99	-1.10	scour	0.18	-1.10	-1.1	scour	29.540	
29.040	-0.02	-0.62	-0.56	-0.62	scour	-0.02	-0.62	-0.62	scour	29.040	
28.950	-0.50	-0.70	-0.74	-0.76	scour	-0.50	-0.76	-0.76	scour	28.950	
28.670	-0.01	-0.96	-0.95	-0.89	scour	-0.01	-0.96	-0.96	scour	28.670	
28.120	-0.04	-0.82	-1.02	-1.29	scour	-0.04	-1.29	-1.29	scour	28.120	
27.940	0.22	-0.53	0.32	0.15	deposition	0.32	-0.53	-0.53	scour	27.940	
27.680	-0.66	-5.66	-1.00	-1.74	scour	-0.66	-5.66	-5.66	scour	27.680	
27.480	-0.08	-4.08	0.12	0.47	deposition	0.47	-4.08	-4.08	scour	27.480	
27.030	0.21	0.60	0.65	0.83	deposition	0.83	0.21	0.83	deposition	27.030	
26.730	0.21	0.15	-0.63	-0.77	scour	0.21	-0.77	-0.77	scour	26.730	
26.630	0.05	-0.37	0.29	0.39	deposition	0.39	-0.37	0.39	deposition	26.630	
26.290	-0.10	-2.91	-0.02	-0.19	scour	-0.02	-2.91	-2.91	scour	26.290	
25.940	-0.61	-2.75	-0.01	0.19	deposition	0.19	-2.75	-2.75	scour	25.940	
25.860	0.13	0.80	0.73	1.25	deposition	1.25	0.13	1.25	deposition	25.860	
25.666	0.93	0.99	0.77	0.71	deposition	0.99	0.71	0.99	deposition	25.666	
25.478	-0.08	-0.70	-0.69	-0.70	scour	-0.08	-0.70	-0.7	scour	25.478	Jomax Road
24.996	0.41	2.08	2.11	1.71	deposition	2.11	0.41	2.11	deposition	24.996	
24.543	-0.20	3.69	3.47	3.13	deposition	3.69	-0.20	3.69	deposition	24.543	
24.449	0.02	0.62	0.04	-1.09	scour	0.62	-1.09	-1.09	scour	24.449	Happy Valley Road
23.974	0.02	0.74	0.26	0.73	deposition	0.74	0.02	0.74	deposition	23.974	
23.692	-0.01	-0.95	-0.02	-0.02	scour	-0.01	-0.95	-0.95	scour	23.692	
23.409	-0.18	-0.85	-0.18	-0.36	scour	-0.18	-0.85	-0.85	scour	23.409	Pinnacle Peak Road
22.935	0.15	2.36	-0.03	-0.08	scour	2.36	-0.08	2.36	deposition	22.935	
22.745	-0.03	-3.13	0.02	-0.03	scour	0.02	-3.13	-3.13	scour	22.745	
22.462	-0.67	-1.52	-0.28	-0.66	scour	-0.28	-1.52	-1.52	scour	22.462	
22.177	0.28	0.33	-0.32	-1.09	scour	0.33	-1.09	-1.09	scour	22.177	
21.893	-0.19	-0.68	0.56	1.57	deposition	1.57	-0.68	1.57	deposition	21.893	
21.431	0.27	2.01	0.09	0.20	deposition	2.01	0.09	2.01	deposition	21.431	
21.157	0.31	0.55	0.00	0.00	no change	0.55	0.00	0.55	deposition	21.157	
21.061	0.07	0.22	0.00	0.00	no change	0.22	0.00	0.22	deposition	21.061	Beardsley Road
20.958	0.03	0.08	-0.26	-0.36	scour	0.08	-0.36	-0.36	scour	20.958	
20.579	-0.02	-0.08	-0.18	-0.20	scour	-0.02	-0.20	-0.2	scour	20.579	
19.920	-0.02	0.44	0.32	0.12	deposition	0.44	-0.02	0.44	deposition	19.920	Union Hills Road
19.446	-0.04	-0.71	-0.64	-0.67	scour	-0.04	-0.71	-0.71	scour	19.446	
19.066	-0.18	-0.95	-1.37	-1.61	scour	-0.18	-1.61	-1.61	scour	19.066	
18.962	0.14	0.51	-3.92	-5.68	scour	0.51	-5.68	-5.68	scour	18.962	Bell Road
18.839	-0.06	-0.40	0.22	0.37	deposition	0.37	-0.40	-0.4	scour	18.839	
18.275	0.04	0.38	-0.10	-0.28	scour	0.38	-0.28	0.38	deposition	18.275	
17.821	0.03	-0.64	0.24	0.50	deposition	0.50	-0.64	-0.64	scour	17.821	
17.638	-1.15	-2.79	0.01	0.02	deposition	0.02	-2.79	-2.79	scour	17.638	
17.458	0.58	1.65	0.00	0.00	no change	1.65	0.00	1.65	deposition	17.458	
16.990	-0.03	0.31	0.00	0.00	no change	0.31	-0.03	0.31	deposition	16.990	
16.612	-0.32	-2.70	-0.01	-0.02	scour	-0.01	-2.70	-2.7	scour	16.612	
16.506	-0.36	-0.43	-0.51	-0.57	scour	-0.36	-0.57	-0.57	scour	16.506	Grand Avenue
16.482	-0.31	-0.36	-0.36	-0.37	scour	-0.31	-0.37	-0.37	scour	16.482	
16.099	0.04	0.04	0.00	0.00	no change	0.04	0.00	0.04	deposition	16.099	
15.719	0.17	0.17	0.05	0.04	deposition	0.17	0.04	0.17	deposition	15.719	Cactus Road - El Mirage Landfill
15.374	-0.43	-1.45	-1.48	-1.49	scour	-0.43	-1.49	-1.49	scour	15.374	
15.094	0.28	0.09	0.09	0.10	deposition	0.28	0.09	0.28	deposition	15.094	
15.000	-0.03	-1.26	-1.27	-1.27	scour	-0.03	-1.27	-1.27	scour	15.000	
14.430	-0.07	-2.88	-2.95	-3.20	scour	-0.07	-3.20	-3.2	scour	14.430	
13.952	-0.59	-1.65	-2.08	-2.69	scour	-0.59	-2.69	-2.69	scour	13.952	
13.467	0.34	0.44	0.63	0.76	deposition	0.76	0.34	0.76	deposition	13.467	Olive Ave
13.007	-0.07	-0.12	-0.15	-0.13	scour	-0.07	-0.15	-0.15	scour	13.007	
12.816	0.25	1.09	0.74	0.49	deposition	1.09	0.25	1.09	deposition	12.816	
12.470	0.49	0.39	-1.81	-2.52	scour	0.49	-2.52	-2.52	scour	12.470	
12.420	1.36	1.98	-5.29	-7.52	scour	1.98	-7.52	-7.52	scour	12.420	
12.359	0.01	0.37	1.50	2.14	deposition	2.14	0.01	2.14	deposition	12.359	
12.042	-0.21	-3.13	0.19	0.38	deposition	0.38	-3.13	-3.13	scour	12.042	
11.847	0.17	-0.57	-0.05	-0.09	scour	0.17	-0.57	-0.57	scour	11.847	
11.557	-0.26	-0.36	0.01	0.02	deposition	0.02	-0.36	-0.36	scour	11.557	
11.428	-0.51	0.91	0.31	-0.06	scour	0.91	-0.51	0.91	deposition	11.428	Glendale Ave
11.029	0.07	1.92	1.66	1.10	deposition	1.92	0.07	1.92	deposition	11.029	
10.846	-0.04	0.68	-0.66	-0.97	scour	0.68	-0.97	-0.97	scour	10.846	
10.752	0.01	0.91	-0.96	-1.70	scour	0.91	-1.70	-1.7	scour	10.752	
10.538	0.01	0.27	0.15	0.22	deposition	0.27	0.01	0.27	deposition	10.538	
10.343	-0.35	-0.74	-0.06	-0.13	scour	-0.06	-0.74	-0.74	scour	10.343	
10.167	0.09	0.62	0.11	0.22	deposition	0.62	0.09	0.62	deposition	10.167	
9.885	-0.08	-0.28	0.04	0.08	deposition	0.08	-0.28	-0.28	scour	9.885	
9.696	-0.04	0.18	-0.12	-0.28	scour	0.18	-0.28	-0.28	scour	9.696	D/S Glendale Airport
9.435	0.06	0.31	-0.29	-0.37	scour	0.31	-0.37	-0.37	scour	9.435	U/S Camelback Road
9.266	0.15	0.21	-0.96	-1.80	scour	0.21	-1.80	-1.8	scour	9.266	
8.992	-0.05	-1.08	0.67	1.28	deposition	1.28	-1.08	1.28	deposition	8.992	
8.768	-0.48	-2.07	0.08	-0.01	scour	0.08	-2.07	-2.07	scour	8.768	
8.433	-0.08	0.03	0.24	0.59	deposition	0.59	-0.08	0.59	deposition	8.433	
8.198	-0.02	0.62	-0.04	-0.11	scour	0.62	-0.11	0.62	deposition	8.198	
8.105	-0.21	0.65	-0.20	-0.48	scour	0.65	-0.48	0.65	deposition	8.105	
8.000	0.73	2.02	1.23	0.96	deposition	2.02	0.73	2.02	deposition	8.000	
7.990	0.51	1.85	0.39	0.69	deposition	1.85	0.39	1.85	deposition	7.990	Indian School Road
7.988	0.19	1.83	1.35	0.96	deposition	1.83	0.19	1.83	deposition	7.988	Grade control structure
7.490	0.03	-0.33	-0.31	-0.34	scour	0.03	-0.34	-0.34	scour	7.490	
6.990	-0.39	-0.79	-0.84	-0.83	scour	-0.39	-0.84	-0.84	scour	6.990	
6.930	0.03	-0.12	0.01	-0.16	scour	0.03	-0.16	-0.16	scour	6.930	
6.910	-0.41	-0.61	-0.91	-0.72	scour	-0.41	-0.91	-0.91	scour	6.910	
6.890	0.01	0.03	0.00	0.04	deposition	0.04	0.00	0.04	deposition	6.890	Grade control structure
6.888	0.04	0.06	0.84	0.00	no change	0.84	0.00	0.84	deposition	6.888	
6.820	-0.35	-0.67	-0.67	-0.67	scour	-0.35	-0.67	-0.67	scour	6.820	
6.430	0.23	0.13	0.03	0.01	deposition	0.23	0.01	0.23	deposition	6.430	
6.070	0.32	1.05	1.00	0.90	deposition	1.05	0.32	1.05	deposition	6.070	Grade control structure
6.068	0.30	1.05	1.03	0.90	deposition	1.05	0.30	1.05	deposition	6.068	
5.900	-0.01	0.62	0.60	0.50	deposition	0.62	-0.01	0.62	deposition	5.900	
5.750	0.05	0.73	0.60	0.55	deposition	0.73	0.05	0.73	deposition	5.750	
5.689	0.33	1.28	1.22	1.13	deposition	1.28	0.33	1.28	deposition	5.689	McDowell Road
5.380	-0.34	-0.58	-0.59	-0.61	scour	-0.34	-0.61	-0.61	scour	5.380	
5.290	-0.19	-0.32	-0.33	-0.36	scour	-0.19	-0.36	-0.36	scour	5.290	
5.203	0.00	0.00	0.31	0.01	deposition	0.31	0.00	0.31	deposition	5.203	Grade control structure
5.201	0.05	0.10	0.00	0.01	deposition	0.10	0.00	0.1	deposition	5.201	
5.150	-0.19	-3.59	-3.55	-3.55	scour	-0.19	-3.59	-3.59	scour	5.150	
4.790	-0.14	2.30	2.58	2.59	deposition	2.59	-0.14	2.59	deposition	4.790	
4.754	1.71	3.74	3.73	3.92	deposition	3.92	1.71	3.92	deposition	4.754	
4.700	0.52	3.30	3.33	3.45	deposition	3.45	0.52	3.45	deposition	4.700	
4.300	0.06	2.03	1.77	1.78	deposition	2.03	0.06	2.03	deposition	4.300	
4.094	0.00	0.00	0.23	0.01	deposition	0.23	0.00	0.23	deposition	4.094	Grade control structure
4.092	0.01	0.02	0.00	0.00	no change	0.02	0.00	0.02	deposition	4.092	
3.767	-0.79	-1.31	-1.22	-1.15	scour	-0.79	-1.31	-1.31	scour	3.767	
3.757	0.00	-0.56	-0.63	-0.54	scour	0.00	-0.63	-0.63	scour	3.757	
3.734	-0.33	-0.74	-0.52	-0.90	scour	-0.33	-0.90	-0.9	scour	3.734	
3.729	-0.58	-0.82	-0.72	-0.67	scour	-0.58	-0.82	-0.82	scour	3.729	
3.430	0.03	0.36	0.34	0.60	deposition	0.60	0.03	0.6	deposition	3.430	
3.370	1.01	1.69	1.58	1.67	deposition	1.69	1.01	1.69	deposition	3.370	
3.270	0.15	1.16	1.17	1.16	deposition	1.17	0.15	1.17	deposition	3.270	
2.800	0.03	-0.53	-0.40	-0.40	scour	0.03	-0.53	-0.53	scour	2.800	
2.600	-0.09	-1.32	-1.39	-1.49	scour	-0.09	-1.49	-1.49	scour	2.600	
2.020	-0.23	-1.37	-1.36	-1.33	scour	-0.23	-1.37	-1.37	scour	2.020	
1.710	0.33	-0.33	-0.28	-0.39	scour	0.33	-0.39	-0.39	scour	1.710	
1.330	-0.61	-3.20	-5.15	-6.18	scour	-0.61	-6.18	-6.18	scour	1.330	
1.250	0.30	-1.26	0.19	2.43	deposition	2.43	-1.26	2.43	deposition	1.250	
1.170	-0.17	-2.11	4.04	5.62	deposition	5.62	-2.11	5.62	deposition	1.170	
1.100	0.70	-0.51	0.92	2.14	deposition	2.14	-0.51	2.14	deposition	1.100	
1.010	-0.26	-2.08	-0.11	-0.30	scour	-0.11	-2.08	-2.08	scour	1.010	
0.730	-0.05	-0.89	-1.18	-1.46	scour	-0.05	-1.46	-1.46	scour	0.730	
0.630	-0.25	-1.36	-1.53	-1.70	scour	-0.25	-1.70	-1.7	scour	0.630	
0.440	0.04	-0.37	-0.41	-0.63	scour	0.04	-0.63	-0.63	scour	0.440	
0.160	-0.76	-1.13	-1.14	-0.92	scour	-0.76	-1.14	-1.14	scour	0.160	Gila River confluence

6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
Bed Elevation Change (ft)
River Station (miles above Gila River)
Day 1.0
Day 30.0
Day 30.37 Peak of 100-year
Day 31 End of 100-year

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T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      100-YEAR EVENT SAND AND GRAVEL MODEL - SGBase50.dat JULY 25 2001
     ********************************************************************************
     SAND AND GRAVEL BASE MODEL WITHOUT DREDGING TEMPLATES
     ADDED CROSS SECTIONS AT SEVERAL SAND AND GRAVEL MINE LOCATIONS
     THIS SGBase50.dat MODEL IS BASED ON ECAFREV.DAT WHICH IS THE EXISTING CONDITIONS
     MODEL OF THE AGUA FRIA RIVER
     ********************************************************************************
          EC - EXISTING CONDITIONS
          AF - AGUA FRIA
          Rev - Revised from April 25, 2001 model titled EC100AF.DAT
        ***UPDATE***(1) CHANGE BED VOLUME RESERVOIR AT STATE ROUTE 74 X-SECTION 32.984
        TO 0 FT; (2) CHANGE MOVEABLE BED LEFT LIMIT FOR X-SECTION 24.542 TO STA. 9000.
     ********************************************************************************
        50% SEDIMENT INFLOW FOR AGUA FRIA RIVER
     ********************************************************************************
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3    10
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6  10136.   913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1  10590.   916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1  11265.   911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1  11911.   914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5  12758.   916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5  15403.   920.3 15459.0
HD  0.16      10    8200   12250
NC 0.045    0.10   0.035
X1  0.44    44.0    9798   10420    1510    1465    1485
X3    10
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8100   12750
NC 0.048   0.074   0.035
X1  0.63    36.0    9888   10209    1055     985    1010
X3                  6600     925   16200     925
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8270   12400
NC 0.050   0.066   0.035
X1  0.73    39.0    9917   10162     510     490     500
X3    10
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8200   12400
      ************************************************
      ************BEGIN BROADWAY 1W AND 1E*******************
NC 0.045    0.07   0.035
X1  1.01    35.0    9682   10471    1380    1375    1375
X3    10
GR 928.9  4205.0   928.5  5661.0   929.2  6721.0   928.4  7602.0   928.7  8490.0
GR 928.7  8566.0   928.2  8695.0   928.3  8740.0   928.5  9048.0   928.6  9151.0
GR 928.8  9185.0   922.0  9235.0   921.8  9300.0   921.4  9400.0   924.5  9437.0
GR 924.9  9682.0   921.5 10000.0   921.2 10380.0   921.2 10405.0   924.0 10471.0
GR 924.0  10505.   924.0 10677.0   924.0 10694.0   924.0 10715.0   922.9 10733.0
GR 923.6  10830.   929.5 10849.0   924.2 10867.0   925.3 11259.0   930.4 11284.0
GR 930.4  11298.   924.4 11319.0   924.6 12194.0   929.7   13800   932.0   14000
HD  1.01      10    9300   10800             912   10400   10750
NC 0.045   0.077   0.035
X1  1.10    37.0    9719   10678     500     470     490
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X3    10
GR 929.3  6000.0   930.4  6858.0   929.4  7741.0   929.3  8585.0   929.3  8600.0
GR 929.6  8801.0   928.2  9000.0   931.4  9071.0   919.5  9267.0   920.8  9325.0
GR 923.6  9368.0   924.3  9660.0   923.6  9700.0   923.2  9719.0   922.5 10000.0
GR 923.1 10141.0   923.0 10171.0   923.0 10387.0   923.0 10419.0   923.0 10556.0
GR 923.0 10595.0   925.5 10678.0   925.5 10729.0   924.0 10913.0   924.0 10941.0
GR 924.0 10966.0   924.7 11005.0   927.9 11017.0   927.9 11033.0   924.6 11128.0
GR 929.4 11150.0   925.5 11188.0   925.5 11400.0   925.6 11660.0   926.3 12105.0
GR 928.0   13150   930.3   13600
HD  1.10      10    9200   11033            912   10050   11300
NC 0.045   0.069   0.035
X1  1.17    25.0    9917   10654     560     490     540
X3    10
GR 932.2  6215.0   929.9  7229.0   929.9  7805.0   929.7  8500.0   929.7  8639.0
GR 926.5  8784.0   927.1  9032.0   928.5  9439.0   926.8  9778.0   927.2  9917.0
GR 923.7  9929.0   923.6  9940.0   924.3 10000.0   923.6 10113.0   924.3 10142.0
GR 924.3 10608.0   926.6 10620.0   926.6 10654.0   924.0 10704.0   927.0 11220.0
GR 927.3 11266.0   926.6 11765.0   926.8 12280.0   930.3   13060   934.0   13150
HD  1.17      10    8790   11200
NC 0.045   0.069   0.035
X1  1.25    24.0    9974   10742     480     490     485
X3    10
GR 933.2  6235.0   931.2  6887.0   932.2  8114.0   932.2  8340.0   932.2  8429.0
GR 927.9  8531.0   930.3  8831.0   927.5  9204.0   930.3  9306.0   929.1  9974.0
GR 926.2  9990.0   924.4 10000.0   924.4 10533.0   924.4 10571.0   924.4 10594.0
GR 924.4 10702.0   929.8 10742.0   930.1 11083.0   929.4 11240.0   928.7 11410.0
GR 928.5 12013.0   930.4 12109.0   936.0   12500   940.0   13000
HD  1.25      10    8400   11100
  ************END BROADWAY 1W AND 1E*******************
  ***************************************************
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456     485     500     495
X3    10
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8000   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X3    10
GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965
X3    10
GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8 10079.1
HD  2.02      10    8000   10070
NC   .04     .04    .035
X1  2.60      26    9437   10850    2700    2945    3320
X3    10
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60      10    9437   10850
X1  2.80      19    9200   11222    1250     655    1000
X3    10
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80      10    9150   10850
X1  3.27      17  9692.6 11130.5    2800    1995    2505
X3    10
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
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GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD 3.27      10    9300 11130.5
X1 3.37      17  9716.5 10970.3     585     460     510
X3    10
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37      10    9500 10970.3
X1  3.43      12  9758.5 10873.4     925     795     850
X3    10
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43      10    9650 10873.4
X1 3.729     6.0    9420   10603    1575    1585    1580
X3    10
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729      10    9420   10603
NC                     0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
X3    10
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734      10  9400.9 10599.3
X1 3.757     7.0    9425   10555     120     120     120
X3    10
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757      10    9425   10555
X1 3.767      92  9428.1 10572.0      50      50      50
X3    10
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767      10  9428.1   10572
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
X3    10
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0    9440   10578
X1 4.094     7.0    9440   10578      10      10      10
X3    10
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0    9440   10578
X1  4.30     7.0    9458   10594    1040    1040    1040
X3    10
GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205    2065    2135
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X3    10
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD 4.70      10    9451   10579
X1 .754    53.0  9402.5 10572.3     150     310     225
X3    10
XL                     9402.5 10572.3
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754     10  9402.5 10572.3
X1  4.79    6.0    9440   10590     357     187     277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79     10    9440   10590
X1  5.15    9.0    9291   10713    1780    1960    1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15     10    9291   10590
          ----------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201    9.0    9291   10713     180     360     270
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
GR 969.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
HD 5.201      0    9291   10713
X1 5.203    9.0    9291   10713      10      10      10
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203      0    9291   10713
X1 5.290     82  9250.8 10672.4     505     675     585
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290     10  9250.8 10672.4
X1 5.380   20.0  9266.0 10656.0     305     645     465
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380     10    9266   10656
          ----------MCDOWELL ROAD------
X1 5.689     42  9371.3 10552.8    1320    1740    1620
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR973.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
GR973.85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689     10  9371.3 10552.8
X1 5.750   22.0  9426.0 10579.0     370     370     370
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
GR 973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750     10    9426   10579
X1 5.900   17.0  9429.0 10561.0     945     950     950
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
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GR 977.6 10544.0   991.1 10561.0
HD 5.900   10       9429   10561
       -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0     907     897     902
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068       0  9416.0 10545.0
X1 6.070    15.0  9416.0 10545.0       8       8       8
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070       0  9416.0 10545.0
X1 6.430    20.0  9452.0 10537.0    2045    1850    1945
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430      10     9452   10537
X1 6.820    17.0  9444.0 10573.0    2145    1820    1980
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820      10     9444   10573
                                    357     357     357
        ------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0     357     357     357
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888       0     9439   10577
X1 6.890    16.0  9439.0 10577.0       8       8       8
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890       0     9439   10577
X1 6.910    17.0  9430.0 10579.0     105     115     110
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910      10     9430   10579
X1 6.930    17.0  9413.0 10573.0     105     105     105
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930      10     9413   10573
X1 6.990    19.0  9400.0 10559.0     315     355     335
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10     9400   10559
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10     9509   10525
       -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0    2805    2480    2625
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988       0  9293.0 10732.0
X1 7.990    37.0  9293.0 10732.0      10      10    10.5
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
```

```
HD 7.990        0  9293.0 10732.0
NC                          .3      .5
         ---------INDIAN SCHOOL ROAD------
X[redacted].000       85  9235.5  10725.      50      50      50
X    10
XL                      9235.5   10725
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000        10  9235.5   10725
    ************ DOWNSTREAM LIMIT OF INDIAN SCHOOL 1-S ****************
    ****************************************************************
NC                            0.1     0.3
X1 8.105        91  9493.9 10978.6     405     745  522.59
X3    10
XL                          9400 10978.6
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
G[redacted]4.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR[redacted]2.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105        10    9400 10978.6
X1 8.198        92  9458.7 10971.0     420     620  490.43
X3                    9458.6    1010  109711    1010
XL                      9400   11100
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198        10  9458.7   10971
NC  .040    .040    .035
[redacted]----------Gravel Mine Between Camelback Road and Indian School----------
[redacted]**********DOWNSTREAM LIMIT OF INDIAN SCHOOL 2-S*****************
    ****************************************************************
X1 8.433        87  9583.1 10597.5    1155    1365 1241.36
X3                    9009.5    1012   11000    1012
XL                      9000 10597.5
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
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GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
G[redacted]2.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
G[redacted]6.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433      10    6300 10597.5
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768      73  9584.7 10102.8    1735    1765 1764.77
X3                      8182.6    1018   11500    1018
XL                        9000   11000
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10    7000   11000
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                      9300    1022   11545    1022
XL                      9700 11458.9
G[redacted]9.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR[redacted]8.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992      10    9700 11458.9
     ***********UPSTREAM LIMIT OF INDIAN SCHOOL 2-S**********************
     ********************************************************************
NC  0.05    0.05   0.035     0.3     0.5
     *************U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE**************
     ************BEGIN SAND AND GRAVEL MINES BETWEEN CAMELBACK AND BETHANY HOME***
     ********************************************************************************
X1 9.266      93  9725.9 11607.3    1539     889 1430.62
X3                      9439.6    1026   11700    1026
XL                        9725   11700
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GR1022.9  9444.9  1022.4  9529.5  1020.2  9575.9  1022.3  9661.6  1022.1  9725.9
GR1013.9  9852.8  1017.2 10006.0  1013.9 10058.2  1013.7 10086.7  1017.3 10103.7
GR1016.8 10209.4  1015.7 10230.4  1016.6 10257.2  1014.7 10308.2  1014.3 10344.1
GR1018.0 10369.8  1017.8 10486.5  1019.5 10508.4  1021.4 10604.4  1021.3 10654.4
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HD  266      10    9440   15250
N  0.05    0.05   0.035     0.1     0.3
X1 9.435      83  9548.8 11146.3     875     915  889.44
X3                        8158    1026   11839    1026
XL                        9540   11150
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
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GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
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HD 9.435      10  9548.8 11146.3
QT
X1 9.696      91  9602.6 10996.2    1430    1330 1383.24
X3                        9015    1030   11702    1030
XL                        9600   13500
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GR1030.2 15663.0
HD 9.696      10    9600   11750
        -------SOUTH OF GLENDALE AIRPORT------
     --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40
X3                        9327.8    1032   12100    1032
XL                        9327.8   12800
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
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GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
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GR1035.2 15177.3
HD 9.885      10  9327.8 10706.6
X  167      91  9412.5 10272.2    1820    1135 1491.12
X3                        9380    1034 11989.1  1036.3
XL                        9200 11989.1
GR1036.2  7129.0  1037.7  7194.5  1035.7  7205.8  1037.3  7277.2  1037.1  7420.3
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XL                          9750   11416
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XL                          8200   11000
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GR1044.4 10402.4  1042.7 10409.7  1044.3 10419.7  1042.4 10496.4  1043.7 10522.5
GR1042.7 10830.5  1043.1 10840.5  1040.9 10848.8  1040.5 10856.7  1043.7 10865.5
GR1042.8 10994.0  1040.8 11003.6  1043.6 11155.2  1042.4 11164.5  1042.9 11173.3
GR1041.7 11176.7  1043.5 11316.2  1042.3 11568.9  1041.2 11574.0  1044.0 11627.0
GR1040.0 11674.8  1040.2 11730.9  1042.9 11769.5  1041.4 11804.3  1038.8 11820.9
GR1038.2 11875.5  1043.1 11899.9  1042.7 11965.1  1043.9 11981.0  1041.9 12286.9
GR1042.2 12373.3
HD10.846      10    7572   12370
   ****************UPSTREAM END OF SAND AND GRAVEL MINES BETWEEN CAMELBACK ******
   ****************AND BETHANY HOME ROAD - PITS DEPTHS BASED ON AREA WEIGHTED****
   ****************PIT DEPTHS AS A FUNCTION OF TOTAL MINING AREA*****************
NC  0.05   0.095   0.045
X111.029      95  9513.1 10404.2    1035     865  963.30
X3                        9240    1046   10467    1046
GR1055.5  3356.7  1053.0  3607.3  1053.9  3617.6  1051.2  3623.8  1050.3  3635.8
GR1051.3  3641.5  1049.4  3661.8  1047.1  3741.2  1046.4  3861.8  1044.0  3889.2
GR1045.3  3899.9  1045.1  4187.0  1046.2  4194.5  1045.9  4514.8  1044.5  4858.6
GR1044.0  4890.1  1046.3  5011.7  1046.5  5170.4  1047.9  5180.1  1045.6  5308.8
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR1046.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR[illegible]4.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR[illegible]5.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR1045.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029      10    8700   10700
         -------GLENDALE AVENUE----------
X111.428      94  9814.2 10227.2    1960    2335    2160
X3    10
XL                        9500 10227.2
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10    9500 10227.2
NC  0.15   0.055   0.035     0.3     0.5
   ***************DOWNSTREAM LIMIT OF GLENDALE-1*****************************
   ************************************************************************
X111.557      95  9881.6 10100.9     675     675  677.68
X3                        8970    1058   10122    1058
XL                        9000 10100.9
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR[illegible].2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR[illegible].5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
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GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
G   1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
G   1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557      10    8000 10100.9
X111.847      95  9914.3 10113.4    1530    1530 1531.67
X3                   7310    1062   10173    1062
XL                 9914.3 10113.4
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    6000 10113.4
X112.042      62  9903.4   10070     990    1050 1028.61
X3                   6350    1066   10165    1066
XL                   5900   10165
GR  1066    5900    1058    5930    1058    6005    1059  6024.1  1059.2  6048.5
GR  1060  6057.8  1058.2  6082.7  1058.2  6096.6  1058.2  6138.2  1058.2  6154.2
GR1058.2  6173.8  1058.2  6190.9  1058.2  6201.8  1058.2  8555.6  1058.2  8631.6
GR1058.2  8641.8  1061.8  8660.4  1058.2    8806  1058.2  8910.3  1058.2  8998.8
G   8.2  9007.9  1058.2  9078.3  1058.2  9101.9  1058.2  9111.5  1058.2  9145.2
GR  58.2  9148.5  1058.2  9164.4  1058.2  9181.1  1058.2  9201.8  1058.2  9211.2
GR1058.2  9267.4  1058.2  9290.8  1058.2  9298.9  1059.3  9367.2  1062.4  9377.5
GR1062.9  9390.5  1059.5    9402  1058.5  9412.2  1058.2  9418.8  1058.2  9447.6
GR1061.2  9485.4    1061  9536.3  1058.2  9574.9  1058.2    9588  1058.2  9609.8
GR1058.2  9615.8  1058.2  9622.9  1058.2  9667.5  1058.2  9802.1  1058.2  9840.1
GR1058.2  9853.8  1062.1  9867.5  1060.9  9871.4  1061.8  9900.2    1063  9903.4
GR1050.5    9940  1049.3  9955.3  1049.7  9979.1  1048.5  9992.6  1049.8   10044
GR  1062   10070    1068   10165
HD12.042      10    7200   10165
X112.359      73  9691.6 10061.0    1520    1680 1672.99
XL                   7600   10200
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      10    6700   10200
   ****************UPSTREAM LIMIT OF GLENDALE-1*******************************
   ****************************************************************************
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                   7000    1066 10782.8    1066
XL                   7950   10200
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
G   65.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
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GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
G   1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
G   1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42      10    7200   10150
NC  .045    .040    .035     0.1     0.3
    **************DOWNSTREAM LIMT OF NORTHERN -1 *******************************
    *************DID NOT INCLUDE IN SAND AND GRAVEL MODEL AS PROPOSED PIT********
    *************IS OUTSIDE 100-YEAR FLOODPLAIN LIMITS ACCORDING TO LOMR*********
    ************************************************************************
X1 12.47      89  9382.2 10296.2     230     240     255
X3                      7298.5    1066 11052.3    1066
XL                      9382.2 10296.2
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47      10    7500 10296.2
X112.816      94  9781.2 10376.3    1780    1850 1859.04
X3                      8483.3    1068   10488    1068
XL                      9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
G   8.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
GR  9.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR1070.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816      10    7500   10375
   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007      94  9767.1 10186.1    1000    1030 1006.76
X3                      8750    1072   10239    1072
XL                      9150 10186.1
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
G   2.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR1070.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007      10    8800   10186
NC  .045    .045    .035     0.3     0.5
   ***********UPSTREAM LIMIT OF NORTHERN-1*****************************************
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   ********************************************************************************
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467       89  8693.6 10286.7  2400.4  2425.4  2429.7
X[illegible]   10
G[illegible]0.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467       10  8693.6 10286.7
NC                        0.1     0.3
X113.952       93  9432.8 10076.3    2525    2585 2566.36
X3     10
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
G[illegible]3.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR[illegible]8.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952       10    7200   10600
X114.430       95  9171.4 10301.1    2175    2625 2523.57
X3                      7800    1093  109841    1093
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
GR1092.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
GR1093.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
GR1092.0  8194.9  1091.5  8233.1  1092.1  8266.0  1092.1  8279.7  1088.9  8296.7
GR1087.9  8349.4  1088.0  8356.7  1090.6  8393.8  1090.6  8428.0  1092.7  8449.0
GR1092.3  8510.5  1091.7  8551.5  1089.9  8570.9  1091.7  8660.6  1092.0  8710.6
GR1091.9  8760.6  1091.0  8810.6  1090.8  8860.6  1089.9  8937.3  1089.9  8990.6
GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
GR1089.0  9184.9  1085.7  9213.3  1086.2  9236.5  1083.2  9251.1  1083.8  9327.2
GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
GR1086.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7  1093.2 10940.6  1093.8 10984.2
HD14.430       10    8800 10301.1
X115.000       93  9346.3 10081.6    2700    3130  3009.7
X3     10
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
GR1094.7  9835.6  1093.9  9875.1  1091.8  9911.5  1091.4  9946.6  1092.3  9974.0
GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
G[illegible]6.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
GR[illegible]4.0 10495.3  1100.0 10526.1  1100.6 10561.4  1101.1 10679.6  1101.4 10895.6
GR1101.2 10958.4  1101.8 11017.3  1101.4 11192.8  1101.3 11274.2  1100.7 11355.6
GR1099.3 11392.9  1098.1 11400.2  1096.6 11405.2  1096.5 11410.1  1097.8 11419.6
GR1098.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
GR1100.2 11466.1  1097.6 11479.7  1097.3 11498.8  1099.1 11540.6  1099.9 11574.4
GR1099.9 11593.7  1101.2 11685.2  1101.1 11736.6  1101.7 11756.7  1101.5 11782.1
GR1102.6 11787.3  1102.1 11802.9  1100.2 11815.5  1100.5 11836.4  1098.5 11890.8
GR1098.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
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GR1100.7 12125.7  1102.8 12147.6  1103.6 12163.7  1103.8 12179.4  1101.5 12212.6
GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR[illegible]4.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
G[illegible]4.2 12758.9  1103.7 12782.7  1104.1 12821.1
HD15.000       10  9346.3   10550
X115.094       93  9336.0 10125.1     495      495  496.49
X3                        9234.4    1102    11152    1102
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
GR1098.7  9317.6  1099.1  9336.0  1093.7  9355.8  1092.1  9366.0  1093.0  9426.0
GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
GR1096.4 10911.4  1097.7 10930.8  1100.9 10959.2  1100.7 10987.0  1102.5 11002.3
GR1102.3 11152.4  1101.1 11308.7  1100.6 11317.7  1099.8 11395.4  1100.0 11416.9
GR1098.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
GR1102.6 12022.7  1102.6 12073.5  1099.0 12224.6  1098.4 12273.7  1099.4 12426.5
GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094       10    9336   10400
NC  .040    .045    .035
X115.374       92  9832.4 10085.5    1650    1260 1478.26
X3                        9822    1106   10770    1106
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
GR1096.2 10025.3  1098.6 10044.5  1101.9 10085.5  1103.7 10130.8  1100.9 10141.2
GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
G[illegible]1.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
G[illegible]2.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
GR1103.5 11613.3  1104.1 11633.1  1104.6 11679.6  1104.4 11729.7  1104.3 11830.0
GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374       10  9832.4   11650
NC  .040    .040    .035
          ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719       91  9885.3 10059.7    1950    1635 1824.01
X3                        9385.2    1111   10150    1111
GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719       10    9390   10055
X[illegible]099       92  9804.0 10081.1    2010    2005 2002.13
X3                        9192    1178   10300    1178
XL                        9200   10200
GR1132.1  9191.9  1126.8  9200.4  1111.0  9233.0  1104.9  9259.9  1105.0  9274.3
GR1104.8  9282.4  1106.9  9313.0  1108.3  9366.1  1109.2  9418.0  1109.2  9466.8
GR1110.2  9517.2  1109.5  9549.3  1109.5  9567.6  1108.4  9606.1  1105.8  9624.0
GR1106.1  9629.4  1106.4  9668.4  1106.2  9694.8  1106.5  9705.3  1107.2  9716.8
GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
GR1102.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
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GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR[illegible]7.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR[illegible]4.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
GR1113.5 11456.5  1111.4 11479.4  1111.7 11481.5  1113.2 11504.1  1113.1 11516.6
GR1112.4 11531.3  1112.5 11549.4  1113.1 11567.8  1113.4 11729.2  1113.2 11911.4
GR1113.5 12079.2  1113.9 12179.2  1114.1 12304.0  1114.4 12329.3  1114.1 12501.3
GR1113.9 12675.5  1114.0 12727.4  1114.2 12746.8  1114.1 12929.3  1114.6 13041.6
GR1115.1 13090.7  1115.1 13122.1
HD16.099      10    9200   10200
NC                     0.3     0.5
X116.482      90  9781.9 10219.8    1980    2160 2026.23
X3                   9750  1127.5   10290  1127.5
XL                   9600   10500
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
GR1139.3  9451.2  1138.5  9456.3  1137.2  9528.1  1136.8  9537.1  1137.1  9563.8
GR1136.6  9616.0  1135.9  9622.7  1134.7  9645.4  1133.3  9704.0  1131.9  9731.2
GR1130.9  9750.4  1130.6  9765.2  1126.1  9774.7  1122.1  9781.9  1117.0  9795.4
GR1114.2  9802.5  1111.1  9816.2  1109.7  9859.8  1108.9  9880.3  1108.6  9915.4
GR1107.7  9931.8  1105.6  9947.6  1105.8  9985.2  1108.0 10015.1  1109.8 10086.8
GR1108.8 10140.7  1109.1 10210.9  1117.6 10219.8  1119.6 10222.0  1120.1 10266.0
GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR1123.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
GR1121.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
GR1118.8 10994.6  1118.6 11064.6  1118.2 11105.9  1117.3 11151.7  1116.3 11206.3
GR1116.2 11210.6  1117.1 11245.1  1116.8 11253.8  1117.1 11286.7  1118.3 11329.8
GR1118.3 11349.3  1118.5 11378.5  1118.7 11406.2  1119.3 11448.7  1119.7 11562.0
GR1120.2 11569.8  1120.5 11673.4  1120.6 11689.2  1120.7 11754.4  1121.0 11817.9
GR1121.1 11822.8  1122.0 11961.4  1122.4 11986.6  1122.8 12071.0  1123.0 12098.0
GR1123.1 12149.2  1123.1 12151.2  1123.2 12191.5  1124.0 12254.5  1124.0 12264.5
HD16.482      10  9781.9   10220
X116.506      72  9768.0 10245.4     125     125  126.72
X3    10
X[illegible]                   9500   10300
GR[illegible]3.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
GR1140.0  9334.9  1139.6  9379.4  1139.0  9386.3  1138.3  9448.3  1138.4  9482.6
GR1138.0  9525.0  1137.9  9526.8  1136.5  9625.1  1135.2  9710.2  1135.3  9731.2
GR1126.2  9750.8  1124.5  9756.7  1122.2  9768.0  1113.9  9802.5  1112.2  9807.7
GR1110.1  9853.7  1109.1  9878.2  1107.6  9903.9  1106.7  9917.3  1105.4  9933.8
GR1105.6  9939.1  1105.9  9960.5  1105.8  9970.9  1106.6  9982.4  1108.1 10007.8
GR1109.2 10031.5  1110.0 10081.1  1110.5 10104.0  1110.0 10129.9  1110.1 10176.4
GR1110.7 10177.1  1113.8 10221.4  1122.4 10245.4  1122.5 10247.4  1123.5 10250.2
GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506      10    9700   10300
    **************DOWNSTREAM END OF GRAND-1**********************************
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NC  0.05    0.05    0.04     0.1     0.3
X116.612      84  9808.2 10161.2     627     342     581
X3                   9793    1124   10286    1124
XL                 9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
G[illegible]9.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR[illegible]8.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      10   10090   10800
NC  0.05    0.05    0.04     0.1     0.3
X116.990      82  9810.0 10135.4    1990    1985    1993
X3                   9725    1130   10150    1130
XL                   9800   11000
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GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR 1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR 1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990      10    9800   12650
X117.458      92  9370.6 10225.3    3035    1705 2468.67
X3                      8808    1132   10334    1132
XL                      9000   10400
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR 1133.3 14132.7  1133.3 14165.7
HD .458      10    8740   12500
     ***************DOWNSTREAM END GREENWAY-1*********************************
     ************************************************************************
X117.638      89  9774.7 10288.4     955     895  949.45
X3                      8744    1136   10386    1136
XL                      9100 10288.4
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638      10    8800   12580
NC 0.045    0.05   0.035
X117.821      92  9764.8 10227.7     950     970  964.24
X3                      8350    1140   10270    1140
XL                      8600 10227.7
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
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GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
G[illegible]46.2 14445.9  1146.2 14449.6
H[illegible].821      10    8170   11800
   *************UPSTREAM END OF GRAND-1****************************************
   ***************************************************************************
X118.275      93  9752.1 10210.5    2170    2440 2398.82
X3                      8750    1144   10715    1144
XL                    9752.1   10650
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0  1149.4 13000.0
HD18.275      10    8010   12900
X118.839      92  9787.8 10337.0    2635    3185 2882.75
X3                      9250    1156   10375    1156
XL                      9300   10350
GR1159.3  8035.3  1160.1  8038.6  1154.0  8081.5  1152.0  8142.0  1151.8  8165.7
GR1145.2  8172.5  1142.4  8175.7  1135.6  8182.7  1126.5  8192.5  1119.8  8199.1
GR1119.8  8265.6  1136.1  8284.0  1141.6  8289.5  1151.1  8298.1  1150.6  8339.2
GR1152.4  8343.3  1147.4  8393.6  1149.7  8415.2  1150.8  8439.6  1151.2  8443.4
GR1149.9  8483.6  1144.3  8492.4  1143.1  8504.6  1142.9  8518.4  1143.5  8526.7
GR1143.5  8539.0  1141.4  8542.8  1138.4  8549.1  1139.2  8560.7  1139.1  8569.3
G[illegible]3.3  8578.2  1146.8  8592.3  1149.9  8594.8  1150.7  8597.1  1150.7  8600.4
GR[illegible]48.7  8619.6  1148.7  8627.7  1149.8  8634.1  1151.3  8649.9  1151.6  8695.7
GR1150.9  8746.0  1150.6  8796.3  1149.1  8837.3  1149.4  8854.9  1151.4  8869.2
GR1152.3  8960.5  1152.0  8966.7  1148.3  9004.8  1150.0  9017.9  1151.0  9023.1
GR1147.6  9041.7  1147.0  9087.8  1149.7  9104.9  1149.5  9108.5  1149.7  9149.0
GR1150.7  9199.0  1151.4  9285.5  1151.8  9359.0  1154.0  9367.0  1154.7  9374.4
GR1151.2  9388.1  1151.3  9420.2  1150.0  9435.1  1149.5  9446.3  1151.6  9476.4
GR1150.9  9511.1  1150.8  9556.2  1151.8  9665.4  1152.1  9705.2  1152.8  9716.6
GR1148.6  9747.1  1147.5  9774.5  1149.2  9787.8  1147.8  9825.0  1145.3  9845.2
GR1145.1  9901.6  1147.0  9913.2  1146.0  9962.2  1145.0 10056.4  1144.6 10160.9
GR1145.3 10164.0  1146.7 10168.0  1146.8 10189.4  1146.1 10196.0  1145.1 10199.7
GR1144.9 10310.7  1146.1 10321.9  1147.1 10325.1  1147.5 10331.4  1150.1 10337.0
GR1152.2 10340.5  1159.1 10354.4
HD18.839      10    8150   10350
    ****************UPSTREAM END OF GREENWAY-1*******************************
    ***************************************************************************
NC                    0.3     0.5
             -------------BELL ROAD-----------
X118.962      74    9840 10223.7     540     700  644.97
X3                      9391    1156   10535    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD[illegible].962      10    9440   10480
N[illegible].045    .045    .035
X[illegible].066      93  9885.7 10349.1     485     580  551.29
X3    10
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
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GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR[illegible]2.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR[illegible]4.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066      10  9302.8   10398
NC 0.045   0.045   0.035     0.1     0.3
X119.446      91  9592.8 10078.6    1840    2400 2473.39
X3    10
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
       ---------UNION HILLS---------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X[illegible]  10
GR[illegible]8.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3    10
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR[illegible]1.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
G[illegible]9.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR[illegible]8.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
   ***************DOWNSTREAM END OF BEARDSLEY-1*****************************
   ************************************************************************
X120.958      90  9787.3 10383.8    1815    2044 2006.06
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X3                          8780    1188   10760    1188
XL                          9250   10750
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
G[illegible]6.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
G[illegible]8.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958       10    8600   10750
        ----------BEARDSLEY----------
X121.061       91  9850.0 10325.4     340     655  542.53
X3                          9200    1188   11045    1188
XL                          9200   11000
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
G[illegible]5.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR[illegible]5.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061       10    8800   10100
NC  .055    .055    .050
X121.157       94  9377.3 10376.3     340     630  509.07
X3                          9266.8    1190   11150    1190
XL                          9300   10800
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157       10  9377.3 10398.0
X121.431       75  9467.9 10343.5    1205    1490 1443.17
X3                          9350    1193   10343    1193
XL                          9100   11200
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR[illegible]2.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
G[illegible]6.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR[illegible]96.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
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GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
H[redacted]431      10  9190.7 10769.6
N[redacted].045    .055    .035
     *********UPSTREAM END OF BEARDSLEY -1*************************************
     *********LOCATION OF ROSE GARDEN -1***************************************
     ******************************************************************************
X121.893      93  9558.8 10146.5    2525    2070 2442.15
X3                      9546    1200   11050    1200
XL                      9604   12000
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893      10  9558.8 10758.1
      -------UPSTREAM OF DEER VALLEY ROAD--------
   **********DOWNSTREAM END OF DEER VALLEY-1S, 1N, AND DEER VALLEY-2**********
   ******************************************************************************
X122.177      89  9909.7 10533.6    1425    1520 1500.23
X3                     8765.7    1206   10650    1206
XL                      8850   11100
GR1207.0  8765.7  1207.1  8786.8  1204.9  8844.5  1203.0  8855.1  1199.5  8865.5
GR1199.8  8878.3  1197.7  9076.9  1201.5  9111.1  1201.8  9131.3  1203.9  9160.3
G[redacted]4.1  9366.4  1203.1  9432.5  1200.7  9451.7  1202.2  9529.3  1201.7  9586.2
GR[redacted]02.1  9705.0  1200.6  9773.2  1199.6  9909.7  1197.1 10001.3  1196.9 10057.0
GR1196.2 10078.7  1201.5 10089.5  1196.9 10231.7  1196.0 10350.6  1196.0 10510.5
GR1200.7 10533.6  1197.5 10557.0  1194.4 10565.7  1197.7 10653.0  1196.0 10668.4
GR1193.8 10790.9  1194.5 10950.2  1197.8 10965.9  1202.7 10979.9  1202.4 11012.5
GR1201.0 11024.0  1201.8 11036.9  1212.9 11068.5  1203.3 11092.5  1202.5 11126.9
GR1202.8 11163.1  1207.3 11173.2  1206.9 11197.3  1205.9 11206.1  1207.0 11344.6
GR1210.4 11352.1  1213.2 11360.4  1207.1 11376.6  1207.1 11600.9  1208.7 11813.7
GR1213.6 11826.7  1214.6 11832.4  1212.5 11856.3  1214.4 11897.1  1212.8 11966.7
GR1214.0 12077.6  1211.0 12191.7  1212.2 12252.6  1211.1 12304.1  1211.6 12311.6
GR1210.8 12326.4  1213.5 12334.0  1206.8 12349.9  1206.8 12409.5  1212.7 12439.6
GR1212.4 12476.5  1206.8 12489.2  1206.8 12564.8  1211.1 12576.8  1209.7 12583.4
GR1207.7 12667.9  1213.9 12678.3  1214.7 12678.9  1214.2 12696.7  1210.2 12709.6
GR1208.5 12713.4  1208.1 12737.7  1220.1 12763.9  1219.5 12790.0  1216.3 12811.3
GR1219.0 12823.9  1216.4 12834.3  1212.8 12843.9  1213.0 12857.8  1211.9 12881.8
GR1209.2 12892.3  1208.1 12903.1  1220.1 12936.6  1220.4 12953.7
HD22.177      10    8850   11500
NC  .045    .045    .035
X122.462      77  9887.4 10318.9    1530    1400 1478.14
X3    10
XL                      9050   10800
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR[redacted]13.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
G[redacted]7.8 13132.1  1225.6 13192.8
HD[redacted].462      10  9050.4   12200
X122.745      92  9797.7 10147.8    1520    1270 1491.33
X3    10
XL                      8910   11000
GR1225.1  8903.1  1207.9  8919.7  1208.2  8963.5  1207.5  9060.1  1207.7  9092.9
GR1206.4  9114.7  1206.1  9143.1  1208.9  9172.4  1211.8  9209.3  1212.0  9328.1
GR1211.9  9402.0  1212.9  9418.9  1212.4  9534.3  1211.5  9563.3  1211.0  9595.9
GR1211.2  9640.5  1210.6  9677.3  1210.8  9692.3  1209.6  9711.3  1209.4  9723.7
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GR1211.0  9745.9  1211.9  9797.7  1211.1  9835.1  1208.8  9954.1  1207.1  9981.3
GR1207.0 10008.3  1206.3 10036.6  1207.2 10049.9  1207.2 10119.2  1210.2 10147.8
GR1210.8 10219.0  1210.4 10251.5  1211.9 10260.4  1211.3 10309.2  1211.7 10324.5
GR1212.5 10377.1  1211.5 10388.9  1212.2 10429.8  1212.2 10482.5  1211.9 10494.4
GR1210.2 10515.1  1210.5 10539.3  1212.7 10587.8  1212.6 10693.2  1212.4 10746.0
GR1212.9 10851.1  1210.4 10874.3  1210.1 10904.0  1212.0 10941.3  1212.2 10956.6
GR1211.7 11009.3  1211.2 11028.1  1212.9 11064.9  1212.4 11099.8  1210.7 11127.4
GR1212.4 11180.0  1212.7 11259.2  1212.5 11272.7  1212.8 11327.7  1209.3 11351.0
GR1208.3 11378.9  1207.9 11394.3  1206.2 11399.0  1207.0 11430.8  1206.0 11521.2
GR1209.3 11533.2  1209.6 11536.1  1210.0 11641.5  1210.0 11668.6  1208.1 11687.0
GR1210.0 11694.4  1209.8 11721.1  1210.6 11746.8  1211.1 11799.5  1210.6 11904.9
GR1210.8 11957.6  1210.1 12011.8  1209.3 12027.9  1209.6 12051.8  1211.3 12062.3
GR1211.9 12081.2  1212.6 12088.4  1213.4 12113.3  1214.8 12123.8  1214.9 12168.3
GR1215.3 12220.9  1215.3 12248.1  1215.9 12273.6  1216.2 12326.3  1217.0 12371.3
GR1222.8 12402.3  1222.5 12409.2
HD22.745      10    8910   12200
   ***********UPSTREAM END OF DEER VALLEY SAND AND GRAVEL MINES***************
   ****************************************************************************
   ***********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, AND 3E****************
   ****************************************************************************
X122.935      94  9530.2 10351.6    2480    2125 2490.47
X3    10
XL                        8400   10750
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   12000
         ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      93  9675.2 10060.2    2450    2360 2505.26
X3                        9550    1226 12265.5    1226
XL                        8700   11160
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12250
HD23.409      10  8173.3   12200
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X3                        9650    1230 11533.8    1230
XL                        9670   11450
GR1249.2    6690  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
GR1192.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
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GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR 28.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR 26.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR  1238 11521.1  1237.8 11533.8
HD23.692      10    7000   11450
NC  .055    .055    .050
X123.974      94  9716.2 10115.2    1420    1470 1489.37
X3                    9716    1238 11204.9    1238
XL                    9716   11200
GR1269.8    7400  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10  7400.0 10388.9
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
    ********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, 3E**********************
    ************************************************************************
NC  .045    .045    .035
X124.449      92  9496.2 10169.3    2380    2560 2506.65
X3    10
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR 47.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR 45.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10  7898.5 11143.3
         ----------UPSTREAM OF HAPPY VALLEY ROAD----
X124.543      91  9646.7 10243.6     495     495  500.50
X3    10
XL                    9300   10400
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR 39.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR 39.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543      10    8000 11413.5
NC   .05    .05    .035
X124.996      96  9774.0 10632.3    2320    2330 2388.18
X3    10
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GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
G[redacted]0.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
G[redacted]3.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901:3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
GR1250.9 12975.2  1250.9 13009.4  1248.8 13019.0  1250.7 13059.6  1254.0 13074.1
GR1270.0 13110.8
HD24.996      10  9632.6 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478      93  9750.7 10127.1    2600    2485 2546.34
X3    10
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
G[redacted]0.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR[redacted]0.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478      10  9750.7 10598.2
          ----------UPSTREAM OF JOMAX ----------
X125.666      66  9842.4 10115.1    1035     975  995.18
X3    10
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666      10  9854.2 10388.0
X1 25.86      25    9940   10200    1575    1565    1585
X3    10
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86      10    8300   10200
     ***************DOWNSTREAM LIMIT OF PINNACLE VISTA-1**************************
     ********************************************************************************
NC  0.06   0.065   0.035
X1 25.94    22.0    9945   10117     450     420     430
X[redacted]  10
X[redacted]                    8000   10000
GR1276.1    7527    1273    7678  1273.9    7868  1272.1  8087.0  1270.3  8382.0
GR1270.3  8578.0  1268.1  8600.0  1271.4  8631.0  1271.2  8762.0  1270.1  9101.0
GR1267.2  9241.0  1271.2  9532.0  1269.2  9945.0  1264.2 10000.0  1267.0 10117.0
GR1263.4 10185.0  1270.1 10242.0  1270.3 10425.0  1269.7 10480.0  1269.0 10780.0
GR1276.0 11050.0  1276.0   12000
HD 25.94      10    8000   11970
X1 26.29    26.0    9696   10120    1640    1875    1810
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X3    10
XL                          8200   13250
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
G[illegible]77.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
G[illegible]71.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13300.0
HD 26.29       10     8200   12800
NC  0.06     0.07    0.035
X1 26.63     22.0     9792   10187     1800     1840     1840
X3    10
XL                          9200   11850
GR1310.9  9050.0  1310.0  9116.0  1288.0  9208.0  1286.8  9488.0  1282.7  9510.0
GR1282.7  9641.0  1284.1  9792.0  1279.5 10000.0  1281.8 10187.0  1280.9 10467.0
GR1279.4 10741.0  1282.9 10861.0  1283.0 11016.0  1285.4 11057.0  1285.6 11351.0
GR1283.8 12475.0  1286.4 13757.0  1288.6 13810.0  1348.8 13939.0  1348.8 13956.0
GR1345.6 13961.0  1345.6 14400.0
HD 26.63       10     9200   14370
    ******************UPSTREAM LIMIT OF PINNACLE VISTA-1*************************
    ****************************************************************************
X1 26.73     31.0     9898   10125      460      470      490
X3    10
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73       10     9400   11200
X1 27.03     23.0     9922   10079     1660     1020     1590
X3    10
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03       10     9700   10600
N[illegible]055    0.055    0.035
    ******************DOWNSTREAM END OF DIXLETA-1*****************************
    ****************************************************************************
X1 27.48     36.0     9894   10087     2860     2160     2390
X3    10
XL                          7710   10080
GR1357.7  6865.0  1350.6  6903.0  1350.2  6923.0  1301.6  7048.0  1299.7  7138.0
GR1300.5  7579.0  1295.1  7603.0  1296.8  7764.0  1298.1  7834.0  1294.2  7891.0
GR1294.1  7961.0  1296.5  8010.0  1293.8  8054.0  1296.9  8084.0  1295.1  8126.0
GR1297.8  8226.0  1296.0  8427.0  1297.8  8611.0  1297.0  8717.0  1295.9  8742.0
GR1294.5  8960.0  1297.5  9033.0  1298.6  9348.0  1295.3  9547.0  1296.3  9669.0
GR1297.6  9742.0  1295.2  9753.0  1294.9  9894.0  1291.5 10000.0  1292.8 10087.0
GR1292.8 10157.0  1301.9 10203.0  1301.3 10736.0  1301.9 11132.0  1323.3 11258.0
GR1324.8 11319.0
HD 27.48       10     7030   10080
X1 27.68     35.0     9853   10078     1260     1040     1040
X3    10
XL                          7850   10200
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68       10     7270   10800
X1 27.94     24.0     9944   10187     1370     1415     1405
X3    10
XL                          8380   10300
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94       10     7850   10200
    ******************UPSTREAM LIMIT OF DIXLETA-1*****************************
    ****************************************************************************
X[illegible]28.12     27.0     9906   10076      990      960      950
X3    10
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
```

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HD 28.12       10     8750   11300
X1 28.67     37.0     9964   10192     2785     2925     2885
X3                           9450   1322.3    11202   1322.3
G[illegible]2.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
G[illegible]2.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67       10     9900   11100
X1 28.95     34.0     9946   10353     1550      940     1465
X3     10
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95       10     9946   12000
X1 29.04     34.0     9828   10239      550      330      510
X3     10
GR1360.0     9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04       10     9800   11700
X1 29.54     30.0     9846   10150     2750     2235     2640
X3     10
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
G[illegible]5.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD [illegible]9.54       10     9210   10200
X129.611     31.0     9791   10094      315      315      375
X3     10
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611       10     9000   10200
NC 0.055   0.055   0.040
X1 29.80     16.0     9882   10205      980     1025     1025
X3     10
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80       10     9882   10600
X1 30.07     17.0     9925   10098     1425     1440     1420
X3     10
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07       10     9600   10300
X1 30.26     12.0     9749   10135      870     1090     1005
X3     10
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26       10     9700   10250
X1 30.73     14.0     9881   10075     2455     2470     2460
X3     10
XI[illegible]                9850   10250
G[illegible]9.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR[illegible]52.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73       10     9850   10250
X1 30.82     12.0     9924   10201      500      370      500
X3     10
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
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HD 30.82      10    9900   10400
X1 31.39    17.0    9792   10080    2900    3165    2970
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
G[illegible]54.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
G[illegible]56.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39      10    9550   10400
X1 31.86    10.0    9894   10261    2550    2485    2505
X3    10
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86      10    9500   10300
NC 0.045   0.050   0.045
X1 32.43    14.0    9852   10112    2885    2970    2980
X3    10
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43      10    9450   10200
X1 32.72    28.0    9879   10150    1725    1145    1535
X3                   9435  1408.2   10524  1408.2
XL                   9600   10500
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72      10    9600   10700
X1 32.86    12.0    9928   10155     680     990     760
X3    10
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86      10    9800   10200
X1 32.92     9.0    9891   10143     290     370     310
X3                   9680    1390   10180    1390
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
G[illegible]390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
H[illegible]2.92      10    9890   10180
     ------------STATE ROUTE 74---------
X132.984      33    9962   10011     338     358     343
X3    10
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       0       0       0
X132.998     9.0    9962   10108      72      72      72
     ------------************************-------------
X3    10
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
      ------------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170
X3    10
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10    9900   10400
X1 33.82    20.0    9861   10068    2165    2220    2175
X3    10
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82      10    9600   10200
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T[illegible]  NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T[illegible]  BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1            1       0
I4            4       1      10
LQ         5000    7000   17000   55000
LT         6457   10880   33475  146960
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
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LF     MS 0.21035 0.22940 0.21429 0.21542
LF     CS 0.23112 0.22521 0.22541 0.25124
LF    VCS 0.36207 0.32486 0.38978 0.39271
LF    VFG 0.00367 0.00255 0.00203 0.00119
LF     FG 0.00683 0.00452 0.00379 0.00284
LF     MG 0.01083 0.00681 0.00677 0.00652
LF     CG 0.00587 0.00134 0.00686 0.01048
LF    VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF         5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075       2
PF         5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18      82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075       1
PF         8.000       1      19    12.5      99     9.5      98     6.3      96
PFC 4.75      95    2.36      91       2      90    1.18      79     0.6      54
PFC0.425      37     0.3      22    0.15       5   0.075       3
PF         8.992       1      50    37.5      98      25      97      19      95
PFC 12.5      94     9.5      91     6.3      88    4.75      85    2.36      80
PFC    2      78    1.18      67     0.6      44   0.425      29     0.3      18
PFC 0.15       8   0.075       5
PF         9.885       1      50    37.5      99      25      94      19      92
PFC 12.5      90     9.5      89     6.3      87    4.75      86    2.36      82
PFC    2      79    1.18      65     0.6      30   0.425      16     0.3      11
PFC 0.15       7   0.075       5
PF        11.029       1      50    37.5      99      25      96      19      93
PFC 12.5      88     9.5      83     6.3      77    4.75      73    2.36      66
PFC    2      62    1.18      46     0.6      18   0.425       9     0.3       6
PFC 0.15       2   0.075       0
PF        11.428       1    37.5      25      98      19      93    12.5      86
PFC  9.5      81     6.3      73    4.75      67    2.36      61       2      59
PFC 1.18      48     0.6      33   0.425      27     0.3      24    0.15      20
PFC0.075      18
PF        12.470       1      50    37.5      95      25      88      19      82
PFC 12.5      75     9.5      70     6.3      64    4.75      61    2.36      48
PFC    2      46    1.18      35     0.6      18   0.425       9     0.3       4
PFC 0.15       1   0.075       0
PF        13.467       1    37.5      25      99      19    98.5    12.5      98
PFC  9.5      97     6.3    96.5    4.75    96.2    2.36    96.1       2      96
PFC 1.18      93     0.6      79   0.425      58     0.3      33    0.15       7
PFC0.075       1
PF        14.430       1    37.5      25      99      19      99    12.5      99
PFC  9.5      99     6.3      99    4.75      98    2.36      95       2      93
PFC 1.18      80     0.6      46   0.425      25     0.3      13    0.15       4
PFC0.075       2
PF        15.719       1    62.5    37.5      88      25      85      19      80
PFC 12.5      76     9.5      73     6.3      69    4.75      66    2.36      62
PFC    2      59    1.18      45     0.6      28   0.425      23     0.3      21
PFC 0.15      13   0.075       5
PF        16.482       1      25      19      99    12.5      97     9.5      96
PFC  6.3      92    4.75      90    2.36      85       2      81    1.18      62
PFC  0.6      24   0.425       9     0.3       4    0.15       1   0.075       0
PF        16.612       1      75    37.5      92      25      85      19      80
PFC 12.5      73     9.5      70     6.3      65    4.75      62    2.36      49
PFC    2      44    1.18      29     0.6      16   0.425      11     0.3       6
PFC 0.15       2   0.075       1
PF        16.990       1      50    37.5      98      25      95      19      93
PFC 12.5      91     9.5      90     6.3      88    4.75      87    2.36      84
PFC    2      82    1.18      75     0.6      58   0.425      41     0.3      22
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PFC 0.15       5   0.075       2
PF        17.821       1      50    37.5      92      25      85      19      73
PFC 12.5      60     9.5      53     6.3      47    4.75      44    2.36      36
P[redacted]    2      34    1.18      25     0.6      12   0.425       6     0.3       3
P[redacted].15       1   0.075       0
PF        18.275       1      50    37.5      94      25      83      19      76
PFC 12.5      66     9.5      59     6.3      50    4.75      45    2.36      39
PFC    2      36    1.18      27     0.6      19   0.425      15     0.3      13
PFC 0.15      11   0.075       9
PF        18.962       1    62.5    37.5      87      25      75      19      70
PFC 12.5      63     9.5      59     6.3      54    4.75      50    2.36      45
PFC    2      43    1.18      34     0.6      19   0.425      11     0.3       5
PFC 0.15       1   0.075       0
PF        19.920       1      50    37.5      96      25      87      19      82
PFC 12.5      75     9.5      70     6.3      65    4.75      61    2.36      53
PFC    2      50    1.18      35     0.6      14   0.425       7     0.3       5
PFC 0.15       2   0.075       1
PF        21.061       1    62.5    37.5      85      25      76      19      69
PFC 12.5      59     9.5      53     6.3      45    4.75      40    2.36      34
PFC    2      32    1.18      25     0.6      15   0.425      11     0.3       9
PFC 0.15       6   0.075       5
PF        21.893       1      50    37.5      98      25      98      19      92
PFC 12.5      83     9.5      77     6.3      68    4.75      63    2.36      51
PFC    2      46    1.18      27     0.6      10   0.425       5     0.3       3
PFC 0.15       1   0.075       1
PF        22.462       1    62.5    37.5      91      25      83      19      78
PFC 12.5      73     9.5      68     6.3      62    4.75      58    2.36      48
PFC    2      45    1.18      32     0.6      15   0.425       7     0.3       3
PFC 0.15       0   0.075       0
PF        23.409       1    62.5    37.5      91      25      83      19      75
PFC 12.5      66     9.5      61     6.3      54    4.75      51    2.36      44
PFC    2      42    1.18      32     1.6      18   0.425      11     0.3       6
PFC 0.15       2   0.075       2
PF        24.543       1    62.5    37.5      84      25      76      19      70
PFC 12.5      64     9.5      60     6.3      54    4.75      52    2.36      47
PFC    2      45    1.18      36     0.6      21   0.425      13     0.3       9
PFC 0.15       4   0.075       2
PF        25.666       1      50    37.5      97      25      88      19      81
PF[redacted]12.5      74     9.5      69     6.3      64    4.75      61    2.36      54
P[redacted]    2      52    1.18      43     0.6      21   0.425       8     0.3       3
P[redacted].15       2   0.075       1
PF        25.860       1    37.5      25      98      19      96    12.5      91
PFC  9.5      87     6.3      80    4.75      74    2.36      56       2      46
PFC 1.18      27     0.6       7   0.425       3     0.3       2    0.15       2
PFC0.075       1
PF        26.290       1      19     9.5      98     6.3      97    4.75      92
PFC 2.36      84       2      80    1.18      22     0.6      18   0.425       6
PFC  0.3       3    0.15       2   0.075       2
PF        26.730       1      50    37.5      96      25      93      19      92
PFC 12.5      88     9.5      84     6.3      80    4.75      77    2.36      67
PFC    2      62    1.18      39     0.6      14   0.425       9     0.3       7
PFC 0.15       6   0.075       6
PF        27.680       1      50    37.5      99      25      97      19      92
PFC 12.5      88     9.5      85     6.3      78    4.75      73    2.36      61
PFC    2      56    1.18      34     0.6      10   0.425       5     0.3       3
PFC 0.15       3   0.075       3
PF        30.070       1      50    37.5      97      25      88      19      84
PFC 12.5      73     9.5      67     6.3      55    4.75      53    2.36      43
PFC    2      40    1.18      31     0.6      21   0.425      17     0.3      14
PFC 0.15      11   0.075       9
PF        30.820       1    37.5      25      99      19      97    12.5      95
PFC  9.5      94     6.3      90    4.75      89    2.36      86       2      85
PFC 1.18      76     0.6      61   0.425      50     0.3      35    0.15      11
PFC0.075       4
PF        31.860       1    37.5      25      94      19      92    12.5      91
PFC  8.5      90     6.3      89    4.75      88    2.36      88       2      88
PFC 1.18      86     0.6      74   0.425      60     0.3      43    0.15      17
PFC0.075       8
PF        32.430       1   32.64    2.36      99       2      98    1.18      95
PFC  0.6      84   0.425      69     0.3      52    0.15      25   0.075      12
PF        32.998       1    62.5    37.5      97      25      91      19      84
PFC 12.5      74     9.5      67     6.3      57    4.75      51    2.36      40
PFC    2      37    1.18      27     0.6      18   0.425      14     0.3      12
PFC 0.15      10   0.075       7
$LOCAL
L[redacted]          0.1    1000    5000   10000   25000
LFL           0.1    1094    6855   16015   51300
LF   VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL   FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL   MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL   CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL  VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL  VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL   FG 0.00076 0.00076 0.00197 0.00380 0.00293
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LFL   MG 0.00056 0.00056 0.00028 0.00067 0.00050
LFL   CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL  VCG 0.00000 0.00000 0.00000 0.00000 0.00000
S[redacted]
S[redacted]ING
RC             12    5000    5000          912.55  913.39   913.9  914.53   914.9
RC         915.38   915.8  916.05   916.3  916.70   917.0  917.24
          ***********RUN 30 DAYS OF 9,000 CFS ************************
*    AB  TIME STEP NO 1
Q    9000
T      60
X           0.005       1
*    AB  TIME STEP NO 2
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 3
Q    9000
T      60
X           0.005       1
*    AB  TIME STEP NO 4
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 5
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 6
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 7
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 8
Q    9000
T      60
X[redacted]          0.01       1
*    AB  TIME STEP NO 9
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 10
Q    9000
T      60
X           0.005       1
*    AB  TIME STEP NO 11
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 12
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 13
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 14
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 15
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 16
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO  17
Q    9000
T      60
X[redacted]          0.01       1
*    AB  TIME STEP NO 18
Q    9000
T      60
X            0.01       1
*    AB  TIME STEP NO 19
Q    9000
T      60
X            0.01       1
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*   AB  TIME STEP NO 20
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 21
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 22
Q   9000
T     60
X           0.01       1
*   AB TIME STEP NO 23
Q   9000
T     60
X           0.01       1
*   AB  TIM STEP NO  24
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 25
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 27
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 28
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 29
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 30
Q   9000
T     60
X           0.01       1
    $DREDGEB
    $NODREDGE
       -----100-YEAR HYDROGRAPH------
*   AB  TIME STEP NO 31
Q   9000      100
T     60       60
X          0.005    0.06
*       TIME STEP NO 32
Q   9000      100
W   0.01
*   AB  TIME STEP NO 33
Q   9000      800
X         0.0001    0.08
*       TIME STEP NO 34
Q   9000      800
W   0.01
*   AB  TIME STEP NO 35
Q  18000     7000
X           0.01    0.04
*       TIME STEP NO 36
Q  18000     7000
W   0.01
*   AB  TIME STEP NO 37
Q  36000    17000
X           0.01    0.06
*       TIME STEP NO 38
Q  36000    17000
W   0.01
*   AB  TIME STEP NO 39
Q  44000    20000
X           0.01    0.04
*       TIME STEP NO 40
Q  44000    20000
W   0.01
*   AB  TIME STEP NO 41
Q  54000    24000
X           0.01    0.04
*       TIME STEP NO 42
Q  54000    24000
W   0.01
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*   AB  TIME STEP NO 43
Q  52000   22000
X           0.01    0.04
*       TIME STEP NO 44
Q  52000   22000
W   0.01
*   AB  TIME STEP NO 45
Q  44000   18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000   18000
W   0.01
*   AB  TIME STEP NO 47
Q  30000   12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000   12000
W   0.01
*   AB  TIME STEP NO 49
Q  20000    8000
X          0.001    0.06
*       TIME STEP NO 50
Q  20000    8000
W   0.01
*   AB  TIME STEP NO 51
Q   9000    4000
X          0.001    0.13
*       TIME STEP NO 52
Q   9000    4000
W   0.01
*   AB  TIME STEP NO 53
Q   5500     500
X          0.01    0.33
*       TIME STEP NO 54
Q   5500     500
W   0.01
$$END
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T1       KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2       AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3       100-YEAR EVENT SAND AND GRAVEL MODEL - SGM1-50.dat JULY 25 2001
     ************************************************************************
     FULL SAND AND GRAVEL BASE MODEL WITH DREDGING TEMPLATES
     ************************************************************************
      THIS SGM1.dat MODEL IS BASED ON SGBASE50.DAT WHICH IS THE EXISTING CONDITIONS
      MODEL OF THE AGUA FRIA RIVER DATED JULY 25, 2001
     ************************************************************************
       ADDED DREDGDING TEMPLATES TO SAND AND GRAVEL MINES ON HD RECORDS
       THIS MODEL DREDGING OCCURS AFTER TIME STEP NO. 30 OF THE 30-DAY 9,000 CFS
       DISCHARGE
     ************************************************************************
       50% SEDIMENT INFLOW FOR AGUA FRIA RIVER
     ************************************************************************
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3    10
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6 10136.    913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1 10590.    916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1 11265.    911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1 11911.    914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5 12758.    916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5 15403.    920.3 15459.0
HD  0.16      10    8200   12250
NC 0.045    0.10   0.035
X1  0.44    44.0    9798   10420    1510    1465    1485
X3    10
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8100   12750
NC 0.048   0.074   0.035
X1  0.63    36.0    9888   10209    1055     985    1010
X3                  6600     925   16200     925
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8270   12400
NC 0.050   0.066   0.035
X1  0.73    39.0    9917   10162     510     490     500
X3    10
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8200   12400
     ******************************************************
     ************BEGIN BROADWAY 1W AND 1E********************
NC 0.045    0.07   0.035
X1  1.01    35.0    9682   10471    1380    1375    1375
X3    10
GR 928.9  4205.0   928.5  5661.0   929.2  6721.0   928.4  7602.0   928.7  8490.0
GR 928.7  8566.0   928.2  8695.0   928.3  8740.0   928.5  9048.0   928.6  9151.0
GR 928.8  9185.0   922.0  9235.0   921.8  9300.0   921.4  9400.0   924.5  9437.0
GR 924.9  9682.0   921.5 10000.0   921.2 10380.0   921.2 10405.0   924.0 10471.0
GR 924.0 10505.    924.0 10677.0   924.0 10694.0   924.0 10715.0   922.9 10733.0
GR 923.6 10830.    929.5 10849.0   924.2 10867.0   925.3 11259.0   930.4 11284.0
GR 930.4 11298.    924.4 11319.0   924.6 12194.0   929.7   13800   932.0   14000
HD  1.01      10    9300   10800             912   10400   10750
NC 0.045   0.077   0.035
X1  1.10    37.0    9719   10678     500     470     490
X3    10
GR 929.3  6000.0   930.4  6858.0   929.4  7741.0   929.3  8585.0   929.3  8600.0
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GR 929.6  8801.0   928.2  9000.0   931.4  9071.0   919.5  9267.0   920.8  9325.0
GR 923.6  9368.0   924.3  9660.0   923.6  9700.0   923.2  9719.0   922.5 10000.0
GR 923.1 10141.0   923.0 10171.0   923.0 10387.0   923.0 10419.0   923.0 10556.0
G  23.0 10595.0   925.5 10678.0   925.5 10729.0   924.0 10913.0   924.0 10941.0
G  24.0 10966.0   924.7 11005.0   927.9 11017.0   927.9 11033.0   924.6 11128.0
GR 929.4 11150.0   925.5 11188.0   925.5 11400.0   925.6 11660.0   926.3 12105.0
GR 928.0   13150   930.3   13600
HD  1.10      10    9200   11033            912   10050   11300
NC 0.045   0.069   0.035
X1  1.17    25.0    9917   10654     560     490     540
X3    10
GR 932.2  6215.0   929.9  7229.0   929.9  7805.0   929.7  8500.0   929.7  8639.0
GR 926.5  8784.0   927.1  9032.0   928.5  9439.0   926.8  9778.0   927.2  9917.0
GR 923.7  9929.0   923.6  9940.0   924.3 10000.0   923.6 10113.0   924.3 10142.0
GR 924.3 10608.0   926.6 10620.0   926.6 10654.0   924.0 10704.0   927.0 11220.0
GR 927.3 11266.0   926.6 11765.0   926.8 12280.0   930.3   13060   934.0   13150
HD  1.17      15    8790   11200            912   10050   10650
NC 0.045   0.069   0.035
X1  1.25    24.0    9974   10742     480     490     485
X3    10
GR 933.2  6235.0   931.2  6887.0   932.2  8114.0   932.2  8340.0   932.2  8429.0
GR 927.9  8531.0   930.3  8831.0   927.5  9204.0   930.3  9306.0   929.1  9974.0
GR 926.2  9990.0   924.4 10000.0   924.4 10533.0   924.4 10571.0   924.4 10594.0
GR 924.4 10702.0   929.8 10742.0   930.1 11083.0   929.4 11240.0   928.7 11410.0
GR 928.5 12013.0   930.4 12109.0   936.0   12500   940.0   13000
HD  1.25      15    8400   11100            912    9920   10520
  ************END BROADWAY 1W AND 1E*******************
  ***************************************************
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456     485     500     495
X3    10
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8000   10456
N  045     0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X3    10
GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965
X3    10
GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8 10079.1
HD  2.02      10    8000   10070
NC   .04     .04    .035
X1  2.60      26    9437   10850    2700    2945    3320
X3    10
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60      10    9437   10850
X1  2.80      19    9200   11222    1250     655    1000
X3    10
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
G  3.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80      10    9150   10850
X1  3.27      17  9692.6 11130.5    2800    1995    2505
X3    10
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
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GR 948.5 11116.0   960.5 11130.5
HD  3.27      10    9300 11130.5
X1  3.37      17  9716.5 10970.3     585     460     510
X3    10
GR 951.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37      10    9500 10970.3
X1  3.43      12  9758.5 10873.4     925     795     850
X3    10
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43      10    9650 10873.4
X1 3.729     6.0    9420   10603    1575    1585    1580
X3    10
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729      10    9420   10603
NC                     0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
X3    10
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734      10  9400.9 10599.3
X1 3.757     7.0    9425   10555     120     120     120
X3    10
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757      10    9425   10555
X1 3.767      92  9428.1 10572.0      50      50      50
X3    10
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767      10  9428.1   10572
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
X3    10
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0    9440   10578
X1 4.094     7.0    9440   10578      10      10      10
X3    10
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0    9440   10578
X1 4.30      7.0    9458   10594    1040    1040    1040
X3    10
GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205    2065    2135
X3    10
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
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GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10     9451   10579
X1 4.754    53.0  9402.5 10572.3     150     310     225
X[redacted]  10
X[redacted]                    9402.5 10572.3
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754      10  9402.5 10572.3
X1  4.79     6.0     9440   10590     357     187     277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79      10     9440   10590
X1  5.15     9.0     9291   10713    1780    1960    1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15      10     9291   10590
         ------------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201     9.0     9291   10713     180     360     270
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
GR 969.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
HD 5.201       0     9291   10713
X1 5.203     9.0     9291   10713      10      10      10
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203       0     9291   10713
X1 5.290      82  9250.8 10672.4     505     675     585
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
G[redacted]1.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290      10  9250.8 10672.4
X1 5.380    20.0  9266.0 10656.0     305     645     465
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380      10     9266   10656
         ----------MCDOWELL ROAD------
X1 5.689      42  9371.3 10552.8    1320    1740    1620
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR973.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
GR973.85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689      10  9371.3 10552.8
X1 5.750    22.0  9426.0 10579.0     370     370     370
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
G[redacted]3.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750      10     9426   10579
X1 5.900    17.0  9429.0 10561.0     945     950     950
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900   10       9429   10561
```

```
        -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0     907     897     902
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068       0  9416.0 10545.0
X1 6.070    15.0  9416.0 10545.0       8       8       8
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070       0  9416.0 10545.0
X1 6.430    20.0  9452.0 10537.0    2045    1850    1945
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430      10     9452   10537
X1 6.820    17.0  9444.0 10573.0    2145    1820    1980
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820      10     9444   10573
                                     357     357     357
          -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0     357     357     357
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888       0     9439   10577
X1 6.890    16.0  9439.0 10577.0       8       8       8
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890       0     9439   10577
X1 6.910    17.0  9430.0 10579.0     105     115     110
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910      10     9430   10579
X1 6.930    17.0  9413.0 10573.0     105     105     105
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930      10     9413   10573
X1 6.990    19.0  9400.0 10559.0     315     355     335
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10     9400   10559
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10     9509   10525
        -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0    2805    2480    2625
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988       0  9293.0 10732.0
X1 7.990    37.0  9293.0 10732.0      10      10    10.5
X3    10
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.990       0  9293.0 10732.0
NC                        .3      .5
```

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         ---------INDIAN SCHOOL ROAD------
X1 8.000       85  9235.5  10725.      50      50      50
X3    10
XL                       9235.5   10725
GR[illegible]4.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000       10  9235.5   10725
    ************ DOWNSTREAM LIMIT OF INDIAN SCHOOL 1-S *****************
    ***********************************************************************
NC                          0.1     0.3
X1 8.105       91  9493.9 10978.6     405     745  522.59
X3    10
XL                        9400 10978.6
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
G[illegible]1.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR[illegible]0.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105       10    9400 10978.6          1000    9650   10280
X1 8.198       92  9458.7 10971.0      420     620  490.43
X3                       9458.6    1010  109711    1010
XL                         9400   11100
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198       10  9458.7   10971          1000    9600   10500
NC  .040    .040    .035
   ------------Gravel Mine Between Camelback Road and Indian School----------
   *************DOWNSTREAM LIMIT OF INDIAN SCHOOL 2-S*****************
   ***********************************************************************
X[illegible]433       87  9583.1 10597.5    1155    1365 1241.36
X3                       9009.5    1012   11000    1012
XL                         9000 10597.5
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
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GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
G[redacted]5.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
G[redacted]8.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433      10    9000   10940            1000    9100   10940
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768      73  9584.7 10102.8    1735    1765 1764.77
X3                      8182.6    1018   11500    1018
XL                        9000   11000
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10    7000   11000            1005    9160   10930
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                      9300    1022   11545    1022
XL                      9700   11460
GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
G[redacted]8.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR[redacted]9.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992      10    9700   11460            1005    9800   11460
     ************UPSTREAM LIMIT OF INDIAN SCHOOL 2-S**********************
     ************************************************************************
NC  0.05    0.05   0.035     0.3     0.5
     *************U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE**************
     ************BEGIN SAND AND GRAVEL MINES BETWEEN CAMELBACK AND BETHANY HOME***
     ************************************************************************************
X1 9.266      93  9725.9 11607.3    1539     889 1430.62
X3                      9439.6    1026   11700    1026
XL                        9725   11700
GR1024.3  7822.4  1024.5  8138.1  1024.7  8447.1  1024.9  8756.0  1024.2  9091.8
GR1023.4  9402.0  1023.3  9418.1  1024.2  9423.6  1021.6  9432.7  1024.2  9439.6
GR1022.9  9444.9  1022.4  9529.5  1020.2  9575.9  1022.3  9661.6  1022.1  9725.9
GR1013.9  9852.8  1017.2 10006.0  1013.9 10058.2  1013.7 10086.7  1017.3 10103.7
GR1016.8 10209.4  1015.7 10230.4  1016.6 10257.2  1014.7 10308.2  1014.3 10344.1
GR1018.0 10369.8  1017.8 10486.5  1019.5 10508.4  1021.4 10604.4  1021.3 10654.4
GR1019.6 10685.0  1019.7 10704.5  1016.3 10751.4  1017.9 10770.7  1021.4 10905.8
GR1020.8 11021.8  1021.6 11204.6  1020.8 11252.1  1017.1 11283.4  1018.2 11404.6
GR[redacted]7.7 11468.4  1021.5 11607.3  1018.7 11635.1  1017.1 11660.6  1023.1 11704.5
G[redacted]2.8 11728.9  1017.3 11752.5  1017.5 11789.2  1023.8 11815.8  1024.4 11854.6
GR[redacted]2.1 11954.6  1023.1 12278.8  1021.6 12459.7  1020.1 12472.3  1021.7 12489.4
GR1020.8 12507.6  1022.4 12660.6  1019.8 12672.3  1019.0 12686.2  1021.1 12714.1
GR1020.8 12727.1  1022.4 12754.6  1021.7 13004.7  1020.1 13039.2  1022.2 13104.7
GR1021.4 13173.2  1018.6 13185.1  1018.2 13192.5  1022.7 13202.6  1018.5 13212.1
GR1019.0 13244.7  1023.0 13254.3  1018.1 13265.2  1019.3 13347.4  1020.2 13359.6
GR1020.5 13394.8  1018.9 13405.5  1020.6 13454.7  1020.8 13490.7  1022.7 13501.3
GR1023.2 13532.9  1022.0 13542.7  1022.7 13554.9  1023.2 13887.5  1023.1 14188.9
GR1023.3 14504.7  1023.0 14515.6  1024.2 14522.5  1023.3 14526.3  1023.2 14854.7
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GR1023.8 15204.7  1024.1 15254.7  1024.1 15454.2
HD 9.266      10    9440   15250           1014    9440   15200
NC  0.05    0.05   0.035     0.1     0.3
X[redacted]435      83  9548.8 11146.3     875     915  889.44
X[redacted]                    8158    1026   11839    1026
XL                             9540   11150
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
GR1020.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
GR1025.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR1024.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD 9.435      10  9548.8 11146.3           1015    9350   13500
QT
X1 9.696      91  9602.6 10996.2    1430    1330 1383.24
X3                             9015    1030   11702    1030
XL                             9600   13500
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR1028.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
GR1019.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
GR1024.7 10030.2  1025.6 10107.8  1025.2 10146.5  1024.5 10147.3  1024.7 10232.4
GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR[redacted]27.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
G[redacted]3.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR[redacted]21.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696      10    9600   11750           1018   10550   15500
       -------SOUTH OF GLENDALE AIRPORT------
     --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40
X3                             9327.8    1032   12100    1032
XL                             9327.8   12800
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
GR1029.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR1023.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
GR1029.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
GR1028.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
GR1031.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
GR1031.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
GR1035.2 15177.3
HD 9.885      10  9327.8   15050           1021   10100   15050
X110.167      91  9412.5 10272.2    1820    1135 1491.12
X3[redacted]                   9380    1034 11989.1  1036.3
X[redacted]                    9200 11989.1
GR[redacted]36.2  7129.0  1037.7  7194.5  1035.7  7205.8  1037.3  7277.2  1037.1  7420.3
GR1039.4  7453.6  1037.1  7485.2  1038.7  7507.3  1037.7  7579.8  1038.3  7590.5
GR1037.3  7594.2  1037.3  7713.7  1036.2  7723.0  1036.4  7888.6  1038.2  7925.2
GR1037.1  7939.2  1035.1  8120.7  1036.1  8128.4  1036.5  8429.0  1035.2  8480.7
GR1037.0  8786.9  1035.9  8921.4  1037.0  8943.4  1036.8  8974.4  1031.8  9018.5
GR1039.2  9040.9  1034.5  9055.3  1033.7  9126.3  1036.7  9148.2  1033.3  9165.5
GR1033.8  9220.1  1033.4  9233.3  1034.7  9240.3  1038.4  9252.7  1035.6  9256.7
GR1033.3  9272.8  1033.5  9412.5  1030.1  9441.5  1028.9  9508.9  1029.9  9773.1
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GR1023.3 10025.7  1023.7 10040.0  1025.8 10051.5  1026.7 10190.6  1028.9 10206.1
GR1028.6 10254.0  1031.0 10272.2  1033.1 10498.3  1032.9 10848.3  1033.0 11148.3
GR1032.2 11453.2  1030.3 11467.7  1032.9 11483.3  1032.3 11523.7  1030.0 11546.4
G[redacted]4.0 11563.1  1032.4 11603.2  1032.6 11807.8  1033.8 11846.8  1032.4 11877.0
G[redacted]4.1 11898.4  1033.1 11953.6  1033.7 11977.0  1036.3 11989.1  1031.3 12008.1
GR1033.4 12031.2  1033.2 12088.4  1031.7 12103.8  1033.5 12114.2  1032.3 12117.7
GR1034.5 12198.3  1033.1 12499.2  1032.6 12530.4  1034.2 12592.6  1032.8 12620.5
GR1032.5 12695.9  1030.5 12748.7  1033.1 12905.5  1030.4 13006.4  1032.1 13048.1
GR1033.2 13355.8  1033.5 13581.8  1034.8 13585.3  1031.2 13629.7  1033.4 13936.1
GR1032.9 14248.3  1033.1 14395.7  1037.8 14406.5  1038.1 14419.7  1033.2 14430.0
GR1033.1 14443.1
HD10.167      10    9200   14340           1023    9660   14340
NC  0.05    0.05   0.045
X110.343      78  9782.1 10288.8     910     695  923.51
X3                       9750    1040   11416    1040
XL                       9750   11416
GR1043.6  5749.1  1044.2  5780.6  1038.7  5851.9  1039.0  6019.2  1039.2  6332.0
GR1039.2  6402.4  1036.8  6515.4  1039.7  6852.7  1039.1  7156.0  1038.6  7398.1
GR1040.0  7472.0  1039.8  7821.6  1039.2  8124.2  1040.1  8426.7  1038.4  8626.1
GR1035.8  8870.7  1039.2  8882.3  1030.0  8906.1  1030.0  9429.5  1031.6  9432.5
GR1033.6  9465.9  1034.3  9531.5  1031.4  9573.0  1031.9  9592.8  1036.7  9615.6
GR1031.8  9659.5  1031.4  9770.7  1032.9  9782.1  1029.4  9854.5  1031.9  9869.3
GR1029.4  9924.3  1030.7 10065.3  1026.7 10247.0  1035.2 10288.8  1036.1 10312.9
GR1035.6 10620.5  1034.8 10841.9  1034.0 10847.5  1034.8 10947.5  1033.8 10988.6
GR1034.1 11072.8  1033.2 11092.4  1035.7 11109.8  1035.9 11151.3  1037.1 11164.0
GR1035.8 11184.6  1036.7 11198.0  1035.1 11214.8  1036.3 11231.4  1034.8 11244.9
GR1035.6 11279.1  1034.4 11296.8  1035.7 11345.3  1033.4 11353.5  1033.1 11388.4
GR1035.0 11390.4  1037.4 11416.6  1035.1 11427.0  1033.9 11612.9  1035.2 11918.3
GR1033.7 12029.0  1035.4 12049.5  1035.0 12282.6  1033.3 12306.7  1034.1 12609.1
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GR1039.9 13845.1  1040.0 13859.8  1035.3 13871.1
HD10.343      10    8520   13750           1026    8520   13750
X110.538      87  9573.5 10478.1     925     985 1033.23
X3                       9514.6    1044   11058    1040
XL                       8600 10478.1
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
GR1040.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
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G[redacted]8.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR[redacted]6.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1034.7  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
GR1038.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
GR1037.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR1035.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR1037.2 13424.5  1036.8 13435.8
HD10.538      10    7870   13320           1030    7870   13320
X110.752      90  9651.8 10329.8     1070    1140 1124.93
X3                       9335    1042 10329.9    1042
XL                              10550
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
GR1042.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
GR1039.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR1040.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
GR1041.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
G[redacted]6.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752      10    9200   12690           1025   10550   12660
X110.846      91  9756.4 10308.2     510     480  500.68
X3                       8865    1044 10402.4    1044
XL                              10300
GR1046.7  4455.3  1042.9  4484.7  1043.7  4812.2  1043.8  5129.0  1043.8  5433.6
GR1044.1  5530.4  1046.4  5558.5  1041.5  5602.2  1045.1  5927.4  1044.9  6130.9
GR1043.3  6192.7  1044.4  6233.7  1043.6  6291.3  1045.2  6592.3  1045.2  6865.7
GR1043.5  6881.1  1046.0  6943.5  1044.7  7051.7  1046.2  7081.4  1044.9  7091.1
```

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GR1046.9  7101.3  1043.9  7119.5  1046.3  7147.0  1045.8  7462.6  1049.2  7474.5
GR1044.0  7487.9  1046.2  7572.9  1048.6  7583.4  1046.3  7599.4  1045.6  7653.5
GR1043.4  7674.3  1043.0  7985.4  1041.5  8301.1  1042.5  8319.7  1042.0  8459.6
G[redacted]43.9  8485.0  1042.8  8530.2  1044.1  8547.8  1044.3  8770.3  1042.4  8787.3
G[redacted]42.1  8963.4  1043.0  9125.3  1041.7  9155.7  1042.6  9496.4  1041.8  9621.3
GR1040.7  9636.3  1039.3  9713.9  1039.0  9756.4  1034.8  9829.0  1033.3  9916.9
GR1031.6  9937.5  1035.3 10030.4  1037.4 10223.5  1033.7 10237.0  1033.6 10267.9
GR1038.8 10283.4  1042.9 10308.2  1040.5 10341.8  1042.0 10384.0  1041.2 10394.2
GR1044.4 10402.4  1042.7 10409.7  1044.3 10419.7  1042.4 10496.4  1043.7 10522.5
GR1042.7 10830.5  1043.1 10840.5  1040.9 10848.8  1040.5 10856.7  1043.7 10865.5
GR1042.8 10994.0  1040.8 11003.6  1043.6 11155.2  1042.4 11164.5  1042.9 11173.3
GR1041.7 11176.7  1043.5 11316.2  1042.3 11568.9  1041.2 11574.0  1044.0 11627.0
GR1040.0 11674.8  1040.2 11730.9  1042.9 11769.5  1041.4 11804.3  1038.8 11820.9
GR1038.2 11875.5  1043.1 11899.9  1042.7 11965.1  1043.9 11981.0  1041.9 12286.9
GR1042.2 12373.3
HD10.846      10    7572   12370            1025   10680   12300
   ****************UPSTREAM END OF SAND AND GRAVEL MINES BETWEEN CAMELBACK ******
   ****************AND BETHANY HOME ROAD - PITS DEPTHS BASED ON AREA WEIGHTED****
   ****************PIT DEPTHS AS A FUNCTION OF TOTAL MINING AREA*****************
NC  0.05   0.095   0.045
X111.029       95  9513.1 10404.2    1035     865  963.30
X3                          9240    1046   10467    1046
GR1055.5  3356.7  1053.0  3607.3  1053.9  3617.6  1051.2  3623.8  1050.3  3635.8
GR1051.3  3641.5  1049.4  3661.8  1047.1  3741.2  1046.4  3861.8  1044.0  3889.2
GR1045.3  3899.9  1045.1  4187.0  1046.2  4194.5  1045.9  4514.8  1044.5  4858.6
GR1044.0  4890.1  1046.3  5011.7  1046.5  5170.4  1047.9  5180.1  1045.6  5308.8
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR1046.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
G[redacted]5.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR[redacted]45.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029      10    8700   10700
      -------GLENDALE AVENUE----------
X111.428       94  9814.2 10227.2    1960    2335    2160
X3    10
XL                          9500 10227.2
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10    9500 10227.2
NC  0.15   0.055   0.035     0.3     0.5
    ***************DOWNSTREAM LIMIT OF GLENDALE-1*****************************
    ************************************************************************
X111.557       95  9881.6 10100.9     675     675  677.68
X3                          8970    1058   10122    1058
XL                          9000 10100.9
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR[redacted]51.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
G[redacted]1.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR[redacted]50.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
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GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
G[redacted]050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
G[redacted]050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557      25    8000 10100.9            1022    6100   10000
X111.847      95  9914.3 10113.4    1530    1530 1531.67
X3                      7310    1062   10173    1062
XL                    9914.3 10113.4
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      25    6000 10113.4            1022    6000   10000
X112.042      62  9903.4   10070     990    1050 1028.61
X3                      6350    1066   10165    1066
XL                      5900   10165
GR  1066    5900    1058    5930    1058    6005    1059  6024.1  1059.2  6048.5
GR  1060  6057.8  1058.2  6082.7  1058.2  6096.6  1058.2  6138.2  1058.2  6154.2
GR1058.2  6173.8  1058.2  6190.9  1058.2  6201.8  1058.2  8555.6  1058.2  8631.6
GR1058.2  8641.8  1061.8  8660.4  1058.2    8806  1058.2  8910.3  1058.2  8998.8
GR1058.2  9007.9  1058.2  9078.3  1058.2  9101.9  1058.2  9111.5  1058.2  9145.2
G[redacted]8.2  9148.5  1058.2  9164.4  1058.2  9181.1  1058.2  9201.8  1058.2  9211.2
GR[redacted]8.2  9267.4  1058.2  9290.8  1058.2  9298.9  1059.3  9367.2  1062.4  9377.5
GR1062.9  9390.5  1059.5    9402  1058.5  9412.2  1058.2  9418.8  1058.2  9447.6
GR1061.2  9485.4    1061  9536.3  1058.2  9574.9  1058.2    9588  1058.2  9609.8
GR1058.2  9615.8  1058.2  9622.9  1058.2  9667.5  1058.2  9802.1  1058.2  9840.1
GR1058.2  9853.8  1062.1  9867.5  1060.9  9871.4  1061.8  9900.2    1063  9903.4
GR1050.5    9940  1049.3  9955.3  1049.7  9979.1  1048.5  9992.6  1049.8   10044
GR  1062   10070    1068   10165
HD12.042      30    7200   10165            1025    7200   10000
X112.359      73  9691.6 10061.0    1520    1680 1672.99
XL                      7600   10200
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      30    6700   10200            1030    7200   10000
   ****************UPSTREAM LIMIT OF GLENDALE-1*******************************
   ****************************************************************************
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                      7000    1066 10782.8    1066
XL                      7950   10200
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR[redacted]5.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
G[redacted]060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR[redacted]1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
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GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
G  1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
G  1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42      15    7200   10150
NC  .045    .040    .035     0.1     0.3
    **************DOWNSTREAM LIMIT OF NORTHERN-1 ******************************
    *************DID NOT INCLUDE IN SAND AND GRAVEL MODEL AS PROPOSED PIT********
    *************IS OUTSIDE 100-YEAR FLOODPLAIN LIMITS ACCORDING TO LOMR*********
    ********************************************************************************
X1 12.47      89  9382.2 10296.2     230     240     255
X3                       7298.5    1066 11052.3    1066
XL                       9382.2 10296.2
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47      10    7500 10296.2
X112.816      94  9781.2 10376.3    1780    1850 1859.04
X3                       8483.3    1068   10488    1068
XL                       9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR1068.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
G  9.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR 0.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816      10    7500   10375
   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007      94  9767.1 10186.1    1000    1030 1006.76
X3                       8750    1072   10239    1072
XL                       9150 10186.1
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
GR1072.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
G  0.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007      10    8800   10186
NC  .045    .045    .035     0.3     0.5
   **********UPSTREAM LIMIT OF NORTHERN-1*****************************************
   ********************************************************************************
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    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467       89  8693.6 10286.7  2400.4  2425.4  2429.7
X3    10
G[illegible]0.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
G[illegible]5.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467      10  8693.6 10286.7
NC                      0.1     0.3
X113.952       93  9432.8 10076.3    2525    2585 2566.36
X3    10
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR[illegible]3.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
G[illegible]8.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR[illegible]0.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952      10    7200   10600
X114.430       95  9171.4 10301.1    2175    2625 2523.57
X3                    7800    1093  109841    1093
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
GR1092.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
GR1093.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
GR1092.0  8194.9  1091.5  8233.1  1092.1  8266.0  1092.1  8279.7  1088.9  8296.7
GR1087.9  8349.4  1088.0  8356.7  1090.6  8393.8  1090.6  8428.0  1092.7  8449.0
GR1092.3  8510.5  1091.7  8551.5  1089.9  8570.9  1091.7  8660.6  1092.0  8710.6
GR1091.9  8760.6  1091.0  8810.6  1090.8  8860.6  1089.9  8937.3  1089.9  8990.6
GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
GR1089.0  9184.9  1085.7  9213.3  1086.2  9236.5  1083.2  9251.1  1083.8  9327.2
GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
GR1086.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7  1093.2 10940.6  1093.8 10984.2
HD14.430      10    8800 10301.1
X115.000       93  9346.3 10081.6    2700    3130  3009.7
X3    10
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
GR1094.7  9835.6  1093.9  9875.1  1091.8  9911.5  1091.4  9946.6  1092.3  9974.0
GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
GR[illegible]6.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
G[illegible]4.0 10495.3  1100.0 10526.1  1100.6 10561.4  1101.1 10679.6  1101.4 10895.6
GR1101.2 10958.4  1101.8 11017.3  1101.4 11192.8  1101.3 11274.2  1100.7 11355.6
GR1099.3 11392.9  1098.1 11400.2  1096.6 11405.2  1096.5 11410.1  1097.8 11419.6
GR1098.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
GR1100.2 11466.1  1097.6 11479.7  1097.3 11498.8  1099.1 11540.6  1099.9 11574.4
GR1099.9 11593.7  1101.2 11685.2  1101.1 11736.6  1101.7 11756.7  1101.5 11782.1
GR1102.6 11787.3  1102.1 11802.9  1100.2 11815.5  1100.5 11836.4  1098.5 11890.8
GR1098.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
GR1100.7 12125.7  1102.8 12147.6  1103.6 12163.7  1103.8 12179.4  1101.5 12212.6
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GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
G[ ]04.2 12758.9  1103.7 12782.7  1104.1 12821.1
H[ ].000      10  9346.3   10550
X115.094      93  9336.0 10125.1     495     495  496.49
X3                      9234.4    1102   11152    1102
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
GR1098.7  9317.6  1099.1  9336.0  1093.7  9355.8  1092.1  9366.0  1093.0  9426.0
GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
GR1096.4 10911.4  1097.7 10930.8  1100.9 10959.2  1100.7 10987.0  1102.5 11002.3
GR1102.3 11152.4  1101.1 11308.7  1100.6 11317.7  1099.8 11395.4  1100.0 11416.9
GR1098.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
GR1102.6 12022.7  1102.6 12073.5  1099.0 12224.6  1098.4 12273.7  1099.4 12426.5
GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   10400
NC  .040    .045    .035
X115.374      92  9832.4 10085.5    1650    1260 1478.26
X3                      9822    1106   10770    1106
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
GR1096.2 10025.3  1098.6 10044.5  1101.9 10085.5  1103.7 10130.8  1100.9 10141.2
GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR[ ]01.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
G[ ]2.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR[ ]99.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
GR1103.5 11613.3  1104.1 11633.1  1104.6 11679.6  1104.4 11729.7  1104.3 11830.0
GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   11650
NC  .040    .040    .035
            -----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719      91  9885.3 10059.7    1950    1635 1824.01
X3                      9385.2    1111   10150    1111
GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
X[ ].099      92  9804.0 10081.1    2010    2005 2002.13
X[ ]                    9192    1178   10300    1178
X[ ]                    9200   10200
GR1132.1  9191.9  1126.8  9200.4  1111.0  9233.0  1104.9  9259.9  1105.0  9274.3
GR1104.8  9282.4  1106.9  9313.0  1108.3  9366.1  1109.2  9418.0  1109.2  9466.8
GR1110.2  9517.2  1109.5  9549.3  1109.5  9567.6  1108.4  9606.1  1105.8  9624.0
GR1106.1  9629.4  1106.4  9668.4  1106.2  9694.8  1106.5  9705.3  1107.2  9716.8
GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
GR1102.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
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GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
G[redacted]4.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
G[redacted]4.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
GR1113.5 11456.5  1111.4 11479.4  1111.7 11481.5  1113.2 11504.1  1113.1 11516.6
GR1112.4 11531.3  1112.5 11549.4  1113.1 11567.8  1113.4 11729.2  1113.2 11911.4
GR1113.5 12079.2  1113.9 12179.2  1114.1 12304.0  1114.4 12329.3  1114.1 12501.3
GR1113.9 12675.5  1114.0 12727.4  1114.2 12746.8  1114.1 12929.3  1114.6 13041.6
GR1115.1 13090.7  1115.1 13122.1
HD16.099      10    9200   10200
NC                     0.3     0.5
X116.482      90  9781.9 10219.8    1980    2160 2026.23
X3                   9750  1127.5   10290  1127.5
XL                   9600   10500
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
GR1139.3  9451.2  1138.5  9456.3  1137.2  9528.1  1136.8  9537.1  1137.1  9563.8
GR1136.6  9616.0  1135.9  9622.7  1134.7  9645.4  1133.3  9704.0  1131.9  9731.2
GR1130.9  9750.4  1130.6  9765.2  1126.1  9774.7  1122.1  9781.9  1117.0  9795.4
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GR1107.7  9931.8  1105.6  9947.6  1105.8  9985.2  1108.0 10015.1  1109.8 10086.8
GR1108.8 10140.7  1109.1 10210.9  1117.6 10219.8  1119.6 10222.0  1120.1 10266.0
GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR1123.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
GR1121.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
GR1118.8 10994.6  1118.6 11064.6  1118.2 11105.9  1117.3 11151.7  1116.3 11206.3
GR1116.2 11210.6  1117.1 11245.1  1116.8 11253.8  1117.1 11286.7  1118.3 11329.8
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GR1120.2 11569.8  1120.5 11673.4  1120.6 11689.2  1120.7 11754.4  1121.0 11817.9
GR1121.1 11822.8  1122.0 11961.4  1122.4 11986.6  1122.8 12071.0  1123.0 12098.0
GR1123.1 12149.2  1123.1 12151.2  1123.2 12191.5  1124.0 12254.5  1124.0 12264.5
HD16.482      10  9781.9   10220
X116.506      72  9768.0 10245.4     125     125  126.72
X3    10
XL                   9500   10300
G[redacted]3.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
GR[redacted]40.0  9334.9  1139.6  9379.4  1139.0  9386.3  1138.3  9448.3  1138.4  9482.6
GR1138.0  9525.0  1137.9  9526.8  1136.5  9625.1  1135.2  9710.2  1135.3  9731.2
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GR1105.6  9939.1  1105.9  9960.5  1105.8  9970.9  1106.6  9982.4  1108.1 10007.8
GR1109.2 10031.5  1110.0 10081.1  1110.5 10104.0  1110.0 10129.9  1110.1 10176.4
GR1110.7 10177.1  1113.8 10221.4  1122.4 10245.4  1122.5 10247.4  1123.5 10250.2
GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506      10    9700   10300
    **************DOWNSTREAM END OF GRAND-1***********************************
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NC  0.05    0.05    0.04     0.1     0.3
X116.612      84  9808.2 10161.2     627     342     581
X3                   9793    1124   10286    1124
XL                 9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR[redacted]19.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
G[redacted]8.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      25   10090   10800            1090   10090   10700
NC  0.05    0.05    0.04     0.1     0.3
X116.990      82  9810.0 10135.4    1990    1985    1993
X3                   9725    1130   10150    1130
XL                   9800   12400
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
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GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
G[redacted]3.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
G[redacted]8.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990      25    9800   12650            1090   10100   12650
X117.458      92  9370.6 10225.3    3035    1705 2468.67
X3                        8808    1132   10334    1132
XL                        9000   11800
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR[redacted]3.3 14132.7  1133.3 14165.7
H[redacted]458      30    8740   12500            1090    8740   12500
     ***************DOWNSTREAM END GREENWAY-1*********************************
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X117.638      89  9774.7 10288.4     955     895  949.45
X3                        8744    1136   10386    1136
XL                        9100   11100
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106,4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638      25    8800   12580            1105    8800   12580
NC 0.045    0.05   0.035
X117.821      92  9764.8 10227.7     950     970  964.24
X3                        8350    1140   10270    1140
XL                        8600   10800
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR[redacted]1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
G[redacted]1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
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GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
H[redacted]821      25    8170   11800            1107    8185   11800
   ***********UPSTREAM END OF GRAND-1*************************************
   ****************************************************************************
X118.275      93  9752.1 10210.5    2170    2440 2398.82
X3                         8750    1144   10715    1144
XL                         8800   10650
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0  1149.4 13000.0
HD18.275      25    8010   12900            1120    8010   12900
X118.839      92  9787.8 10337.0    2635    3185 2882.75
X3                         9250    1156   10375    1156
XL                         9300   10350
GR1159.3  8035.3  1160.1  8038.6  1154.0  8081.5  1152.0  8142.0  1151.8  8165.7
GR1145.2  8172.5  1142.4  8175.7  1135.6  8182.7  1126.5  8192.5  1119.8  8199.1
GR1119.8  8265.6  1136.1  8284.0  1141.6  8289.5  1151.1  8298.1  1150.6  8339.2
GR1152.4  8343.3  1147.4  8393.6  1149.7  8415.2  1150.8  8439.6  1151.2  8443.4
GR1149.9  8483.6  1144.3  8492.4  1143.1  8504.6  1142.9  8518.4  1143.5  8526.7
GR1143.5  8539.0  1141.4  8542.8  1138.4  8549.1  1139.2  8560.7  1139.1  8569.3
GR1143.3  8578.2  1146.8  8592.3  1149.9  8594.8  1150.7  8597.1  1150.7  8600.4
G[redacted]8.7  8619.6  1148.7  8627.7  1149.8  8634.1  1151.3  8649.9  1151.6  8695.7
GR[redacted]0.9  8746.0  1150.6  8796.3  1149.1  8837.3  1149.4  8854.9  1151.4  8869.2
GR1152.3  8960.5  1152.0  8966.7  1148.3  9004.8  1150.0  9017.9  1151.0  9023.1
GR1147.6  9041.7  1147.0  9087.8  1149.7  9104.9  1149.5  9108.5  1149.7  9149.0
GR1150.7  9199.0  1151.4  9285.5  1151.8  9359.0  1154.0  9367.0  1154.7  9374.4
GR1151.2  9388.1  1151.3  9420.2  1150.0  9435.1  1149.5  9446.3  1151.6  9476.4
GR1150.9  9511.1  1150.8  9556.2  1151.8  9665.4  1152.1  9705.2  1152.8  9716.6
GR1148.6  9747.1  1147.5  9774.5  1149.2  9787.8  1147.8  9825.0  1145.3  9845.2
GR1145.1  9901.6  1147.0  9913.2  1146.0  9962.2  1145.0 10056.4  1144.6 10160.9
GR1145.3 10164.0  1146.7 10168.0  1146.8 10189.4  1146.1 10196.0  1145.1 10199.7
GR1144.9 10310.7  1146.1 10321.9  1147.1 10325.1  1147.5 10331.4  1150.1 10337.0
GR1152.2 10340.5  1159.1 10354.4
HD18.839      25    8150   10350            1120    8150   10250
    *****************UPSTREAM END OF GREENWAY-1*******************************
    ****************************************************************************
NC                          0.3     0.5
            -------------BELL ROAD-----------
X118.962      74    9840 10223.7     540     700  644.97
X3                         9391    1156   10535    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962      10    9440   10480
NC[redacted].045    .045    .035
X[redacted]066      93  9885.7 10349.1     485     580  551.29
X3    10
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
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GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR[illegible]54.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
G[illegible]50.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066      10  9302.8   10398
NC 0.045   0.045   0.035     0.1     0.3
X119.446      91  9592.8 10078.6    1840    2400 2473.39
X3    10
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
       ---------UNION HILLS--------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X3    10
G[illegible]8.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR[illegible]6.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3    10
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
G[illegible]8.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR[illegible]5.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
   ***************DOWNSTREAM END OF BEARDSLEY-1*****************************
   ************************************************************************
X120.958      90  9787.3 10383.8    1815    2044 2006.06
X3                      8780    1188   10760    1188
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XL                          9250   10750
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
G[redacted]78.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
G[redacted]82.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      35    8600   10750            1145    8600    9150
          ----------BEARDSLEY----------
X121.061      91  9850.0 10325.4     340     655  542.53
X3                        9200    1188   11045    1188
XL                        9200   11000
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR[redacted]85.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
G[redacted]5.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
G[redacted]86.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      30    8800   10100            1150    8800   10100
NC  .055    .055    .050
X121.157      94  9377.3 10376.3     340     630  509.07
X3                        9266.8    1190   11150    1190
XL                        9300   10800
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157      30  9377.3 10398.0            1149    9050   10500
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                        9350    1193   10343    1193
XL                        9100   11200
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR[redacted]96.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
G[redacted]6.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR[redacted]99.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
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GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      35  9190.7 10769.6            1150    7600   10570
NC  .045  .055    .035
     *********UPSTREAM END OF BEARDSLEY -1**************************************
     *********LOCATION OF ROSE GARDEN -1**************************************
     ********************************************************************************
X121.893      93  9558.8 10146.5    2525    2070 2442.15
X3                       9546    1200   11050    1200
XL                       9604   12000
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893      30  9558.8 10758.1            1160    9547   10700
       -------UPSTREAM OF DEER VALLEY ROAD--------
   ***********DOWNSTREAM END OF DEER VALLEY-1S, 1N, AND DEER VALLEY-2***********
   ********************************************************************************
X122.177      89  9909.7 10533.6    1425    1520 1500.23
X3                       8765.7    1206   10650    1206
XL                       8850   11100
GR1207.0  8765.7  1207.1  8786.8  1204.9  8844.5  1203.0  8855.1  1199.5  8865.5
GR1199.8  8878.3  1197.7  9076.9  1201.5  9111.1  1201.8  9131.3  1203.9  9160.3
GR1204.1  9366.4  1203.1  9432.5  1200.7  9451.7  1202.2  9529.3  1201.7  9586.2
GR1202.1  9705.0  1200.6  9773.2  1199.6  9909.7  1197.1 10001.3  1196.9 10057.0
GR1196.2 10078.7  1201.5 10089.5  1196.9 10231.7  1196.0 10350.6  1196.0 10510.5
GR1200.7 10533.6  1197.5 10557.0  1194.4 10565.7  1197.7 10653.0  1196.0 10668.4
GR1193.8 10790.9  1194.5 10950.2  1197.8 10965.9  1202.7 10979.9  1202.4 11012.5
GR1201.0 11024.0  1201.8 11036.9  1212.9 11068.5  1203.3 11092.5  1202.5 11126.9
GR1202.8 11163.1  1207.3 11173.2  1206.9 11197.3  1205.9 11206.1  1207.0 11344.6
GR1210.4 11352.1  1213.2 11360.4  1207.1 11376.6  1207.1 11600.9  1208.7 11813.7
GR1213.6 11826.7  1214.6 11832.4  1212.5 11856.3  1214.4 11897.1  1212.8 11966.7
GR1214.0 12077.6  1211.0 12191.7  1212.2 12252.6  1211.1 12304.1  1211.6 12311.6
GR1210.8 12326.4  1213.5 12334.0  1206.8 12349.9  1206.8 12409.5  1212.7 12439.6
GR1212.4 12476.5  1206.8 12489.2  1206.8 12564.8  1211.1 12576.8  1209.7 12583.4
GR1207.7 12667.9  1213.9 12678.3  1214.7 12678.9  1214.2 12696.7  1210.2 12709.6
GR1208.5 12713.4  1208.1 12737.7  1220.1 12763.9  1219.5 12790.0  1216.3 12811.3
GR1219.0 12823.9  1216.4 12834.3  1212.8 12843.9  1213.0 12857.8  1211.9 12881.8
GR1209.2 12892.3  1208.1 12903.1  1220.1 12936.6  1220.4 12953.7
HD22.177      25    8850   11500            1190    9800   11500
NC  .045    .045    .035
X122.462      77  9887.4 10318.9    1530    1400 1478.14
X3    10
XL                       9050   10800
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462      35  9050.4   12200            1170   10800   12200
XS22.745      92  9797.7 10147.8    1520    1270 1491.33
X3    10
XL                       8910   11000
GR1225.1  8903.1  1207.9  8919.7  1208.2  8963.5  1207.5  9060.1  1207.7  9092.9
GR1206.4  9114.7  1206.1  9143.1  1208.9  9172.4  1211.8  9209.3  1212.0  9328.1
GR1211.9  9402.0  1212.9  9418.9  1212.4  9534.3  1211.5  9563.3  1211.0  9595.9
GR1211.2  9640.5  1210.6  9677.3  1210.8  9692.3  1209.6  9711.3  1209.4  9723.7
GR1211.0  9745.9  1211.9  9797.7  1211.1  9835.1  1208.8  9954.1  1207.1  9981.3
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GR1207.0 10008.3  1206.3 10036.6  1207.2 10049.9  1207.2 10119.2  1210.2 10147.8
GR1210.8 10219.0  1210.4 10251.5  1211.9 10260.4  1211.3 10309.2  1211.7 10324.5
GR1212.5 10377.1  1211.5 10388.9  1212.2 10429.8  1212.2 10482.5  1211.9 10494.4
G[redacted]10.2 10515.1  1210.5 10539.3  1212.7 10587.8  1212.6 10693.2  1212.4 10746.0
G[redacted]12.9 10851.1  1210.4 10874.3  1210.1 10904.0  1212.0 10941.3  1212.2 10956.6
GR1211.7 11009.3  1211.2 11028.1  1212.9 11064.9  1212.4 11099.8  1210.7 11127.4
GR1212.4 11180.0  1212.7 11259.2  1212.5 11272.7  1212.8 11327.7  1209.3 11351.0
GR1208.3 11378.9  1207.9 11394.3  1206.2 11399.0  1207.0 11430.8  1206.0 11521.2
GR1209.3 11533.2  1209.6 11536.1  1210.0 11641.5  1210.0 11668.6  1208.1 11687.0
GR1210.0 11694.4  1209.8 11721.1  1210.6 11746.8  1211.1 11799.5  1210.6 11904.9
GR1210.8 11957.6  1210.1 12011.8  1209.3 12027.9  1209.6 12051.8  1211.3 12062.3
GR1211.9 12081.2  1212.6 12088.4  1213.4 12113.3  1214.8 12123.8  1214.9 12168.3
GR1215.3 12220.9  1215.3 12248.1  1215.9 12273.6  1216.2 12326.3  1217.0 12371.3
GR1222.8 12402.3  1222.5 12409.2
HD22.745      25    8910   12200            1195   11050   12200
   ************UPSTREAM END OF DEER VALLEY SAND AND GRAVEL MINES***************
   ************************************************************************
   ************DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, AND 3E***************
   ************************************************************************
X122.935      94  9530.2 10351.6    2480    2125 2490.47
X3    10
XL                        8400   10750
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
G[redacted]7.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
G[redacted]25.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      30  8492.7   12000            1208   10920   12000
        ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      93  9675.2 10060.2    2450    2360 2505.26
X3                        9550    1226 12265.5    1226
XL                        8700   11160
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12250
HD23.409      30  8173.3   12200            1210   11160   12200
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X3                        9650    1230 11533.8    1230
XL                        9670   11450
GR1249.2    6690  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
G[redacted]2.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR[redacted]91.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
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GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR1228.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
G[redacted]6.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
G[redacted]238 11521.1  1237.8 11533.8
HD23.692       35    7000   11450           1190    7000    9700
NC  .055    .055    .050
X123.974       94  9716.2 10115.2    1420    1470 1489.37
X3                      9716    1238 11204.9    1238
XL                      9716   11200
GR1269.8     7400  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974       40  7400.0 10388.9           1190    7400   10280
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
    ********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, 3E**********************
    ************************************************************************
NC  .045    .045    .035
X124.449       92  9496.2 10169.3    2380    2560 2506.65
X3    10
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR[redacted]247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
G[redacted]5.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR[redacted]39.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449       10  7898.5 11143.3
     ----------UPSTREAM OF HAPPY VALLEY ROAD----
X124.543       91  9646.7 10243.6     495     495  500.50
X3    10
XL                      9300   10400
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR[redacted]39.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
G[redacted]9.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR[redacted]41.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543       10    7240 11413.5
NC   .05     .05    .035
X124.996       96  9774.0 10632.3    2320    2330 2388.18
X3    10
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
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GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
G[redacted]3.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
G[redacted]9.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
GR1250.9 12975.2  1250.9 13009.4  1248.8 13019.0  1250.7 13059.6  1254.0 13074.1
GR1270.0 13110.8
HD24.996      10  9632.6 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478      93  9750.7 10127.1    2600    2485 2546.34
X3    10
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
G[redacted]0.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR[redacted]60.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478      10  9750.7 10598.2
          ----------UPSTREAM OF JOMAX ----------
X125.666      66  9842.4 10115.1    1035     975  995.18
X3    10
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666      10  9854.2 10388.0
X1 25.86      25    9940   10200    1575    1565    1585
X3    10
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86      10    8300   10200
     ***************DOWNSTREAM LIMIT OF PINNACLE VISTA-1*************************
     ******************************************************************************
NC  0.06   0.065   0.035
X1 25.94    22.0    9945   10117     450     420     430
X3    10
X[redacted]                  8000   10000
GR[redacted]76.1    7527    1273    7678  1273.9    7868  1272.1  8087.0  1270.3  8382.0
GR1270.3  8578.0  1268.1  8600.0  1271.4  8631.0  1271.2  8762.0  1270.1  9101.0
GR1267.2  9241.0  1271.2  9532.0  1269.2  9945.0  1264.2 10000.0  1267.0 10117.0
GR1263.4 10185.0  1270.1 10242.0  1270.3 10425.0  1269.7 10480.0  1269.0 10780.0
GR1276.0 11050.0  1276.0   12000
HD 25.94      30    8000   11970            1245    9950   11970
X1 26.29    26.0    9696   10120    1640    1875    1810
X3    10
```

```
XL                          8200   10890
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR[redacted]71.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
G[redacted]75.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13300.0
HD 26.29      30     8200   13250            1255   10890   13250
NC  0.06    0.07   0.035
X1 26.63    22.0     9792   10187    1800    1840    1840
X3    10
XL                          9200   11850
GR1310.9  9050.0  1310.0  9116.0  1288.0  9208.0  1286.8  9488.0  1282.7  9510.0
GR1282.7  9641.0  1284.1  9792.0  1279.5 10000.0  1281.8 10187.0  1280.9 10467.0
GR1279.4 10741.0  1282.9 10861.0  1283.0 11016.0  1285.4 11057.0  1285.6 11351.0
GR1283.8 12475.0  1286.4 13757.0  1288.6 13810.0  1348.8 13939.0  1348.8 13956.0
GR1345.6 13961.0  1345.6 14400.0
HD 26.63      30     9200   14370            1260   11850   14370
    ******************UPSTREAM LIMIT OF PINNACLE VISTA-1************************
    ***************************************************************************
X1 26.73    31.0     9898   10125     460     470     490
X3    10
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73      10     9400   11200
X1 27.03    23.0     9922   10079    1660    1020    1590
X3    10
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03      10     9700   10600
NC 0.055   0.055   0.035
[redacted]******************DOWNSTREAM END OF DIXLETA-1*************************
    ***************************************************************************
X1 27.48    36.0     9894   10087    2860    2160    2390
X3    10
XL                          7710   10080
GR1357.7  6865.0  1350.6  6903.0  1350.2  6923.0  1301.6  7048.0  1299.7  7138.0
GR1300.5  7579.0  1295.1  7603.0  1296.8  7764.0  1298.1  7834.0  1294.2  7891.0
GR1294.1  7961.0  1296.5  8010.0  1293.8  8054.0  1296.9  8084.0  1295.1  8126.0
GR1297.8  8226.0  1296.0  8427.0  1297.8  8611.0  1297.0  8717.0  1295.9  8742.0
GR1294.5  8960.0  1297.5  9033.0  1298.6  9348.0  1295.3  9547.0  1296.3  9669.0
GR1297.6  9742.0  1295.2  9753.0  1294.9  9894.0  1291.5 10000.0  1292.8 10087.0
GR1292.8 10157.0  1301.9 10203.0  1301.3 10736.0  1301.9 11132.0  1323.3 11258.0
GR1324.8 11319.0
HD 27.48      35     7030   10080            1260    7030    7710
X1 27.68    35.0     9853   10078    1260    1040    1040
X3    10
XL                          7850   10200
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68      35     7270   10800            1265    7270    7850
X1 27.94    24.0     9944   10187    1370    1415    1405
X3    10
XL                          8380   10300
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94      35     7850   10200            1265    8020    8380
    ****************UPSTREAM LIMIT OF DIXLETA-1*******************************
    ***************************************************************************
X[redacted].12    27.0     9906   10076     990     960     950
X3    10
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
HD 28.12      10     8750   11300
```

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X1 28.67    37.0    9964   10192    2785    2925    2885
X3                   9450  1322.3   11202  1322.3
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR[illegible]12.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR[illegible]20.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67      10    9900   11100
X1 28.95    34.0    9946   10353    1550     940    1465
X3    10
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95      10    9946   12000
X1 29.04    34.0    9828   10239     550     330     510
X3    10
GR1360.0    9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04      10    9800   11700
X1 29.54    30.0    9846   10150    2750    2235    2640
X3    10
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
H[illegible].54      10    9210   10200
X1[illegible].611    31.0    9791   10094     315     315     375
X3    10
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611      10    9000   10200
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025
X3    10
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80      10    9882   10600
X1 30.07    17.0    9925   10098    1425    1440    1420
X3    10
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07      10    9600   10300
X1 30.26    12.0    9749   10135     870    1090    1005
X3    10
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26      10    9700   10250
X1 30.73    14.0    9881   10075    2455    2470    2460
X3    10
XL                   9850  10250
GR[illegible]69.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
G[illegible]2.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR[illegible]57.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73      10    9850   10250
X1 30.82    12.0    9924   10201     500     370     500
X3    10
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD 30.82      10    9900   10400
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X1 31.39    17.0    9792   10080    2900    3165    2970
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
G[redacted]6.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
G[redacted]8.6 10528.0  1407.9 10633.0
HD 31.39      10    9550   10400
X1 31.86    10.0    9894   10261    2550    2485    2505
X3    10
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86      10    9500   10300
NC 0.045   0.050   0.045
X1 32.43    14.0    9852   10112    2885    2970    2980
X3    10
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43      10    9450   10200
X1 32.72    28.0    9879   10150    1725    1145    1535
X3                   9435  1408.2   10524  1408.2
XL                   9600   10500
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72      10    9600   10700
X1 32.86    12.0    9928   10155     680     990     760
X3    10
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86      10    9800   10200
X1 32.92     9.0    9891   10143     290     370     310
X3                   9680    1390   10180    1390
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92      10    9890   10180
[redacted]----------STATE ROUTE 74---------
X[redacted].984      33    9962   10011     338     358     343
X3    10
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       0       0       0
X132.998     9.0    9962   10108      72      72      72
     ----------**********----------
X3    10
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
      ----------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170
X3    10
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10    9900   10400
X1 33.82    20.0    9861   10068    2165    2220    2175
X3    10
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82      10    9600   10200
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T5    NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T6    BED GRADATIONS FROM FIELD SAMPLES
T[redacted]   FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1             1       0
I4             4       1      10
LQ          5000    7000   17000   55000
LT          6457   10880   33475  146960
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
LF    MS 0.21035 0.22940 0.21429 0.21542
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LF     CS 0.23112 0.22521 0.22541 0.25124
LF    VCS 0.36207 0.32486 0.38978 0.39271
LF    VFG 0.00367 0.00255 0.00203 0.00119
LF     FG 0.00683 0.00452 0.00379 0.00284
LF     MG 0.01083 0.00681 0.00677 0.00652
LF     CG 0.00587 0.00134 0.00686 0.01048
LF    VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF        1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF        2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF        3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF        4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF        5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075       2
PF        5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF        6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18      82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075       1
PF        8.000       1      19    12.5      99     9.5      98     6.3      96
P     .75     95    2.36      91       2      90    1.18      79     0.6      54
P     .425    37     0.3      22    0.15       5   0.075       3
PF        8.992       1      50    37.5      98      25      97      19      95
PFC 12.5      94     9.5      91     6.3      88    4.75      85    2.36      80
PFC    2      78    1.18      67     0.6      44   0.425      29     0.3      18
PFC 0.15       8   0.075       5
PF        9.885       1      50    37.5      99      25      94      19      92
PFC 12.5      90     9.5      89     6.3      87    4.75      86    2.36      82
PFC    2      79    1.18      65     0.6      30   0.425      16     0.3      11
PFC 0.15       7   0.075       5
PF       11.029       1      50    37.5      99      25      96      19      93
PFC 12.5      88     9.5      83     6.3      77    4.75      73    2.36      66
PFC    2      62    1.18      46     0.6      18   0.425       9     0.3       6
PFC 0.15       2   0.075       0
PF       11.428       1    37.5      25      98      19      93    12.5      86
PFC  9.5      81     6.3      73    4.75      67    2.36      61       2      59
PFC 1.18      48     0.6      33   0.425      27     0.3      24    0.15      20
PFC0.075      18
PF       12.470       1      50    37.5      95      25      88      19      82
PFC 12.5      75     9.5      70     6.3      64    4.75      61    2.36      48
PFC    2      46    1.18      35     0.6      18   0.425       9     0.3       4
PFC 0.15       1   0.075       0
PF       13.467       1    37.5      25      99      19    98.5    12.5      98
PFC  9.5      97     6.3    96.5    4.75    96.2    2.36    96.1       2      96
PFC 1.18      93     0.6      79   0.425      58     0.3      33    0.15       7
PFC0.075       1
PF       14.430       1    37.5      25      99      19      99    12.5      99
PFC  9.5      99     6.3      99    4.75      98    2.36      95       2      93
PFC 1.18      80     0.6      46   0.425      25     0.3      13    0.15       4
PFC0.075       2
PF       15.719       1    62.5    37.5      88      25      85      19      80
PFC 12.5      76     9.5      73     6.3      69    4.75      66    2.36      62
PFC    2      59    1.18      45     0.6      28   0.425      23     0.3      21
PFC 0.15      13   0.075       5
PF       16.482       1      25      19      99    12.5      97     9.5      96
PFC  6.3      92    4.75      90    2.36      85       2      81    1.18      62
P     0.6     24   0.425       9     0.3       4    0.15       1   0.075       0
PF       16.612       1      75    37.5      92      25      85      19      80
PFC 12.5      73     9.5      70     6.3      65    4.75      62    2.36      49
PFC    2      44    1.18      29     0.6      16   0.425      11     0.3       6
PFC 0.15       2   0.075       1
PF       16.990       1      50    37.5      98      25      95      19      93
PFC 12.5      91     9.5      90     6.3      88    4.75      87    2.36      84
PFC    2      82    1.18      75     0.6      58   0.425      41     0.3      22
PFC 0.15       5   0.075       2
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PF        17.821        1       50     37.5       92       25       85       19       73
PFC 12.5      60      9.5       53      6.3       47     4.75       44     2.36       36
PFC    2      34     1.18       25      0.6       12    0.425        6      0.3        3
P[redacted].15       1    0.075        0
P[redacted]       18.275        1       50     37.5       94       25       83       19       76
PFC 12.5      66      9.5       59      6.3       50     4.75       45     2.36       39
PFC    2      36     1.18       27      0.6       19    0.425       15      0.3       13
PFC 0.15      11    0.075        9
PF        18.962        1     62.5     37.5       87       25       75       19       70
PFC 12.5      63      9.5       59      6.3       54     4.75       50     2.36       45
PFC    2      43     1.18       34      0.6       19    0.425       11      0.3        5
PFC 0.15       1    0.075        0
PF        19.920        1       50     37.5       96       25       87       19       82
PFC 12.5      75      9.5       70      6.3       65     4.75       61     2.36       53
PFC    2      50     1.18       35      0.6       14    0.425        7      0.3        5
PFC 0.15       2    0.075        1
PF        21.061        1     62.5     37.5       85       25       76       19       69
PFC 12.5      59      9.5       53      6.3       45     4.75       40     2.36       34
PFC    2      32     1.18       25      0.6       15    0.425       11      0.3        9
PFC 0.15       6    0.075        5
PF        21.893        1       50     37.5       98       25       98       19       92
PFC 12.5      83      9.5       77      6.3       68     4.75       63     2.36       51
PFC    2      46     1.18       27      0.6       10    0.425        5      0.3        3
PFC 0.15       1    0.075        1
PF        22.462        1     62.5     37.5       91       25       83       19       78
PFC 12.5      73      9.5       68      6.3       62     4.75       58     2.36       48
PFC    2      45     1.18       32      0.6       15    0.425        7      0.3        3
PFC 0.15       0    0.075        0
PF        23.409        1     62.5     37.5       91       25       83       19       75
PFC 12.5      66      9.5       61      6.3       54     4.75       51     2.36       44
PFC    2      42     1.18       32      1.6       18    0.425       11      0.3        6
PFC 0.15       2    0.075        2
PF        24.543        1     62.5     37.5       84       25       76       19       70
PFC 12.5      64      9.5       60      6.3       54     4.75       52     2.36       47
PFC    2      45     1.18       36      0.6       21    0.425       13      0.3        9
PFC 0.15       4    0.075        2
PF        25.666        1       50     37.5       97       25       88       19       81
PFC 12.5      74      9.5       69      6.3       64     4.75       61     2.36       54
PFC    2      52     1.18       43      0.6       21    0.425        8      0.3        3
P[redacted].15       2    0.075        1
P[redacted]       25.860        1     37.5       25       98       19       96     12.5       91
PFC  9.5      87      6.3       80     4.75       74     2.36       56        2       46
PFC 1.18      27      0.6        7    0.425        3      0.3        2     0.15        2
PFC0.075       1
PF        26.290        1       19      9.5       98      6.3       97     4.75       92
PFC 2.36      84        2       80     1.18       22      0.6       18    0.425        6
PFC  0.3       3     0.15        2    0.075        2
PF        26.730        1       50     37.5       96       25       93       19       92
PFC 12.5      88      9.5       84      6.3       80     4.75       77     2.36       67
PFC    2      62     1.18       39      0.6       14    0.425        9      0.3        7
PFC 0.15       6    0.075        6
PF        27.680        1       50     37.5       99       25       97       19       92
PFC 12.5      88      9.5       85      6.3       78     4.75       73     2.36       61
PFC    2      56     1.18       34      0.6       10    0.425        5      0.3        3
PFC 0.15       3    0.075        3
PF        30.070        1       50     37.5       97       25       88       19       84
PFC 12.5      73      9.5       67      6.3       55     4.75       53     2.36       43
PFC    2      40     1.18       31      0.6       21    0.425       17      0.3       14
PFC 0.15      11    0.075        9
PF        30.820        1     37.5       25       99       19       97     12.5       95
PFC  9.5      94      6.3       90     4.75       89     2.36       86        2       85
PFC 1.18      76      0.6       61    0.425       50      0.3       35     0.15       11
PFC0.075       4
PF        31.860        1     37.5       25       94       19       92     12.5       91
PFC  8.5      90      6.3       89     4.75       88     2.36       88        2       88
PFC 1.18      86      0.6       74    0.425       60      0.3       43     0.15       17
PFC0.075       8
PF        32.430        1    32.64     2.36       99        2       98     1.18       95
PFC  0.6      84    0.425       69      0.3       52     0.15       25    0.075       12
PF        32.998        1     62.5     37.5       97       25       91       19       84
PFC 12.5      74      9.5       67      6.3       57     4.75       51     2.36       40
PFC    2      37     1.18       27      0.6       18    0.425       14      0.3       12
PFC 0.15      10    0.075        7
$LOCAL
LO[redacted]      0.1     1000     5000    10000    25000
L[redacted]       0.1     1094     6855    16015    51300
LF[redacted] VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL   FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL   MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL   CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL  VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL  VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL   FG 0.00076 0.00076 0.00197 0.00380 0.00293
LFL   MG 0.00056 0.00056 0.00028 0.00067 0.00050
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LFL   CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL  VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$HYD
$[redacted]TNG
R[redacted]          12    5000    5000          912.55  913.39   913.9  914.53   914.9
RC        915.38   915.8  916.05   916.3  916.70   917.0  917.24
          ***********RUN 30 DAYS OF 9,000 CFS ***********************
*   AB  TIME STEP NO 1
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 2
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 3
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 4
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 5
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 6
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 7
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 8
Q   9000
T     60
X           0.01       1
*[redacted]B  TIME STEP NO 9
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 10
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 11
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 12
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 13
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 14
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 15
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 16
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO  17
Q   9000
T     60
X           0.01       1
*[redacted]B  TIME STEP NO 18
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 19
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 20
```

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Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 21
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 22
Q   9000
T     60
X           0.01       1
*   AB TIME STEP NO 23
Q   9000
T     60
X           0.01       1
*   AB  TIM STEP NO  24
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 25
Q   9000
T     60
X         0.005        1
*   AB  TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 27
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 28
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 29
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 30
Q   9000
T     60
X           0.01       1
          *************SGM1.DAT******************
          ***DREDGE ALL MINES PRIOR TO 100-YEAR***
          ***HYDROGRAPH                      ****
          ****************************************
$DREDGEB
$NODREDGE
       -----100-YEAR HYDROGRAPH------
*   AB  TIME STEP NO 31
Q   9000     100
T     60      60
X          0.005    0.06
*        TIME STEP NO 32
Q   9000     100
W   0.01
*   AB  TIME STEP NO 33
Q   9000     800
X         0.0001    0.08
*        TIME STEP NO 34
Q   9000     800
W   0.01
*   AB  TIME STEP NO 35
Q  18000    7000
X           0.01    0.04
*        TIME STEP NO 36
Q  18000    7000
W   0.01
*   AB  TIME STEP NO 37
Q  36000   17000
X           0.01    0.06
*        TIME STEP NO 38
Q  36000   17000
W   0.01
*   AB  TIME STEP NO 39
Q  44000   20000
X           0.01    0.04
*        TIME STEP NO 40
Q  44000   20000
W   0.01
*   AB  TIME STEP NO 41
Q  54000   24000
X           0.01    0.04
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*       TIME STEP NO 42
Q  54000    24000
W   0.01
*   AB  TIME STEP NO 43
Q  52000    22000
X           0.01    0.04
*       TIME STEP NO 44
Q  52000    22000
W   0.01
*   AB  TIME STEP NO 45
Q  44000    18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000    18000
W   0.01
*   AB  TIME STEP NO 47
Q  30000    12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000    12000
W   0.01
*   AB  TIME STEP NO 49
Q  20000     8000
X          0.001    0.06
*       TIME STEP NO 50
Q  20000     8000
W   0.01
*   AB  TIME STEP NO 51
Q   9000     4000
X          0.001    0.13
*       TIME STEP NO 52
Q   9000     4000
W   0.01
*   AB  TIME STEP NO 53
Q   5500      500
X           0.01    0.33
*       TIME STEP NO 54
Q   5500      500
W   0.01
$
```

BRIDGE DATA					
BRIDGE	**HEC-RAS Sta.**	**Deck Elev.**	**Low Chord**	**No. of Piers**	**Scour Counter Measures**
Buckeye Rd	3.7405	974.4	967.0	14	
Van Buren Road	4.7565	992.8	960.3	9	2600 cy of rip rap at piers
I-10		994.4	987.7	19	
McDowell Rd	5.6945	1003.5	996.8	9	4078 cy of rip rap at abutments, 960 cy rip rap at piers
Indian School Rd	8.005	1021.3	1013.3	17	
Camelback Rd	9.184	1041.3	1031.8		
Glendale Ave	11.41	1065.4	1057.5	5	640 cy of dumped rip rap at western most pier
Olive Ave	13.4585	1098.2	1086.4		
Grand Ave - U.S. 60	16.494	1133.6	1126.6	3	dumped rip rap at the toe of slopes, no rip rap at piers
Santa Fe Railroad	16.516	1140.1	1129.9		
Bell Road	18.97	1177.0	1166.2	8	
Highway 74	32.9885	1432.3	1427.3	4	9500 cy of dumped rip rap at west abutment

AT-GRADE CROSSING DATA					
CROSSING	**HEC-RAS Sta.**	**Centerline Elev.**	**Length (ft)**	**Width (ft)**	**Scour Counter Measures**
Lower Buckeye Rd.	2.7	942.7	2000	48	
Northern Ave.	12.42	1054.0	~4600	48	
Rose Garden Ln.	21.798	1188.4	~1800	15	
Jomax	25.666	1257.8	~2100	12	

WATER CROSSING DATA					
CROSSING	**HEC-RAS Sta.**	**Centerline Elev.**	**Length (ft)**	**Width (ft)**	**Scour Counter Measures**
Beardsley Canal	29.6175	1353.98	1347		

Grade Control Location	HEC-6 Cross Sections (river mile)	Bed Sediment Reservoir Depth (ft)	Comments
Upstream Buckeye	4.0920	0	CVL HEC-2 Cross section
	4.0940	0	CVL HEC-2 Cross section
Downstream I-10	5.2010	0	CVL HEC-2 Cross section
	5.2030	0	CVL HEC-2 Cross section
Upstream McDowell	6.0680	0	Copied 6.07 section to upstream sill
	6.0700	0	CVL HEC-2 Cross section
Downstream Thomas	6.8880	0	Copied 6.89 section to upstream sill
	6.8900	0	CVL HEC-2 Cross section
Downstream Indian School	7.9880	0	Copied 7.99 section to upstream sill
	7.9900	0	CVL HEC-2 Cross section

Grade Control Structures

Number	Location	Length (ft)	Top Width (ft)	Top Elev. (ft)	Bottom Elev. (ft)	U/S Slope ('/ft)	D/S Slope ('/ft)	River mile	depth of gcs
1	Approx. 100 feet downstream of Indian School Rd.	1367	10	1000.00	982.00	0.0025	0.0019	7.988	18.00
2	Approx. 500 feet downstream of Thomas Rd.	1050	8	988.65	968.65	0.0024	0.0021	6.888	20.00
3	Approx. 1500 feet upstream of McDowell Rd.	1050	8	979.94	959.94	0.0021	0.0020	6.068	20.00
4	Approx. 500 feet downstream of I-10	1400	8	970.00	950.00	0.0020	0.0018	5.201	20.00
5	Approx. 1800 feet upstream of Buckeye Rd.	1100	8	958.50	936.50	0.0018	?	4.092	22.00

* Information for No. 1 is from a different set of plans than the other four

APPENDIX E
ENCROACHMENT HEC-6 MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

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T1       KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2       AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3       ENCH.DAT SEPT 18 2001  ENCROACHED FLOODWAY MODEL
     ********************************************************************************

     THIS ENCH.DAT MODEL IS BASED ON SGBASE50.DAT WHICH IS THE EXISTING CONDITIONS
     MODEL OF THE AGUA FRIA RIVER WITH 50% SEDIMENT INFLOW
     ENCH.DAT IS THE FULLY ENCROACHED HEC-6 SEDIMENT TRANSPORT MODEL OF THE
     AGUA FRIA RIVER. EACH CROSS SECTION IS ENCROACHED TO THE FLOODWAY LIMITS PER
     ENCROACHMENT STATIONS DEVELOPED IN THE FLOOD INSURANCE STUDY AND HEC-2 MDOEL BY COE & VAN LOO
     AND BY KHA/LTM HEC-RAS MODEL OF THE AGUA FRIA RIVER

     ********************************************************************************
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3                          9300     920   11600     920
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6  10136.   913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1  10590.   916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1  11265.   911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1  11911.   914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5  12758.   916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5  15403.   920.3 15459.0
HD  0.16      10    9300   11600
NC 0.045   0.10   0.035
X1  0.44    44.0    9798   10420    1510    1465    1485
X3                          8970     923   11640     923
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8970   11640
NC 0.048   0.074   0.035
X1  0.63    36.0    9888   10209    1055     985    1010
X3                          8970     926   11440     926
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8970   11440
NC 0.050   0.066   0.035
X1  0.73    39.0    9917   10162     510     490     500
X3                          8980     927   11280     927
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8980   11280
      ******************************************************
      ************BEGIN BROADWAY 1W AND 1E********************
NC 0.045    0.07   0.035
X1  1.01    35.0    9682   10471    1380    1375    1375
X3                          9300     930   11250     930
GR 928.9  4205.0   928.5  5661.0   929.2  6721.0   928.4  7602.0   928.7  8490.0
GR 928.7  8566.0   928.2  8695.0   928.3  8740.0   928.5  9048.0   928.6  9151.0
GR 928.8  9185.0   922.0  9235.0   921.8  9300.0   921.4  9400.0   924.5  9437.0
GR 924.9  9682.0   921.5 10000.0   921.2 10380.0   921.2 10405.0   924.0 10471.0
GR 924.0 10505.   924.0 10677.0   924.0 10694.0   924.0 10715.0   922.9 10733.0
GR 923.6 10830.   929.5 10849.0   924.2 10867.0   925.3 11259.0   930.4 11284.0
GR 930.4 11298.   924.4 11319.0   924.6 12194.0   929.7   13800   932.0   14000
HD  1.01      10    9300   11250             912   10400   10750
NC 0.045   0.077   0.035
X1  1.10    37.0    9719   10678     500     470     490
X3                          9450     931   11220     931
GR 929.3  6000.0   930.4  6858.0   929.4  7741.0   929.3  8585.0   929.3  8600.0
GR 929.6  8801.0   928.2  9000.0   931.4  9071.0   919.5  9267.0   920.8  9325.0
GR 923.6  9368.0   924.3  9660.0   923.6  9700.0   923.2  9719.0   922.5 10000.0
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GR 923.1 10141.0   923.0 10171.0   923.0 10387.0   923.0 10419.0   923.0 10556.0
GR 923.0 10595.0   925.5 10678.0   925.5 10729.0   924.0 10913.0   924.0 10941.0
GR 924.0 10966.0   924.7 11005.0   927.9 11017.0   927.9 11033.0   924.6 11128.0
G[redacted]29.4 11150.0   925.5 11188.0   925.5 11400.0   925.6 11660.0   926.3 12105.0
G[redacted]28.0   13150   930.3   13600
HD  1.10      10    9450   11220            912   10050   11300
NC 0.045   0.069   0.035
X1  1.17    25.0    9917   10654     560     490     540
X3                  9400     932   11020     932
GR 932.2  6215.0   929.9  7229.0   929.9  7805.0   929.7  8500.0   929.7  8639.0
GR 926.5  8784.0   927.1  9032.0   928.5  9439.0   926.8  9778.0   927.2  9917.0
GR 923.7  9929.0   923.6  9940.0   924.3 10000.0   923.6 10113.0   924.3 10142.0
GR 924.3 10608.0   926.6 10620.0   926.6 10654.0   924.0 10704.0   927.0 11220.0
GR 927.3 11266.0   926.6 11765.0   926.8 12280.0   930.3   13060   934.0   13150
HD  1.17      10    9400   11020
NC 0.045   0.069   0.035
X1  1.25    24.0    9974   10742     480     490     485
X3                  9200     933   10700     933
GR 933.2  6235.0   931.2  6887.0   932.2  8114.0   932.2  8340.0   932.2  8429.0
GR 927.9  8531.0   930.3  8831.0   927.5  9204.0   930.3  9306.0   929.1  9974.0
GR 926.2  9990.0   924.4 10000.0   924.4 10533.0   924.4 10571.0   924.4 10594.0
GR 924.4 10702.0   929.8 10742.0   930.1 11083.0   929.4 11240.0   928.7 11410.0
GR 928.5 12013.0   930.4 12109.0   936.0   12500   940.0   13000
HD  1.25      10    9200   10700
      ************END BROADWAY 1W AND 1E********************
      ***************************************************
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456     485     500     495
X3                  8853     935   10470     935
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8853   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X[redacted]                 8350     940   10285     940
G[redacted]40.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965
X3                  8410     942 10071.1     942
GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8 10079.1
HD  2.02      10    8410   10070
NC   .04     .04    .035
X1  2.60      26    9437   10850    2700    2945    3320
X3                  9300     950 11144.3     950
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60      10    9437   10850
X1  2.80      19    9200   11222    1250     655    1000
X3                  9160     952 11209.3     952
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR [redacted]43.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
G[redacted]5.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80      10    9160   10850
X1  3.27      17  9692.6 11130.5    2800    1995    2505
X3                  9692     955 11120.3     955
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27      10    9692 11120.3
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X1  3.37      17  9716.5 10970.3     585     460     510
X3                    9750     955 10952.4     955
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37      10    9750 10952.4
X1  3.43      12  9758.5 10873.4     925     795     850
X3                    9700     956 10856.9     956
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43      10    9700 10856.9
X1 3.729     6.0    9420   10603    1575    1585    1580
X3                  9422.4     962 10596.3     962
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729      10  9422.4 10596.3
NC                    0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
X3                  9407.8     962 10592.8     962
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734      10  9407.8 10592.8
X1 3.757     7.0    9425   10555     120     120     120
X3                  9436.8     962 10547.4     962
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757      10  9436.8 10547.4
X1 3.767      92  9428.1 10572.0      50      50      50
X3                  9441.2     962 10559.1     962
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767      10  9441.2 10559.1
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
X3                  9454.5     965 10566.5     965
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0  9454.5 10566.5
X1 4.094     7.0    9440   10578      10      10      10
X3                  9458.1     965 10563.7     965
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0  9458.1 10563.7
X1 4.30      7.0    9458   10594    1040    1040    1040
X3                  9467.6     970 10580.8     970
GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205    2065    2135
X3                  9460.5     970 10567.9     970
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10  9460.5 10567.9
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X1 4.754     53.0   9402.5 10572.3      150      310      225
X3                        9438.5      970 10562.4      970
GR 973.0   7150.0    972.7   8115.0   973.6   8831.0   984.3   9296.0   988.1   9402.5
GR 988.1   9427.7    980.6   9427.8   960.3   9445.8   960.3   9525.5   960.3   9525.6
GR 960.3   9537.6    960.3   9537.7   960.3   9641.5   960.3   9641.6   960.3   9653.6
GR 960.3   9653.7    960.3   9757.4   960.3   9757.5   960.3   9769.5   960.3   9769.6
GR 960.3   9873.4    960.3   9873.5   960.3   9885.5   960.3   9885.6   960.3   9997.8
GR 960.3   9997.9    960.3 10009.9    960.3    10010   960.3 10105.8    960.3 10105.9
GR 960.3 10117.9     960.3 10118.0    960.3 10221.3    960.3 10221.4    960.3 10233.4
GR 960.3 10233.5     960.3 10337.9    960.3 10338.0    960.3 10349.0    960.3 10349.1
GR 960.3 10453.5     960.3 10453.6    960.3 10465.6    960.3 10465.7    960.3 10555.9
GR 981.2 10572.3     988.7 10572.4    988.7 10597.0    987.2 10612.0    978.1 11023.0
GR 978.7 11497.0     980.6 12014.0    982.4 12466.0
HD 4.754       10   9438.5 10562.4
X1  4.79      6.0     9440 10562.4      357      187      277
X3                        9458.38      97010573.63     970
GR 980.2   9440.0    964.0   9466.0   961.1 10000.0    964.6 10568.0    980.8 10590.0
GR 980.8 10600.0
HD  4.79       10 9458.3810573.63
X1  5.15      9.0     9291    10713     1780     1960     1873
X3                        9306.95      97510695.61      975
GR 986.0   9275.0    986.0   9291.0   969.9   9310.0   968.1   9678.0   967.4 10000.0
GR 968.7 10469.0     968.9 10691.0    986.0 10713.0    986.0 10720.0
HD  5.15       10 9306.95    10590
          ------------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201      9.0     9291    10713      180      360      270
X3                        9304.89      97510696.92      975
GR 987.0   9275.0    987.0   9291.0   969.1   9310.0   969.1   9678.0   969.1 10000.0
GR 969.1 10469.0     969.1 10691.0    987.0 10713.0    987.0 10720.0
HD 5.201        0 9304.8910696.92
X1 5.203      9.0     9291    10713       10       10       10
X3                        9306.07      97510695.56      975
GR 987.0   9275.0    987.0   9291.0   970.0   9310.0   970.0   9678.0   970.0 10000.0
GR 970.0 10469.0     970.0 10691.0    987.0 10713.0    987.0 10720.0
HD 5.203        0 9306.0710695.56
X1 5.290       82   9250.8 10672.4      505      675      585
X3                        9267.73      98010653.67      980
GR 994.5   9250.7    986.4   9250.8   971.5   9277.5   971.5   9318.7   971.5   9318.8
GR 971.5   9323.4    971.5   9323.5   971.5   9389.9   971.5   9390.0   971.5   9394.5
GR 971.5   9394.6    971.5   9460.9   971.5   9461.0   971.5   9465.6   971.5   9465.7
GR 971.5   9532.1    971.5   9532.2   971.5   9536.8   971.5   9536.9   971.5   9603.3
GR 971.5   9603.4    971.5   9608.0   971.5   9608.1   971.5   9674.5   971.5   9674.6
GR 971.5   9679.2    971.5   9679.3   971.5   9745.7   971.5   9745.8   971.5   9750.4
GR 971.5   9750.5    971.5   9816.9   971.5   9817.0   971.5   9821.6   971.5   9821.7
GR 971.5   9888.1    971.5   9888.2   971.5   9892.8   971.5   9892.9   971.5   9959.3
GR 971.5   9959.4    971.5   9964.0   971.5   9964.1   971.5 10030.0    971.5 10030.1
GR 971.5 10034.7     971.5 10034.8    971.5 10101.2    971.5 10101.3    971.5 10105.9
GR 971.5 10106.0     971.5 10172.3    971.5 10172.4    971.5 10177.0    971.5 10177.1
GR 971.5 10243.7     971.5 10243.8    971.5 10248.4    971.5 10248.5    971.5 10314.9
GR 971.5 10315.0     971.5 10319.6    971.5 10319.7    971.5 10386.0    971.5 10386.1
GR 971.5 10390.7     971.5 10390.8    971.5 10457.2    971.5 10457.3    971.5 10461.9
GR 971.5 10462.0     971.5 10528.4    971.5 10528.5    971.5 10533.0    971.5 10533.1
GR 971.5 10599.5     971.5 10599.6    971.5 10604.2    971.5 10604.3    971.5 10645.5
GR 989.4 10672.3     997.7 10672.4
HD 5.290       10 9267.7310653.67
X1 5.380     20.0   9266.0 10656.0      305      645      465
X3                        9351.35      98010643.74      980
GR 993.0   9214.0    987.7   9266.0   985.7   9342.0   972.8   9358.0   972.3   9413.0
GR 972.2   9565.0    972.2   9734.0   972.2   9889.0   972.2   9994.0   971.4 10000.0
GR 971.4 10062.0     971.4 10195.0    974.3 10208.0    974.2 10263.0    974.2 10420.0
GR 974.2 10582.0     974.2 10639.0    988.4 10656.0    988.6 10671.0    982.3 10702.0
HD 5.380       10 9351.3510643.74
          ----------MCDOWELL ROAD------
X1 5.689       42   9371.3 10552.8     1320     1740     1620
X3                        9385.82      98510538.28      985
GR 996.9   9371.2    990.8   9371.3  973.85   9399.5  973.85   9488.7  973.85   9488.8
GR973.85   9496.2  973.85   9496.3  973.85   9606.6  973.85   9606.7  973.85   9614.1
GR973.85   9614.2  973.85   9725.8  973.85   9725.9  973.85   9733.3  973.85   9733.4
GR973.85   9843.3  973.85   9843.4  973.85   9850.8  973.85   9850.9  973.85   9961.3
GR973.85   9961.4  973.85   9968.8  973.85   9968.9  973.85 10078.9   973.85 10079.0
GR973.85 10086.4   973.85 10086.5   973.85 10196.2   973.85 10196.3   973.85 10203.7
GR973.85 10203.8   973.85 10314.4   973.85 10314.5   973.85 10321.9   973.85 10322.0
GR973.85 10432.1   973.85 10432.2   973.85 10439.6   973.85 10439.7   973.85 10524.6
GR 990.8 10552.8    996.9 10552.9
HD 5.689       10 9385.8210538.28
X1 5.750     22.0   9426.0 10579.0      370      370      370
X3                        9452.74      98510571.99      985
GR 990.7   9287.0    990.7   9295.0   985.9   9330.0   983.9   9362.0   985.6   9388.0
GR 990.1   9416.0    990.3   9426.0   975.3   9477.0   975.3   9595.0   975.5   9715.0
GR 975.5   9864.0    975.5   9981.0   974.0   9994.0   973.7 10030.0    973.7 10095.0
GR 973.7 10244.0     975.6 10259.0    975.6 10349.0    975.7 10474.0    975.7 10565.0
GR 989.2 10579.0     989.6 10596.0
HD 5.750       10 9452.7410571.99
X1 5.900     17.0   9429.0 10561.0      945      950      950
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X3                        9439.5     98510552.01      985
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900    10     9439.510552.01
        -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0      907      897      902
X3                        9424.2     99010536.34      990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068       0  9424.210536.34
X1 6.070    15.0  9416.0 10545.0        8        8        8
X3                        9424.2     99010536.34      990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070       0  9424.210536.34
X1 6.430    20.0  9452.0 10537.0     2045     1850     1945
X3                       9461.07      995 10527.6      995
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430      10 9461.07 10527.6
X1 6.820    17.0  9444.0 10573.0     2145     1820     1980
X3                       9457.95     99510564.05      995
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820      10 9457.9510564.05
         -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0      357      357      357
X3                       9454.42    100010564.82     1000
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR 1002.7 10588.0
HD 6.888       0 9454.4210564.82
X1 6.890    16.0  9439.0 10577.0        8        8        8
X3                       9454.42    100010564.82     1000
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890       0 9454.4210564.82
X1 6.910    17.0  9430.0 10579.0      105      115      110
X3                       9443.21     1000    10568     1000
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910      10 9443.21   10568
X1 6.930    17.0  9413.0 10573.0      105      105      105
X3                       9432.07    100010564.01     1000
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930      10 9432.0710564.01
X1 6.990    19.0  9400.0 10559.0      315      355      335
X3                       9419.31    100010549.14     1000
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10 9419.3110549.14
X1 7.490    13.0  9509.0 10525.0     2645     2610     2595
X3                       9517.21    100510497.13     1005
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10 9517.2110497.13
        -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0     2805     2480     2625
X3                        9318     1010 10703.6     1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
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GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988       0    9318 10703.6
X[redacted]990   37.0  9293.0 10732.0      10      10    10.5
X[redacted]                  9318    1010 10703.6    1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773:0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.990       0    9318 10703.6
NC                          .3      .5
        ---------INDIAN SCHOOL ROAD------
X1 8.000      85  9235.5  10725.      50      50      50
X3                         9249.4    1010 10711.1    1010
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000      10  9249.4 10711.1
    ************* DOWNSTREAM LIMIT OF INDIAN SCHOOL 1-S *****************
    ***********************************************************************
NC                          0.1     0.3
X[redacted]105      91  9493.9 10978.6     405     745  522.59
X[redacted]                  9470    1010 10970.7    1010
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105      10    9470 10970.7
X1 8.198      92  9458.7 10971.0     420     620  490.43
X3                        9470.38    1010 10963.8    1010
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
G[redacted]2.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR[redacted]01.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198      10 9470.38 10963.8
NC  .040    .040    .035
```

```
   ------------Gravel Mine Between Camelback Road and Indian School----------
   **************DOWNSTREAM LIMIT OF INDIAN SCHOOL 2-S*****************
   ********************************************************************
X[illegible] 433       87  9583.1 10597.5    1155     1365 1241.36
X[illegible]                      9009.5    1015    10975    1015
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433       10  9009.5 10597.5
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768       73  9584.7 10102.8    1735     1765 1764.77
X3                        8182.6    1020    11105    1020
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
G[illegible]8.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR[illegible]28.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768       10  8182.6   11000
X1 8.992       92  9819.1 11458.9    1230     1000    1185
X3                        9300    1025    11465    1025
GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021:5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992       10    9700 11458.9
   ************UPSTREAM LIMIT OF INDIAN SCHOOL 2-S**********************
   ********************************************************************
NC  0.05    0.05   0.035     0.3     0.5
   *************U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE**************
   ************BEGIN SAND AND GRAVEL MINES BETWEEN CAMELBACK AND BETHANY HOME***
   ********************************************************************************
X1 9.266       93  9725.9 11607.3    1539      889 1430.62
X3                        9439.6    1026    11620    1026
GR1024.3  7822.4  1024.5  8138.1  1024.7  8447.1  1024.9  8756.0  1024.2  9091.8
G[illegible]3.4  9402.0  1023.3  9418.1  1024.2  9423.6  1021.6  9432.7  1024.2  9439.6
GR[illegible]22.9  9444.9  1022.4  9529.5  1020.2  9575.9  1022.3  9661.6  1022.1  9725.9
GR1013.9  9852.8  1017.2 10006.0  1013.9 10058.2  1013.7 10086.7  1017.3 10103.7
GR1016.8 10209.4  1015.7 10230.4  1016.6 10257.2  1014.7 10308.2  1014.3 10344.1
GR1018.0 10369.8  1017.8 10486.5  1019.5 10508.4  1021.4 10604.4  1021.3 10654.4
GR1019.6 10685.0  1019.7 10704.5  1016.3 10751.4  1017.9 10770.7  1021.4 10905.8
GR1020.8 11021.8  1021.6 11204.6  1020.8 11252.1  1017.1 11283.4  1018.2 11404.6
GR1017.7 11468.4  1021.5 11607.3  1018.7 11635.1  1017.1 11660.6  1023.1 11704.5
GR1022.8 11728.9  1017.3 11752.5  1017.5 11789.2  1023.8 11815.8  1024.4 11854.6
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GR1022.1 11954.6  1023.1 12278.8  1021.6 12459.7  1020.1 12472.3  1021.7 12489.4
GR1020.8 12507.6  1022.4 12660.6  1019.8 12672.3  1019.0 12686.2  1021.1 12714.1
GR1020.8 12727.1  1022.4 12754.6  1021.7 13004.7  1020.1 13039.2  1022.2 13104.7
GR1021.4 13173.2  1018.6 13185.1  1018.2 13192.5  1022.7 13202.6  1018.5 13212.1
GR1019.0 13244.7  1023.0 13254.3  1018.1 13265.2  1019.3 13347.4  1020.2 13359.6
GR1020.5 13394.8  1018.9 13405.5  1020.6 13454.7  1020.8 13490.7  1022.7 13501.3
GR1023.2 13532.9  1022.0 13542.7  1022.7 13554.9  1023.2 13887.5  1023.1 14188.9
GR1023.3 14504.7  1023.0 14515.6  1024.2 14522.5  1023.3 14526.3  1023.2 14854.7
GR1023.8 15204.7  1024.1 15254.7  1024.1 15454.2
HD 9.266      10    9440   11620
NC  0.05    0.05   0.035     0.1     0.3
X1 9.435      83  9548.8 11146.3     875     915  889.44
X3                      8158    1030 11141.8    1030
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
GR1020.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
GR1025.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR1024.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD 9.435      10  9548.8 11141.8
QT
X1 9.696      91  9602.6 10996.2    1430    1330 1383.24
X3                      9570    1030   11080    1030
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR1028.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
GR1019.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
GR1024.7 10030.2  1025.6 10107.8  1025.2 10146.5  1024.5 10147.3  1024.7 10232.4
GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR1027.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
GR1023.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR1021.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696      10    9600   11080
         -------SOUTH OF GLENDALE AIRPORT------
     --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40
X3                      9327.8    1035   10725    1035
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
GR1029.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR1023.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
GR1029.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
GR1028.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
GR1031.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
GR1031.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
GR1035.2 15177.3
HD 9.885      10  9327.8 10706.6
X110.167      91  9412.5 10272.2    1820    1135 1491.12
X3                      9380    1035   10380    1035
GR1036.2  7129.0  1037.7  7194.5  1035.7  7205.8  1037.3  7277.2  1037.1  7420.3
GR1039.4  7453.6  1037.1  7485.2  1038.7  7507.3  1037.7  7579.8  1038.3  7590.5
GR1037.3  7594.2  1037.3  7713.7  1036.2  7723.0  1036.4  7888.6  1038.2  7925.2
GR1037.1  7939.2  1035.1  8120.7  1036.1  8128.4  1036.5  8429.0  1035.2  8480.7
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GR1037.0  8786.9  1035.9  8921.4  1037.0  8943.4  1036.8  8974.4  1031.8  9018.5
GR1039.2  9040.9  1034.5  9055.3  1033.7  9126.3  1036.7  9148.2  1033.3  9165.5
GR1033.8  9220.1  1033.4  9233.3  1034.7  9240.3  1038.4  9252.7  1035.6  9256.7
G[redacted]3.3  9272.8  1033.5  9412.5  1030.1  9441.5  1028.9  9508.9  1029.9  9773.1
G[redacted]3.3 10025.7  1023.7 10040.0  1025.8 10051.5  1026.7 10190.6  1028.9 10206.1
GR1028.6 10254.0  1031.0 10272.2  1033.1 10498.3  1032.9 10848.3  1033.0 11148.3
GR1032.2 11453.2  1030.3 11467.7  1032.9 11483.3  1032.3 11523.7  1030.0 11546.4
GR1034.0 11563.1  1032.4 11603.2  1032.6 11807.8  1033.8 11846.8  1032.4 11877.0
GR1034.1 11898.4  1033.1 11953.6  1033.7 11977.0  1036.3 11989.1  1031.3 12008.1
GR1033.4 12031.2  1033.2 12088.4  1031.7 12103.8  1033.5 12114.2  1032.3 12117.7
GR1034.5 12198.3  1033.1 12499.2  1032.6 12530.4  1034.2 12592.6  1032.8 12620.5
GR1032.5 12695.9  1030.5 12748.7  1033.1 12905.5  1030.4 13006.4  1032.1 13048.1
GR1033.2 13355.8  1033.5 13581.8  1034.8 13585.3  1031.2 13629.7  1033.4 13936.1
GR1032.9 14248.3  1033.1 14395.7  1037.8 14406.5  1038.1 14419.7  1033.2 14430.0
GR1033.1 14443.1
HD10.167      10    9380   10380
NC  0.05    0.05   0.045
X110.343      78  9782.1 10288.8     910     695  923.51
X3                      9750    1040   11416    1040
GR1043.6  5749.1  1044.2  5780.6  1038.7  5851.9  1039.0  6019.2  1039.2  6332.0
GR1039.2  6402.4  1036.8  6515.4  1039.7  6852.7  1039.1  7156.0  1038.6  7398.1
GR1040.0  7472.0  1039.8  7821.6  1039.2  8124.2  1040.1  8426.7  1038.4  8626.1
GR1035.8  8870.7  1039.2  8882.3  1030.0  8906.1  1030.0  9429.5  1031.6  9432.5
GR1033.6  9465.9  1034.3  9531.5  1031.4  9573.0  1031.9  9592.8  1036.7  9615.6
GR1031.8  9659.5  1031.4  9770.7  1032.9  9782.1  1029.4  9854.5  1031.9  9869.3
GR1029.4  9924.3  1030.7 10065.3  1026.7 10247.0  1035.2 10288.8  1036.1 10312.9
GR1035.6 10620.5  1034.8 10841.9  1034.0 10847.5  1034.8 10947.5  1033.8 10988.6
GR1034.1 11072.8  1033.2 11092.4  1035.7 11109.8  1035.9 11151.3  1037.1 11164.0
GR1035.8 11184.6  1036.7 11198.0  1035.1 11214.8  1036.3 11231.4  1034.8 11244.9
GR1035.6 11279.1  1034.4 11296.8  1035.7 11345.3  1033.4 11353.5  1033.1 11388.4
GR1035.0 11390.4  1037.4 11416.6  1035.1 11427.0  1033.9 11612.9  1035.2 11918.3
GR1033.7 12029.0  1035.4 12049.5  1035.0 12282.6  1033.3 12306.7  1034.1 12609.1
GR1035.1 12942.0  1034.8 13067.5  1036.1 13073.7  1034.5 13086.5  1035.2 13108.0
GR1033.0 13133.3  1032.5 13203.6  1034.5 13221.6  1035.3 13542.0  1036.5 13836.8
GR1039.9 13845.1  1040.0 13859.8  1035.3 13871.1
HD10.343      10    9750   11416
X110.538      87  9573.5 10478.1     925     985 1033.23
X3                      9514.6    1045   10480    1045
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
G[redacted]0.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
GR[redacted]1.2  7536.3  1043.3  7856.8  1042.5  7964.9  1043.8  7979.7  1040.8  8090.9
GR1038.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR1036.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1034.7  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
GR1038.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
GR1037.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR1035.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR1037.2 13424.5  1036.8 13435.8
HD10.538      10  9573.5 10478.1
X110.752      90  9651.8 10329.8    1070    1140 1124.93
X3                      9335    1045 10327.3    1045
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
GR1042.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
GR1039.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR[redacted]0.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
G[redacted]1.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
GR[redacted]6.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752      10    9335 10327.3
X110.846      91  9756.4 10308.2     510     480  500.68
X3                      8865    1045   10310    1045
GR1046.7  4455.3  1042.9  4484.7  1043.7  4812.2  1043.8  5129.0  1043.8  5433.6
GR1044.1  5530.4  1046.4  5558.5  1041.5  5602.2  1045.1  5927.4  1044.9  6130.9
GR1043.3  6192.7  1044.4  6233.7  1043.6  6291.3  1045.2  6592.3  1045.2  6865.7
GR1043.5  6881.1  1046.0  6943.5  1044.7  7051.7  1046.2  7081.4  1044.9  7091.1
```

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GR1046.9  7101.3  1043.9  7119.5  1046.3  7147.0  1045.8  7462.6  1049.2  7474.5
GR1044.0  7487.9  1046.2  7572.9  1048.6  7583.4  1046.3  7599.4  1045.6  7653.5
GR1043.4  7674.3  1043.0  7985.4  1041.5  8301.1  1042.5  8319.7  1042.0  8459.6
GR[illegible]3.9  8485.0  1042.8  8530.2  1044.1  8547.8  1044.3  8770.3  1042.4  8787.3
GR[illegible]2.1  8963.4  1043.0  9125.3  1041.7  9155.7  1042.6  9496.4  1041.8  9621.3
GR1040.7  9636.3  1039.3  9713.9  1039.0  9756.4  1034.8  9829.0  1033.3  9916.9
GR1031.6  9937.5  1035.3 10030.4  1037.4 10223.5  1033.7 10237.0  1033.6 10267.9
GR1038.8 10283.4  1042.9 10308.2  1040.5 10341.8  1042.0 10384.0  1041.2 10394.2
GR1044.4 10402.4  1042.7 10409.7  1044.3 10419.7  1042.4 10496.4  1043.7 10522.5
GR1042.7 10830.5  1043.1 10840.5  1040.9 10848.8  1040.5 10856.7  1043.7 10865.5
GR1042.8 10994.0  1040.8 11003.6  1043.6 11155.2  1042.4 11164.5  1042.9 11173.3
GR1041.7 11176.7  1043.5 11316.2  1042.3 11568.9  1041.2 11574.0  1044.0 11627.0
GR1040.0 11674.8  1040.2 11730.9  1042.9 11769.5  1041.4 11804.3  1038.8 11820.9
GR1038.2 11875.5  1043.1 11899.9  1042.7 11965.1  1043.9 11981.0  1041.9 12286.9
GR1042.2 12373.3
HD10.846      10    8865   10310
   ****************UPSTREAM END OF SAND AND GRAVEL MINES BETWEEN CAMELBACK ******
   ****************AND BETHANY HOME ROAD - PITS DEPTHS BASED ON AREA WEIGHTED****
   ****************PIT DEPTHS AS A FUNCTION OF TOTAL MINING AREA*****************
NC  0.05   0.095   0.045
X111.029      95  9513.1 10404.2    1035     865  963.30
X3                      9240    1050   10467    1050
GR1055.5  3356.7  1053.0  3607.3  1053.9  3617.6  1051.2  3623.8  1050.3  3635.8
GR1051.3  3641.5  1049.4  3661.8  1047.1  3741.2  1046.4  3861.8  1044.0  3889.2
GR1045.3  3899.9  1045.1  4187.0  1046.2  4194.5  1045.9  4514.8  1044.5  4858.6
GR1044.0  4890.1  1046.3  5011.7  1046.5  5170.4  1047.9  5180.1  1045.6  5308.8
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR1046.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
G[illegible]5.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR[illegible]5.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029      10    9240   10467
       -------GLENDALE AVENUE----------
X111.428      94  9814.2 10227.2    1960    2335    2160
X3                      9625.4    1053 10191.9    1053
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10  9625.4 10191.9
NC  0.15   0.055   0.035     0.3     0.5
    ***************DOWNSTREAM LIMIT OF GLENDALE-1*****************************
    ************************************************************************
X111.557      95  9881.6 10100.9     675     675  677.68
X3                      8970    1058   10101    1058
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
G[illegible]1.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
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GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR  1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR  1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557      10    8970 10100.9
X111.847      95  9914.3 10113.4    1530    1530 1531.67
X3                   7310    1065   10173    1065
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    7310 10113.4
X112.042      62  9903.4   10070     990    1050 1028.61
X3                   6350    1070   10165    1070
GR  1066    5900    1058    5930    1058    6005    1059  6024.1  1059.2  6048.5
GR  1060  6057.8  1058.2  6082.7  1058.2  6096.6  1058.2  6138.2  1058.2  6154.2
GR1058.2  6173.8  1058.2  6190.9  1058.2  6201.8  1058.2  8555.6  1058.2  8631.6
GR1058.2  8641.8  1061.8  8660.4  1058.2    8806  1058.2  8910.3  1058.2  8998.8
GR1058.2  9007.9  1058.2  9078.3  1058.2  9101.9  1058.2  9111.5  1058.2  9145.2
GR1058.2  9148.5  1058.2  9164.4  1058.2  9181.1  1058.2  9201.8  1058.2  9211.2
GR1058.2  9267.4  1058.2  9290.8  1058.2  9298.9  1059.3  9367.2  1062.4  9377.5
GR1062.9  9390.5  1059.5    9402  1058.5  9412.2  1058.2  9418.8  1058.2  9447.6
GR1061.2  9485.4    1061  9536.3  1058.2  9574.9  1058.2    9588  1058.2  9609.8
GR  1058.2  9615.8  1058.2  9622.9  1058.2  9667.5  1058.2  9802.1  1058.2  9840.1
GR  1058.2  9853.8  1062.1  9867.5  1060.9  9871.4  1061.8  9900.2    1063  9903.4
GR1050.5    9940  1049.3  9955.3  1049.7  9979.1  1048.5  9992.6  1049.8   10044
GR  1062   10070    1068   10165
HD12.042      10    7200   10165
X112.359      73  9691.6 10061.0    1520    1680 1672.99
X3                   7600    1070   10100    1070
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      10    7600   10100
   ****************UPSTREAM LIMIT OF GLENDALE-1*****************************
   ************************************************************************
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                   7850    1070   10200    1070
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR  1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
```

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HD 12.42       10     7850   10150
NC  .045     .040     .035     0.1     0.3
    **************DOWNSTREAM LIMT OF NORTHERN -1 ******************************
    *************DID NOT INCLUDE IN SAND AND GRAVEL MODEL AS PROPOSED PIT********
    *************IS OUTSIDE 100-YEAR FLOODPLAIN LIMITS ACCORDING TO LOMR*********
    ********************************************************************************
X1 12.47       89  9382.2 10296.2     230     240     255
X3                      7298.5    1070 11052.3    1070
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6     5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47       10     7500 10296.2
X112.816       94  9781.2 10376.3     1780     1850 1859.04
X3                      8483.3    1070    10488    1070
XL                      9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR1068.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
GR1069.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR1070.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR  7.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR  7.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816       10  8483.3   10375
   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007       94  9767.1 10186.1     1000     1030 1006.76
X3                      8750    1075    10239    1075
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
GR1072.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR1070.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007       10    8800   10186
NC  .045     .045     .035     0.3     0.5
    *********UPSTREAM LIMIT OF NORTHERN-1*****************************************
    ********************************************************************************
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467       89  8693.6 10286.7  2400.4  2425.4  2429.7
X3                      8783    1080 10203.4    1080
GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
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GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
G[redacted]74.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
G[redacted]67.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467      10    8783 10203.4
NC                     0.1     0.3
X113.952      93  9432.8 10076.3    2525    2585 2566.36
X3                     9400    1085   10384    1085
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR1083.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR1078.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952      10    9400   10384
X114.430      95  9171.4 10301.1    2175    2625 2523.57
X[redacted]                    7800    1095   10520    1095
G[redacted]93.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
GR1092.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
GR1093.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
GR1092.0  8194.9  1091.5  8233.1  1092.1  8266.0  1092.1  8279.7  1088.9  8296.7
GR1087.9  8349.4  1088.0  8356.7  1090.6  8393.8  1090.6  8428.0  1092.7  8449.0
GR1092.3  8510.5  1091.7  8551.5  1089.9  8570.9  1091.7  8660.6  1092.0  8710.6
GR1091.9  8760.6  1091.0  8810.6  1090.8  8860.6  1089.9  8937.3  1089.9  8990.6
GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
GR1089.0  9184.9  1085.7  9213.3  1086.2  9236.5  1083.2  9251.1  1083.8  9327.2
GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
GR1086.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7  1093.2 10940.6  1093.8 10984.2
HD14.430      10    8800 10301.1
X115.000      93  9346.3 10081.6    2700    3130  3009.7
X3                     9290    1105   10130    1105
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
GR1094.7  9835.6  1093.9  9875.1  1091.8  9911.5  1091.4  9946.6  1092.3  9974.0
GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
GR1096.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
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GR1100.2 11466.1  1097.6 11479.7  1097.3 11498.8  1099.1 11540.6  1099.9 11574.4
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G[redacted]98.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
GR[redacted]00.7 12125.7  1102.8 12147.6  1103.6 12163.7  1103.8 12179.4  1101.5 12212.6
GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
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GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
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X115.094      93  9336.0 10125.1     495     495  496.49
X3                     9234.4    1105   11152    1105
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GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
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G[illegible]91.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
GR1096.4 10911.4  1097.7 10930.8  1100.9 10959.2  1100.7 10987.0  1102.5 11002.3
GR1102.3 11152.4  1101.1 11308.7  1100.6 11317.7  1099.8 11395.4  1100.0 11416.9
GR1098.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
GR1102.6 12022.7  1102.6 12073.5  1099.0 12224.6  1098.4 12273.7  1099.4 12426.5
GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   10400
NC  .040    .045    .035
X115.374      92  9832.4 10085.5    1650    1260 1478.26
X3                    9822    1110   10390    1110
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
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GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR1101.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
GR1103.5 11613.3  1104.1 11633.1  1104.6 11679.6  1104.4 11729.7  1104.3 11830.0
GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
G[illegible]04.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
G[illegible]06.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
G[illegible]04.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   10390
NC  .040    .040    .035
          ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719      91  9885.3 10059.7    1950    1635 1824.01
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GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
X116.099      92  9804.0 10081.1    2010    2005 2002.13
X3                    9400    1115   10082    1115
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GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
G[illegible]02.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
G[illegible]20.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
G[illegible]77.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
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H[illegible].099      10    9400   10082
NC                             0.3     0.5
X116.482      90  9781.9 10219.8    1980    2160 2026.23
X3                          9787.92    112510241.84    1125
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
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GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR1123.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
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HD16.482      10 9787.82   10220
X116.506      72  9768.0 10245.4     125     125  126.72
X3                          9777.2    1125 10238.7    1125
GR1143.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
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GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506      10  9777.2 10238.7
    **************DOWNSTREAM END OF GRAND-1************************************
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NC  0.05    0.05    0.04     0.1     0.3
X116.612      84  9808.2 10161.2     627     342     581
X3                          9799    1125 10186.3    1125
XL                          9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
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GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
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GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      10   10090 10186.3
NC  0.05    0.05    0.04     0.1     0.3
X116.990      82  9810.0 10135.4    1990    1985    1993
X3                          9792.31    1130 10135.9    1130
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR[illegible]8.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR[illegible].4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR[illegible].2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
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GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
G[redacted]25.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
G[redacted]30.6 13675.3  1130.2 13709.1
HD16.990       10     9800 10135.9
X117.458       92  9370.6 10225.3     3035     1705 2468.67
X3                          9280     1135    10250     1135
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
HD17.458       10     9280   10250
     **************DOWNSTREAM END GREENWAY-1*********************************
     ***************************************************************************
X117.638       89  9774.7 10288.4      955      895  949.45
X3                          9285     1140    10360     1140
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
G[redacted]30.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
G[redacted]30.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR[redacted]30.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638       10     9285   10360
NC 0.045    0.05    0.035
X117.821       92  9764.8 10227.7      950      970  964.24
X3                          8350     1145    10270     1145
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821       10     8350   10270
[redacted]**************UPSTREAM END OF GRAND-1*************************************
[redacted]***************************************************************************
X1[redacted].275       93  9752.1 10210.5     2170     2440 2398.82
X3                          8750     1145    10670     1145
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
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GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
G[illegible]39.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
G[illegible]39.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0  1149.4 13000.0
HD18.275       10     8750   10670
X118.839       92  9787.8 10337.0     2635     3185 2882.75
X3                      9250     1160    10350     1160
GR1159.3  8035.3  1160.1  8038.6  1154.0  8081.5  1152.0  8142.0  1151.8  8165.7
GR1145.2  8172.5  1142.4  8175.7  1135.6  8182.7  1126.5  8192.5  1119.8  8199.1
GR1119.8  8265.6  1136.1  8284.0  1141.6  8289.5  1151.1  8298.1  1150.6  8339.2
GR1152.4  8343.3  1147.4  8393.6  1149.7  8415.2  1150.8  8439.6  1151.2  8443.4
GR1149.9  8483.6  1144.3  8492.4  1143.1  8504.6  1142.9  8518.4  1143.5  8526.7
GR1143.5  8539.0  1141.4  8542.8  1138.4  8549.1  1139.2  8560.7  1139.1  8569.3
GR1143.3  8578.2  1146.8  8592.3  1149.9  8594.8  1150.7  8597.1  1150.7  8600.4
GR1148.7  8619.6  1148.7  8627.7  1149.8  8634.1  1151.3  8649.9  1151.6  8695.7
GR1150.9  8746.0  1150.6  8796.3  1149.1  8837.3  1149.4  8854.9  1151.4  8869.2
GR1152.3  8960.5  1152.0  8966.7  1148.3  9004.8  1150.0  9017.9  1151.0  9023.1
GR1147.6  9041.7  1147.0  9087.8  1149.7  9104.9  1149.5  9108.5  1149.7  9149.0
GR1150.7  9199.0  1151.4  9285.5  1151.8  9359.0  1154.0  9367.0  1154.7  9374.4
GR1151.2  9388.1  1151.3  9420.2  1150.0  9435.1  1149.5  9446.3  1151.6  9476.4
GR1150.9  9511.1  1150.8  9556.2  1151.8  9665.4  1152.1  9705.2  1152.8  9716.6
GR1148.6  9747.1  1147.5  9774.5  1149.2  9787.8  1147.8  9825.0  1145.3  9845.2
GR1145.1  9901.6  1147.0  9913.2  1146.0  9962.2  1145.0 10056.4  1144.6 10160.9
GR1145.3 10164.0  1146.7 10168.0  1146.8 10189.4  1146.1 10196.0  1145.1 10199.7
GR1144.9 10310.7  1146.1 10321.9  1147.1 10325.1  1147.5 10331.4  1150.1 10337.0
GR1152.2 10340.5  1159.1 10354.4
HD18.839       10     9250   10350
    ****************UPSTREAM END OF GREENWAY-1*******************************
    ****************************************************************************
NC                        0.3     0.5
[illegible]          ----------BELL ROAD-----------
X[illegible].962       74     9840 10223.7      540      700  644.97
X3                      9391     1156 10483.8     1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962       10     9440   10480
NC  .045    .045    .035
X119.066       93  9885.7 10349.1      485      580  551.29
X3                      9350     1160    10778     1160
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR1154.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
G[illegible]50.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
G[illegible]1.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066       10     9350   10398
NC 0.045   0.045   0.035     0.1     0.3
X119.446       91  9592.8 10078.6     1840     2400 2473.39
X3                      9170     1170    11361     1170
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GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
G[redacted]62.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
G[redacted]61.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
       ---------UNION HILLS--------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X3                      9660    1175   11778    1175
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR[redacted]66.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
G[redacted]68.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR[redacted]71.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3                      9660    1185 10329.5    1185
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR1178.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
   ***************DOWNSTREAM END OF BEARDSLEY-1*****************************
   ************************************************************************
X120.958      90  9787.3 10383.8    1815    2044 2006.06
X3                      8780    1190 10383.9    1190
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR[redacted]84.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
G[redacted]82.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR[redacted]82.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
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GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      10    8780 10383.9
          ----------BEARDSLEY----------
X[illegible].061      91  9850.0 10325.4     340     655  542.53
X3                          9200    1190   10350    1190
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      10    9200   10100
NC  .055    .055    .050
X121.157      94  9377.3 10376.3     340     630  509.07
X3                          9274.8    1195   10400    1195
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
G[illegible]6.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
G[illegible]4.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157      10  9377.3 10398.0
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                          9350    1195 10322.7    1195
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      10    9350 10322.7
NC  .045    .055    .035
     *********UPSTREAM END OF BEARDSLEY -1*************************************
     *********LOCATION OF ROSE GARDEN -1***************************************
     ******************************************************************************
X121.893      93  9558.8 10146.5    2525    2070 2442.15
X3                          9546    1200   10680    1200
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
G[illegible]9.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR[illegible]5.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
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GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
G[redacted]03.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
G[redacted]06.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893      10  9558.8   10680
      -------UPSTREAM OF DEER VALLEY ROAD--------
   ***********DOWNSTREAM END OF DEER VALLEY-1S, 1N, AND DEER VALLEY-2***********
   ********************************************************************************
X122.177       89  9909.7 10533.6    1425    1520 1500.23
X3                      8765.7    1205 10533.7    1205
GR1207.0  8765.7  1207.1  8786.8  1204.9  8844.5  1203.0  8855.1  1199.5  8865.5
GR1199.8  8878.3  1197.7  9076.9  1201.5  9111.1  1201.8  9131.3  1203.9  9160.3
GR1204.1  9366.4  1203.1  9432.5  1200.7  9451.7  1202.2  9529.3  1201.7  9586.2
GR1202.1  9705.0  1200.6  9773.2  1199.6  9909.7  1197.1 10001.3  1196.9 10057.0
GR1196.2 10078.7  1201.5 10089.5  1196.9 10231.7  1196.0 10350.6  1196.0 10510.5
GR1200.7 10533.6  1197.5 10557.0  1194.4 10565.7  1197.7 10653.0  1196.0 10668.4
GR1193.8 10790.9  1194.5 10950.2  1197.8 10965.9  1202.7 10979.9  1202.4 11012.5
GR1201.0 11024.0  1201.8 11036.9  1212.9 11068.5  1203.3 11092.5  1202.5 11126.9
GR1202.8 11163.1  1207.3 11173.2  1206.9 11197.3  1205.9 11206.1  1207.0 11344.6
GR1210.4 11352.1  1213.2 11360.4  1207.1 11376.6  1207.1 11600.9  1208.7 11813.7
GR1213.6 11826.7  1214.6 11832.4  1212.5 11856.3  1214.4 11897.1  1212.8 11966.7
GR1214.0 12077.6  1211.0 12191.7  1212.2 12252.6  1211.1 12304.1  1211.6 12311.6
GR1210.8 12326.4  1213.5 12334.0  1206.8 12349.9  1206.8 12409.5  1212.7 12439.6
GR1212.4 12476.5  1206.8 12489.2  1206.8 12564.8  1211.1 12576.8  1209.7 12583.4
GR1207.7 12667.9  1213.9 12678.3  1214.7 12678.9  1214.2 12696.7  1210.2 12709.6
GR1208.5 12713.4  1208.1 12737.7  1220.1 12763.9  1219.5 12790.0  1216.3 12811.3
GR1219.0 12823.9  1216.4 12834.3  1212.8 12843.9  1213.0 12857.8  1211.9 12881.8
GR1209.2 12892.3  1208.1 12903.1  1220.1 12936.6  1220.4 12953.7
HD22.177       10    8850 10533.7
NC  .045    .045    .035
X122.462       77  9887.4 10318.9    1530    1400 1478.14
X3                      9046.89    1210   11760    1210
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
G[redacted]08.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
G[redacted]08.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462       10  9050.4   11760
X122.745       92  9797.7 10147.8    1520    1270 1491.33
X3                      8914.99    1215   12094    1215
GR1225.1  8903.1  1207.9  8919.7  1208.2  8963.5  1207.5  9060.1  1207.7  9092.9
GR1206.4  9114.7  1206.1  9143.1  1208.9  9172.4  1211.8  9209.3  1212.0  9328.1
GR1211.9  9402.0  1212.9  9418.9  1212.4  9534.3  1211.5  9563.3  1211.0  9595.9
GR1211.2  9640.5  1210.6  9677.3  1210.8  9692.3  1209.6  9711.3  1209.4  9723.7
GR1211.0  9745.9  1211.9  9797.7  1211.1  9835.1  1208.8  9954.1  1207.1  9981.3
GR1207.0 10008.3  1206.3 10036.6  1207.2 10049.9  1207.2 10119.2  1210.2 10147.8
GR1210.8 10219.0  1210.4 10251.5  1211.9 10260.4  1211.3 10309.2  1211.7 10324.5
GR1212.5 10377.1  1211.5 10388.9  1212.2 10429.8  1212.2 10482.5  1211.9 10494.4
GR1210.2 10515.1  1210.5 10539.3  1212.7 10587.8  1212.6 10693.2  1212.4 10746.0
GR1212.9 10851.1  1210.4 10874.3  1210.1 10904.0  1212.0 10941.3  1212.2 10956.6
GR1211.7 11009.3  1211.2 11028.1  1212.9 11064.9  1212.4 11099.8  1210.7 11127.4
GR1212.4 11180.0  1212.7 11259.2  1212.5 11272.7  1212.8 11327.7  1209.3 11351.0
GR1208.3 11378.9  1207.9 11394.3  1206.2 11399.0  1207.0 11430.8  1206.0 11521.2
GR1209.3 11533.2  1209.6 11536.1  1210.0 11641.5  1210.0 11668.6  1208.1 11687.0
GR1210.0 11694.4  1209.8 11721.1  1210.6 11746.8  1211.1 11799.5  1210.6 11904.9
GR1210.8 11957.6  1210.1 12011.8  1209.3 12027.9  1209.6 12051.8  1211.3 12062.3
GR1211.9 12081.2  1212.6 12088.4  1213.4 12113.3  1214.8 12123.8  1214.9 12168.3
GR1215.3 12220.9  1215.3 12248.1  1215.9 12273.6  1216.2 12326.3  1217.0 12371.3
GR1222.8 12402.3  1222.5 12409.2
HD22.745       10 8914.99   12094
   [redacted]**********UPSTREAM END OF DEER VALLEY SAND AND GRAVEL MINES***************
   ********************************************************************************
   ************DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, AND 3E*****************
   ********************************************************************************
X122.935       94  9530.2 10351.6    2480    2125 2490.47
X3                      8484.93    1220   11640    1220
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
```

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GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
G[redacted]6.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
G[redacted]1.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   11640
         ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      93  9675.2 10060.2    2450    2360 2505.26
X3                     9550    1230   10970    1230
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
G[redacted]227 11995.5  1226.6 12052.6    1229   12250
HD[redacted].409      10    9550   10970
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X3                     9650    1235   10675    1235
GR1249.2    6690  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
GR1192.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR1228.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR1226.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR  1238 11521.1  1237.8 11533.8
HD23.692      10    9650   10675
NC  .055    .055    .050
X123.974      94  9716.2 10115.2    1420    1470 1489.37
X3                     9716    1240   10825    1240
GR1269.8    7400  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR[redacted]2.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
G[redacted]5.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR[redacted]36.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
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GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10    9716 10388.9
 ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
 ********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, 3E**********************
 ***************************************************************************
NC  .045    .045    .035
X124.449       92  9496.2 10169.3    2380    2560 2506.65
X3                       9350.53    1245   11319    1245
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10 9350.53 11143.3
          ----------UPSTREAM OF HAPPY VALLEY ROAD----
X124.543       91  9646.7 10243.6     495     495  500.50
X3                       9340    1245   11419    1245
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543      10    9340 11413.5
NC   .05     .05    .035
X124.996       90  9774.0 10632.3    2320    2330 2388.18
X3                       9776.35    1255   12290    1255
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
HD24.996      10 9776.35 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC   0.05    0.05    0.03
X    .478      93  9750.7 10127.1    2600    2485 2546.34
X3                       9750    1265   11715    1265
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
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GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
G[redacted]60.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
G[redacted]61.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478      10  9750.7 10598.2
      ----------UPSTREAM OF JOMAX ----------
X125.666      66  9842.4 10115.1    1035     975  995.18
X3                      9830    1270   10810    1270
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666      10  9854.2 10388.0
X1 25.86      25    9940   10200    1575    1565    1585
X3                      9150    1275   10201    1275
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86      10    9150   10200
    **********DOWNSTREAM LIMIT OF PINNACLE VISTA-1**********
    ********************************************************************************
NC  0.06   0.065   0.035
X1 25.94    22.0    9945   10117     450     420     430
X3                      9080    1275   10280    1275
GR1276.1    7527    1273    7678  1273.9    7868  1272.1  8087.0  1270.3  8382.0
GR1270.3  8578.0  1268.1  8600.0  1271.4  8631.0  1271.2  8762.0  1270.1  9101.0
GR1267.2  9241.0  1271.2  9532.0  1269.2  9945.0  1264.2 10000.0  1267.0 10117.0
GR1263.4 10185.0  1270.1 10242.0  1270.3 10425.0  1269.7 10480.0  1269.0 10780.0
GR1276.0 11050.0  1276.0   12000
HD 25.94      10    9080   10280
X1 26.29    26.0    9696   10120    1640    1875    1810
X3                      9380    1285   11060    1285
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13300.0
HD 26.29      10    9380   11060
NC  0.06    0.07   0.035
X1 26.63    22.0    9792   10187    1800    1840    1840
X3                      9780    1290   10770    1290
GR1310.9  9050.0  1310.0  9116.0  1288.0  9208.0  1286.8  9488.0  1282.7  9510.0
GR1282.7  9641.0  1284.1  9792.0  1279.5 10000.0  1281.8 10187.0  1280.9 10467.0
GR1279.4 10741.0  1282.9 10861.0  1283.0 11016.0  1285.4 11057.0  1285.6 11351.0
GR1283.8 12475.0  1286.4 13757.0  1288.6 13810.0  1348.8 13939.0  1348.8 13956.0
GR1345.6 13961.0  1345.6 14400.0
HD 26.63      10    9780   10770
    **********UPSTREAM LIMIT OF PINNACLE VISTA-1**********
    ********************************************************************************
X1 26.73    31.0    9898   10125     460     470     490
X3                      9870    1290   10850    1290
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR[redacted]83.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
G[redacted]87.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73      10    9870   10850
X1 27.03    23.0    9922   10079    1660    1020    1590
X3                      9704    1295   10500    1295
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
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GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
H[illegible]7.03      10    9704   10500
N[illegible].055   0.055   0.035
    ********************DOWNSTREAM END OF DIXLETA-1*****************************
    ***************************************************************************
X1 27.48    36.0    9894   10087    2860    2160    2390
X3                          8500    1305   10130    1305
GR1357.7  6865.0  1350.6  6903.0  1350.2  6923.0  1301.6  7048.0  1299.7  7138.0
GR1300.5  7579.0  1295.1  7603.0  1296.8  7764.0  1298.1  7834.0  1294.2  7891.0
GR1294.1  7961.0  1296.5  8010.0  1293.8  8054.0  1296.9  8084.0  1295.1  8126.0
GR1297.8  8226.0  1296.0  8427.0  1297.8  8611.0  1297.0  8717.0  1295.9  8742.0
GR1294.5  8960.0  1297.5  9033.0  1298.6  9348.0  1295.3  9547.0  1296.3  9669.0
GR1297.6  9742.0  1295.2  9753.0  1294.9  9894.0  1291.5 10000.0  1292.8 10087.0
GR1292.8 10157.0  1301.9 10203.0  1301.3 10736.0  1301.9 11132.0  1323.3 11258.0
GR1324.8 11319.0
HD 27.48      10    8500   10080
X1 27.68    35.0    9853   10078    1260    1040    1040
X3                          8930    1305   10101    1305
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68      10    8930   10101
X1 27.94    24.0    9944   10187    1370    1415    1405
X3                          9320    1310   10203    1310
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94      10    9320   10200
    ****************UPSTREAM LIMIT OF DIXLETA-1*****************************
    ***************************************************************************
X1 28.12    27.0    9906   10076     990     960     950
X[illegible]                9600    1315   10570    1315
G[illegible]57.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
HD 28.12      10    9600   10570
X1 28.67    37.0    9964   10192    2785    2925    2885
X3                          9950    1325   10300    1325
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67      10    9950   10300
X1 28.95    34.0    9946   10353    1550     940    1465
X3                          9946    1330   10600    1330
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95      10    9946   10600
X1 29.04    34.0    9828   10239     550     330     510
X3                          9827    1330   10630    1330
GR1360.0  9770.0  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR[illegible]30.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
G[illegible]5.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR[illegible]44.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04      10    9827   10630
X1 29.54    30.0    9846   10150    2750    2235    2640
X3                          9620   134010135.89    1340
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
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GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD 29.54      10    962010135.89
X[illegible]611    31.0    9791   10094     315     315     375
X[illegible]                      9620    1340   10110    1340
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611      10    9620   10110
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025
X3                        9820    1345   10460    1345
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80      10    9882   10460
X1 30.07    17.0    9925   10098    1425    1440    1420
X3                        9780    135010276.81    1350
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07      10    978010276.81
X1 30.26    12.0    9749   10135     870    1090    1005
X3                        9748    1350   10260    1350
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26      10    9748   10250
X1 30.73    14.0    9881   10075    2455    2470    2460
X3                        9864    1360   10180    1360
GR1369.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR1352.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
H[illegible].73      10    9864   10180
X[illegible]0.82    12.0    9924   10201     500     370     500
X3                      9901.06    1360   10280    1360
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD 30.82      10 9901.06   10280
X1 31.39    17.0    9792   10080    2900    3165    2970
X3                        9550    1370   10320    1370
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39      10    9550   10320
X1 31.86    10.0    9894   10261    2550    2485    2505
X3                        9680    1375   10262    1375
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86      10    9680   10262
NC 0.045   0.050   0.045
X1 32.43    14.0    9852   10112    2885    2970    2980
X3                        9600    138510102.34    1385
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43      10    960010102.34
X1 32.72    28.0    9879   10150    1725    1145    1535
X3                        9617    1385   10453    1385
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72      10    9617   10453
X1 32.86    12.0    9928   10155     680     990     760
X[illegible]                      9807    1390   10332    1390
GR[illegible]23.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86      10    9807   10200
X1 32.92     9.0    9891   10143     290     370     310
X3                      9876.07    1390   10180    1390
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
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HD 32.92      10    9890   10180
     ------------STATE ROUTE 74---------
X132.984      33    9962   10011     338     358     343
X                          9824    1395   10082    1395
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       0       0       0
X132.998     9.0    9962   10108      72      72      72
     -------------**********************-------------
X3                       9842.69    139510108.06    1395
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
       ------------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170
X3                     9966.91    140510280.32    1405
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10 9966.9110280.32
X1 33.82    20.0    9861   10068    2165    2220    2175
X3                      9708    140510061.27    1405
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82      10    970810061.27
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T5    NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T6    BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I             1       0
I             4       1      10
LQ         5000    7000   17000   55000
LT         6457   10880   33475  146960
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
LF    MS 0.21035 0.22940 0.21429 0.21542
LF    CS 0.23112 0.22521 0.22541 0.25124
LF   VCS 0.36207 0.32486 0.38978 0.39271
LF   VFG 0.00367 0.00255 0.00203 0.00119
LF    FG 0.00683 0.00452 0.00379 0.00284
LF    MG 0.01083 0.00681 0.00677 0.00652
LF    CG 0.00587 0.00134 0.00686 0.01048
LF   VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF         5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075       2
PF         5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18      82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075       1
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PF	8.000	1	19	12.5	99	9.5	98	6.3	96
PFC 4.75	95	2.36	91	2	90	1.18	79	0.6	54
PFC0.425	37	0.3	22	0.15	5	0.075	3		
P	8.992	1	50	37.5	98	25	97	19	95
P 12.5	94	9.5	91	6.3	88	4.75	85	2.36	80
PFC 2	78	1.18	67	0.6	44	0.425	29	0.3	18
PFC 0.15	8	0.075	5						
PF	9.885	1	50	37.5	99	25	94	19	92
PFC 12.5	90	9.5	89	6.3	87	4.75	86	2.36	82
PFC 2	79	1.18	65	0.6	30	0.425	16	0.3	11
PFC 0.15	7	0.075	5						
PF	11.029	1	50	37.5	99	25	96	19	93
PFC 12.5	88	9.5	83	6.3	77	4.75	73	2.36	66
PFC 2	62	1.18	46	0.6	18	0.425	9	0.3	6
PFC 0.15	2	0.075	0						
PF	11.428	1	37.5	25	98	19	93	12.5	86
PFC 9.5	81	6.3	73	4.75	67	2.36	61	2	59
PFC 1.18	48	0.6	33	0.425	27	0.3	24	0.15	20
PFC0.075	18								
PF	12.470	1	50	37.5	95	25	88	19	82
PFC 12.5	75	9.5	70	6.3	64	4.75	61	2.36	48
PFC 2	46	1.18	35	0.6	18	0.425	9	0.3	4
PFC 0.15	1	0.075	0						
PF	13.467	1	37.5	25	99	19	98.5	12.5	98
PFC 9.5	97	6.3	96.5	4.75	96.2	2.36	96.1	2	96
PFC 1.18	93	0.6	79	0.425	58	0.3	33	0.15	7
PFC0.075	1								
PF	14.430	1	37.5	25	99	19	99	12.5	99
PFC 9.5	99	6.3	99	4.75	98	2.36	95	2	93
PFC 1.18	80	0.6	46	0.425	25	0.3	13	0.15	4
PFC0.075	2								
PF	15.719	1	62.5	37.5	88	25	85	19	80
PFC 12.5	76	9.5	73	6.3	69	4.75	66	2.36	62
PFC 2	59	1.18	45	0.6	28	0.425	23	0.3	21
PFC 0.15	13	0.075	5						
PF	16.482	1	25	19	99	12.5	97	9.5	96
PFC 6.3	92	4.75	90	2.36	85	2	81	1.18	62
PFC 0.6	24	0.425	9	0.3	4	0.15	1	0.075	0
PF	16.612	1	75	37.5	92	25	85	19	80
P 2.5	73	9.5	70	6.3	65	4.75	62	2.36	49
P 2	44	1.18	29	0.6	16	0.425	11	0.3	6
PFC 0.15	2	0.075	1						
PF	16.990	1	50	37.5	98	25	95	19	93
PFC 12.5	91	9.5	90	6.3	88	4.75	87	2.36	84
PFC 2	82	1.18	75	0.6	58	0.425	41	0.3	22
PFC 0.15	5	0.075	2						
PF	17.821	1	50	37.5	92	25	85	19	73
PFC 12.5	60	9.5	53	6.3	47	4.75	44	2.36	36
PFC 2	34	1.18	25	0.6	12	0.425	6	0.3	3
PFC 0.15	1	0.075	0						
PF	18.275	1	50	37.5	94	25	83	19	76
PFC 12.5	66	9.5	59	6.3	50	4.75	45	2.36	39
PFC 2	36	1.18	27	0.6	19	0.425	15	0.3	13
PFC 0.15	11	0.075	9						
PF	18.962	1	62.5	37.5	87	25	75	19	70
PFC 12.5	63	9.5	59	6.3	54	4.75	50	2.36	45
PFC 2	43	1.18	34	0.6	19	0.425	11	0.3	5
PFC 0.15	1	0.075	0						
PF	19.920	1	50	37.5	96	25	87	19	82
PFC 12.5	75	9.5	70	6.3	65	4.75	61	2.36	53
PFC 2	50	1.18	35	0.6	14	0.425	7	0.3	5
PFC 0.15	2	0.075	1						
PF	21.061	1	62.5	37.5	85	25	76	19	69
PFC 12.5	59	9.5	53	6.3	45	4.75	40	2.36	34
PFC 2	32	1.18	25	0.6	15	0.425	11	0.3	9
PFC 0.15	6	0.075	5						
PF	21.893	1	50	37.5	98	25	98	19	92
PFC 12.5	83	9.5	77	6.3	68	4.75	63	2.36	51
PFC 2	46	1.18	27	0.6	10	0.425	5	0.3	3
PFC 0.15	1	0.075	1						
PF	22.462	1	62.5	37.5	91	25	83	19	78
PFC 12.5	73	9.5	68	6.3	62	4.75	58	2.36	48
PFC 2	45	1.18	32	0.6	15	0.425	7	0.3	3
PFC 0.15	0	0.075	0						
PF	23.409	1	62.5	37.5	91	25	83	19	75
P 2.5	66	9.5	61	6.3	54	4.75	51	2.36	44
P 2	42	1.18	32	1.6	18	0.425	11	0.3	6
PFC 0.15	2	0.075	2						
PF	24.543	1	62.5	37.5	84	25	76	19	70
PFC 12.5	64	9.5	60	6.3	54	4.75	52	2.36	47
PFC 2	45	1.18	36	0.6	21	0.425	13	0.3	9
PFC 0.15	4	0.075	2						
PF	25.666	1	50	37.5	97	25	88	19	81
PFC 12.5	74	9.5	69	6.3	64	4.75	61	2.36	54

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PFC    2       52    1.18       43     0.6       21   0.425        8     0.3        3
PFC 0.15        2   0.075        1
PF        25.860        1    37.5       25       98      19       96    12.5       91
P[redacted] 9.5       87     6.3       80     4.75       74    2.36       56       2       46
P[redacted] 1.18      27     0.6        7    0.425        3     0.3        2    0.15        2
PFC0.075        1
PF        26.290        1       19      9.5       98     6.3       97    4.75       92
PFC 2.36       84        2       80     1.18       22     0.6       18   0.425        6
PFC  0.3        3     0.15        2    0.075        2
PF        26.730        1       50     37.5       96      25       93      19       92
PFC 12.5       88      9.5       84      6.3       80    4.75       77    2.36       67
PFC    2       62     1.18       39      0.6       14   0.425        9     0.3        7
PFC 0.15        6    0.075        6
PF        27.680        1       50     37.5       99      25       97      19       92
PFC 12.5       88      9.5       85      6.3       78    4.75       73    2.36       61
PFC    2       56     1.18       34      0.6       10   0.425        5     0.3        3
PFC 0.15        3    0.075        3
PF        30.070        1       50     37.5       97      25       88      19       84
PFC 12.5       73      9.5       67      6.3       55    4.75       53    2.36       43
PFC    2       40     1.18       31      0.6       21   0.425       17     0.3       14
PFC 0.15       11    0.075        9
PF        30.820        1    37.5       25       99      19       97    12.5       95
PFC  9.5       94      6.3       90     4.75       89    2.36       86       2       85
PFC 1.18       76      0.6       61    0.425       50     0.3       35    0.15       11
PFC0.075        4
PF        31.860        1    37.5       25       94      19       92    12.5       91
PFC  8.5       90      6.3       89     4.75       88    2.36       88       2       88
PFC 1.18       86      0.6       74    0.425       60     0.3       43    0.15       17
PFC0.075        8
PF        32.430        1   32.64     2.36       99       2       98    1.18       95
PFC  0.6       84    0.425       69      0.3       52    0.15       25   0.075       12
PF        32.998        1    62.5     37.5       97      25       91      19       84
PFC 12.5       74      9.5       67      6.3       57    4.75       51    2.36       40
PFC    2       37     1.18       27      0.6       18   0.425       14     0.3       12
PFC 0.15       10    0.075        7
$LOCAL
LQL          0.1     1000     5000    10000    25000
LTL          0.1     1094     6855    16015    51300
LF[redacted] VFS 0.28256 0.28256 0.25945 0.28352 0.27310
L[redacted]  FS 0.43291 0.43291 0.40442 0.37836 0.39708
LF[redacted] MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL   CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL  VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL  VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL   FG 0.00076 0.00076 0.00197 0.00380 0.00293
LFL   MG 0.00056 0.00056 0.00028 0.00067 0.00050
LFL   CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL  VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$HYD
$RATING
RC            12     5000     5000          912.55  913.39   913.9  914.53   914.9
RC         915.38   915.8  916.05   916.3  916.70   917.0  917.24
         ***********RUN 30 DAYS OF 9,000 CFS ************************
*   AB  TIME STEP NO 1
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 2
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 3
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 4
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 5
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 6
Q   9000
T[redacted] 60
X           0.01       1
*   AB  TIME STEP NO 7
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 8
Q   9000
T     60
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X          0.01       1
*   AB  TIME STEP NO 9
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 10
Q   9000
T     60
X         0.005       1
*   AB  TIME STEP NO 11
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 12
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 13
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 14
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 15
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 16
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO  17
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 18
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 19
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 20
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 21
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 22
Q   9000
T     60
X          0.01       1
*   AB TIME STEP NO 23
Q   9000
T     60
X          0.01       1
*   AB  TIM STEP NO  24
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 25
Q   9000
T     60
X         0.005       1
*   AB  TIME STEP NO 26
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 27
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 28
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 29
Q   9000
T     60
```

```
X          0.01       1
*   AB  TIME STEP NO 30
Q   9000
T     60
X          0.005      1
    $DREDGEB
    $NODREDGE
       -----100-YEAR HYDROGRAPH------
*   AB  TIME STEP NO 31
Q   9000      100
T     60       60
X          0.005    0.06
*       TIME STEP NO 32
Q   9000      100
W   0.01
*   AB  TIME STEP NO 33
Q   9000      800
X         0.0005    0.08
*       TIME STEP NO 34
Q   9000      800
W   0.01
*   AB  TIME STEP NO 35
Q  18000     7000
X          0.005    0.04
*       TIME STEP NO 36
Q  18000     7000
W   0.01
*   AB  TIME STEP NO 37
Q  36000    17000
X          0.005    0.06
*       TIME STEP NO 38
Q  36000    17000
W   0.01
*   AB  TIME STEP NO 39
Q  44000    20000
X          0.005    0.04
*       TIME STEP NO 40
Q  44000    20000
W   0.01
*   AB  TIME STEP NO 41
Q  54000    24000
X          0.005    0.04
*       TIME STEP NO 42
Q  54000    24000
W   0.01
*   AB  TIME STEP NO 43
Q  52000    22000
X          0.005    0.04
*       TIME STEP NO 44
Q  52000    22000
W   0.01
*   AB  TIME STEP NO 45
Q  44000    18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000    18000
W   0.01
*   AB  TIME STEP NO 47
Q  30000    12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000    12000
W   0.01
*   AB  TIME STEP NO 49
Q  20000     8000
X          0.001    0.06
*       TIME STEP NO 50
Q  20000     8000
W   0.01
*   AB  TIME STEP NO 51
Q   9000     4000
X          0.001    0.13
*       TIME STEP NO 52
Q   9000     4000
W   0.01
*   AB  TIME STEP NO 53
Q   5500      500
X           0.01    0.33
*       TIME STEP NO 54
Q   5500      500
W   0.01
$$END
```

APPENDIX F
GRADE CONTROL STRUCTURE HEC-6 MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

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T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      ENCHADD.DAT OCT 17 2001  ENCROACHED FLOODWAY MODEL WITH ADDITIONAL XSECTIONS
C  ***************************************************************************

     THIS ENCHADD.DAT MODEL IS BASED ON ENCH.DAT WHICH IS THE ENCROACHMENT
     MODEL OF THE AGUA FRIA RIVER WITH 50% SEDIMENT INFLOW
     ENCH.DAT IS THE FULLY ENCROACHED HEC-6 SEDIMENT TRANSPORT MODEL OF THE
     AGUA FRIA RIVER. EACH CROSS SECTION IS ENCROACHED TO THE FLOODWAY LIMITS PER
     ENCROACHMENT STATIONS DEVELOPED IN THE FLOOD INSURANCE STUDY AND HEC-2 MDOEL BY COE & VAN LOO
     AND BY KHA/LTM HEC-RAS MODEL OF THE AGUA FRIA RIVER.

     ENCHADD.DAT MODEL IS THE ENCH.DAT MODEL BUT WITH 5 ADDITIONAL CROSS SECTIONS
     AT PROPOSED GRADE CONTROL STRCUTURE LOCATIONS. THERE ARE FOUR PROPOSED GRADE
     CONTROL STRUCTURES...(OLIVE AVE, BELL ROAD, ROSE GARDEN, NEW ESTRELLA PKWY)
     THIS MODEL PROVIDES TWO CROSS SECTIONS FOR EACH GRADE CONTROL SO THAT THERE
     IS ONE CROSS SECTION AT THE UPSTREAM SILL AND ONE CROSS SECTION AT THE DOWNSTREAM
     SILL FOR EACH GRADE CONTROL.
     D:\AF\EN\ENCHADD.DAT  OCT 17 2001

    ***************************************************************************
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3                          9300     920   11600     920
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6  10136.   913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1  10590.   916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1  11265.   911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1  11911.   914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5  12758.   916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5  15403.   920.3 15459.0
HD  0.16      10    9300   11600
NC 0.045    0.10   0.035
X1  0.44      44    9798   10420    1510    1465    1485
X3                          8970     923   11640     923
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8970   11640
NC 0.048   0.074   0.035
X1  0.63      36    9888   10209    1055     985    1010
X3                          8970     926   11440     926
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8970   11440
NC 0.050   0.066   0.035
X1  0.73      39    9917   10162     510     490     500
X3                          8980     927   11280     927
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8980   11280
     ******************************************************
     ***********BEGIN BROADWAY 1W AND 1E*******************
NC 0.045    0.07   0.035
X1  1.01      35    9682   10471    1380    1375    1375
X3                          9300     930   11250     930
GR 928.9  4205.0   928.5  5661.0   929.2  6721.0   928.4  7602.0   928.7  8490.0
GR 928.7  8566.0   928.2  8695.0   928.3  8740.0   928.5  9048.0   928.6  9151.0
GR 928.8  9185.0   922.0  9235.0   921.8  9300.0   921.4  9400.0   924.5  9437.0
GR 924.9  9682.0   921.5 10000.0   921.2 10380.0   921.2 10405.0   924.0 10471.0
GR 924.0  10505.   924.0 10677.0   924.0 10694.0   924.0 10715.0   922.9 10733.0
GR 923.6  10830.   929.5 10849.0   924.2 10867.0   925.3 11259.0   930.4 11284.0
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GR 930.4  11298.   924.4 11319.0   924.6 12194.0   929.7   13800   932.0   14000
HD  1.01      10    9300   11250            912   10400   10750
NC 0.045   0.077   0.035
X[illegible]1.10    37.0    9719   10678     500     470     490
X[illegible]                       9450     931   11220     931
GR 929.3  6000.0   930.4  6858.0   929.4  7741.0   929.3  8585.0   929.3  8600.0
GR 929.6  8801.0   928.2  9000.0   931.4  9071.0   919.5  9267.0   920.8  9325.0
GR 923.6  9368.0   924.3  9660.0   923.6  9700.0   923.2  9719.0   922.5 10000.0
GR 923.1 10141.0   923.0 10171.0   923.0 10387.0   923.0 10419.0   923.0 10556.0
GR 923.0 10595.0   925.5 10678.0   925.5 10729.0   924.0 10913.0   924.0 10941.0
GR 924.0 10966.0   924.7 11005.0   927.9 11017.0   927.9 11033.0   924.6 11128.0
GR 929.4 11150.0   925.5 11188.0   925.5 11400.0   925.6 11660.0   926.3 12105.0
GR 928.0   13150   930.3   13600
HD  1.10      10    9450   11220            912   10050   11300
NC 0.045   0.069   0.035
X1  1.17    25.0    9917   10654     560     490     540
X3                         9400     932   11020     932
GR 932.2  6215.0   929.9  7229.0   929.9  7805.0   929.7  8500.0   929.7  8639.0
GR 926.5  8784.0   927.1  9032.0   928.5  9439.0   926.8  9778.0   927.2  9917.0
GR 923.7  9929.0   923.6  9940.0   924.3 10000.0   923.6 10113.0   924.3 10142.0
GR 924.3 10608.0   926.6 10620.0   926.6 10654.0   924.0 10704.0   927.0 11220.0
GR 927.3 11266.0   926.6 11765.0   926.8 12280.0   930.3   13060   934.0   13150
HD  1.17      10    9400   11020
NC 0.045   0.069   0.035
X1  1.25    24.0    9974   10742     480     490     485
X3                         9200     933   10700     933
GR 933.2  6235.0   931.2  6887.0   932.2  8114.0   932.2  8340.0   932.2  8429.0
GR 927.9  8531.0   930.3  8831.0   927.5  9204.0   930.3  9306.0   929.1  9974.0
GR 926.2  9990.0   924.4 10000.0   924.4 10533.0   924.4 10571.0   924.4 10594.0
GR 924.4 10702.0   929.8 10742.0   930.1 11083.0   929.4 11240.0   928.7 11410.0
GR 928.5 12013.0   930.4 12109.0   936.0   12500   940.0   13000
HD  1.25      10    9200   10700
      ************END BROADWAY 1W AND 1E********************
      ************************************************
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456     485     500     495
X3                         8853     935   10470     935
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
G[illegible]29.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
G[illegible]29.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8853   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X3                         8350     940   10285     940
GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965
X3                         8410     942 10071.1     942
GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8 10079.1
HD  2.02      10    8410   10070
NC   .04     .04    .035
X1  2.60      26    9437   10850    2700    2945    3320
X3                         9300     950 11144.3     950
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
G[illegible]2.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60      10    9437   10850
X1  2.80      19    9200   11222    1250     655    1000
X3                         9160     952 11209.3     952
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
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HD  2.80      10    9160   10850
X1  3.27      17  9692.6 11130.5    2800    1995    2505
X3                 9692     955 11120.3     955
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27      10    9692 11120.3
X1  3.37      17  9716.5 10970.3     585     460     510
X3                 9750     955 10952.4     955
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37      10    9750 10952.4
X1  3.43      12  9758.5 10873.4     925     795     850
X3                 9700     956 10856.9     956
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43      10    9700 10856.9
X1 3.729     6.0    9420   10603    1575    1585    1580
X3                 9422.4     962 10596.3     962
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729      10  9422.4 10596.3
NC                   0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
X3                 9407.8     962 10592.8     962
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734      10  9407.8 10592.8
X1 3.757     7.0    9425   10555     120     120     120
X3                 9436.8     962 10547.4     962
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757      10  9436.8 10547.4
X1 3.767      92  9428.1 10572.0      50      50      50
X3                 9441.2     962 10559.1     962
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767      10  9441.2 10559.1
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
X3                 9454.5     965 10566.5     965
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0  9454.5 10566.5
X1 4.094     7.0    9440   10578      10      10      10
X3                 9458.1     965 10563.7     965
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0  9458.1 10563.7
X1  4.30     7.0    9458   10594    1040    1040    1040
X3                 9467.6     970 10580.8     970
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GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1 4.70     9.0    9451   10579    2205    2065    2135
X3                        9460.5     970 10567.9     970
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10  9460.5 10567.9
X1 4.754    53.0  9402.5 10572.3     150     310     225
X3                        9438.5     970 10562.4     970
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754      10  9438.5 10562.4
X1  4.79     6.0    9440 10562.4     357     187     277
X3                        9458.38    97010573.63     970
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79      10 9458.3810573.63
X1  5.15     9.0    9291   10713    1780    1960    1873
X3                        9306.95    97510695.61     975
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15      10 9306.95   10590
         ------------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201     9.0    9291   10713     180     360     270
X3                        9304.89    97510696.92     975
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
GR 969.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
HD 5.201       0 9304.8910696.92
X1 5.203     9.0    9291   10713      10      10      10
X3                        9306.07    97510695.56     975
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203       0 9306.0710695.56
X1 5.290      82  9250.8 10672.4     505     675     585
X3                        9267.73    98010653.67     980
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290      10 9267.7310653.67
X1 5.380    20.0  9266.0 10656.0     305     645     465
X3                        9351.35    98010643.74     980
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380      10 9351.3510643.74
         ----------MCDOWELL ROAD------
X1 5.689      42  9371.3 10552.8    1320    1740    1620
X3                        9385.82    98510538.28     985
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR973.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
GR973.85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689      10 9385.8210538.28
X1 5.750    22.0  9426.0 10579.0     370     370     370
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X3                        9452.74     98510571.99     985
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
G  975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
G  973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750       10 9452.7410571.99
X1 5.900    17.0  9429.0 10561.0     945     950     950
X3                        9439.5     98510552.01     985
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900   10     9439.510552.01
         -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0     907     897     902
X3                        9424.2     99010536.34     990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068        0  9424.210536.34
X1 6.070    15.0  9416.0 10545.0       8       8       8
X3                        9424.2     99010536.34     990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070        0  9424.210536.34
X1 6.430    20.0  9452.0 10537.0    2045    1850    1945
X3                        9461.07     995 10527.6     995
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430       10 9461.07 10527.6
X1 6.820    17.0  9444.0 10573.0    2145    1820    1980
X3                        9457.95     99510564.05     995
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
G  001.0 10573.0  1001.0 10591.0
HD 6.820       10 9457.9510564.05
          -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0     357     357     357
X3                        9454.42    100010564.82    1000
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888        0 9454.4210564.82
X1 6.890    16.0  9439.0 10577.0       8       8       8
X3                        9454.42    100010564.82    1000
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890        0 9454.4210564.82
X1 6.910    17.0  9430.0 10579.0     105     115     110
X3                        9443.21    1000   10568    1000
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910       10 9443.21   10568
X1 6.930    17.0  9413.0 10573.0     105     105     105
X3                        9432.07    100010564.01    1000
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930       10 9432.0710564.01
X1 6.990    19.0  9400.0 10559.0     315     355     335
X3                        9419.31    100010549.14    1000
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
G  990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990       10 9419.3110549.14
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
X3                        9517.21    100510497.13    1005
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490       10 9517.2110497.13
         -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
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X1 7.988     37.0   9293.0 10732.0     2805     2480     2625
X3                      9318     1010 10703.6     1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988        0    9318 10703.6
X1 7.990     37.0   9293.0 10732.0       10       10     10.5
X3                      9318     1010 10703.6     1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.990        0    9318 10703.6
NC                        .3       .5
         ---------INDIAN SCHOOL ROAD------
X1 8.000       85   9235.5  10725.       50       50       50
X3                      9249.4     1010 10711.1     1010
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000       10   9249.4 10711.1
    ************* DOWNSTREAM LIMIT OF INDIAN SCHOOL 1-S *****************
    ***********************************************************************
NC                        0.1      0.3
X1 8.105       91   9493.9 10978.6     405      745   522.59
X3                      9470     1010 10970.7     1010
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105       10    9470 10970.7
X1 8.198       92   9458.7 10971.0     420      620   490.43
X3                   9470.38     1010 10963.8     1010
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
```

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GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
G[redacted]9.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
G[redacted]1.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198      10 9470.38 10963.8
NC  .040    .040    .035
   ------------Gravel Mine Between Camelback Road and Indian School----------
   *************DOWNSTREAM LIMIT OF INDIAN SCHOOL 2-S******************
   ********************************************************************
X1 8.433      87  9583.1 10597.5    1155    1365 1241.36
X3                     9009.5    1015   10975    1015
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433      10  9009.5 10597.5
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768      73  9584.7 10102.8    1735    1765 1764.77
X3                     8182.6    1020   11105    1020
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
G[redacted]6.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR[redacted]16.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10  8182.6   11000
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                     9300    1025   11465    1025
GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992      10    9700 11458.9
   ************UPSTREAM LIMIT OF INDIAN SCHOOL 2-S**********************
   ********************************************************************
NC  0.05    0.05   0.035     0.3     0.5
    *************U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE**************
    ************BEGIN SAND AND GRAVEL MINES BETWEEN CAMELBACK AND BETHANY HOME***
    ********************************************************************************
X1 9.266      93  9725.9 11607.3    1539     889 1430.62
X3                     9439.6    1026   11620    1026
GR1024.3  7822.4  1024.5  8138.1  1024.7  8447.1  1024.9  8756.0  1024.2  9091.8
GR1023.4  9402.0  1023.3  9418.1  1024.2  9423.6  1021.6  9432.7  1024.2  9439.6
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GR1022.9  9444.9  1022.4  9529.5  1020.2  9575.9  1022.3  9661.6  1022.1  9725.9
GR1013.9  9852.8  1017.2 10006.0  1013.9 10058.2  1013.7 10086.7  1017.3 10103.7
GR1016.8 10209.4  1015.7 10230.4  1016.6 10257.2  1014.7 10308.2  1014.3 10344.1
GR[illegible]8.0 10369.8  1017.8 10486.5  1019.5 10508.4  1021.4 10604.4  1021.3 10654.4
GR[illegible]9.6 10685.0  1019.7 10704.5  1016.3 10751.4  1017.9 10770.7  1021.4 10905.8
GR1020.8 11021.8  1021.6 11204.6  1020.8 11252.1  1017.1 11283.4  1018.2 11404.6
GR1017.7 11468.4  1021.5 11607.3  1018.7 11635.1  1017.1 11660.6  1023.1 11704.5
GR1022.8 11728.9  1017.3 11752.5  1017.5 11789.2  1023.8 11815.8  1024.4 11854.6
GR1022.1 11954.6  1023.1 12278.8  1021.6 12459.7  1020.1 12472.3  1021.7 12489.4
GR1020.8 12507.6  1022.4 12660.6  1019.8 12672.3  1019.0 12686.2  1021.1 12714.1
GR1020.8 12727.1  1022.4 12754.6  1021.7 13004.7  1020.1 13039.2  1022.2 13104.7
GR1021.4 13173.2  1018.6 13185.1  1018.2 13192.5  1022.7 13202.6  1018.5 13212.1
GR1019.0 13244.7  1023.0 13254.3  1018.1 13265.2  1019.3 13347.4  1020.2 13359.6
GR1020.5 13394.8  1018.9 13405.5  1020.6 13454.7  1020.8 13490.7  1022.7 13501.3
GR1023.2 13532.9  1022.0 13542.7  1022.7 13554.9  1023.2 13887.5  1023.1 14188.9
GR1023.3 14504.7  1023.0 14515.6  1024.2 14522.5  1023.3 14526.3  1023.2 14854.7
GR1023.8 15204.7  1024.1 15254.7  1024.1 15454.2
HD 9.266      10    9440   11620
NC  0.05    0.05   0.035     0.1     0.3
X1 9.435      83  9548.8 11146.3     875     915  889.44
X3                      8158    1030 11141.8    1030
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
GR1020.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
GR1025.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR1024.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD [illegible]8.435      10  9548.8 11141.8
Q[illegible]
X1 [illegible]9.696      91  9602.6 10996.2    1430     1330 1383.24
X3                      9570    1030    11080    1030
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR1028.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
GR1019.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
GR1024.7 10030.2  1025.6 10107.8  1025.2 10146.5  1024.5 10147.3  1024.7 10232.4
GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR1027.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
GR1023.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR1021.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696      10    9600   11080
          -------SOUTH OF GLENDALE AIRPORT------
     --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40
X3                      9327.8    1035   10725    1035
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
GR1029.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR[illegible]3.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
G[illegible]9.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
GR[illegible]8.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
GR1031.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
GR1031.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
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GR1035.2 15177.3
HD 9.885       10   9327.8 10706.6
X110.167       91   9412.5 10272.2    1820    1135 1491.12
X                                 9380    1035   10380    1035
GR1036.2  7129.0  1037.7  7194.5  1035.7  7205.8  1037.3  7277.2  1037.1  7420.3
GR1039.4  7453.6  1037.1  7485.2  1038.7  7507.3  1037.7  7579.8  1038.3  7590.5
GR1037.3  7594.2  1037.3  7713.7  1036.2  7723.0  1036.4  7888.6  1038.2  7925.2
GR1037.1  7939.2  1035.1  8120.7  1036.1  8128.4  1036.5  8429.0  1035.2  8480.7
GR1037.0  8786.9  1035.9  8921.4  1037.0  8943.4  1036.8  8974.4  1031.8  9018.5
GR1039.2  9040.9  1034.5  9055.3  1033.7  9126.3  1036.7  9148.2  1033.3  9165.5
GR1033.8  9220.1  1033.4  9233.3  1034.7  9240.3  1038.4  9252.7  1035.6  9256.7
GR1033.3  9272.8  1033.5  9412.5  1030.1  9441.5  1028.9  9508.9  1029.9  9773.1
GR1023.3 10025.7  1023.7 10040.0  1025.8 10051.5  1026.7 10190.6  1028.9 10206.1
GR1028.6 10254.0  1031.0 10272.2  1033.1 10498.3  1032.9 10848.3  1033.0 11148.3
GR1032.2 11453.2  1030.3 11467.7  1032.9 11483.3  1032.3 11523.7  1030.0 11546.4
GR1034.0 11563.1  1032.4 11603.2  1032.6 11807.8  1033.8 11846.8  1032.4 11877.0
GR1034.1 11898.4  1033.1 11953.6  1033.7 11977.0  1036.3 11989.1  1031.3 12008.1
GR1033.4 12031.2  1033.2 12088.4  1031.7 12103.8  1033.5 12114.2  1032.3 12117.7
GR1034.5 12198.3  1033.1 12499.2  1032.6 12530.4  1034.2 12592.6  1032.8 12620.5
GR1032.5 12695.9  1030.5 12748.7  1033.1 12905.5  1030.4 13006.4  1032.1 13048.1
GR1033.2 13355.8  1033.5 13581.8  1034.8 13585.3  1031.2 13629.7  1033.4 13936.1
GR1032.9 14248.3  1033.1 14395.7  1037.8 14406.5  1038.1 14419.7  1033.2 14430.0
GR1033.1 14443.1
HD10.167       10     9380   10380
NC  0.05    0.05    0.045
X110.343       78   9782.1 10288.8     910     695  923.51
X3                                9750    1040   11416    1040
GR1043.6  5749.1  1044.2  5780.6  1038.7  5851.9  1039.0  6019.2  1039.2  6332.0
GR1039.2  6402.4  1036.8  6515.4  1039.7  6852.7  1039.1  7156.0  1038.6  7398.1
GR1040.0  7472.0  1039.8  7821.6  1039.2  8124.2  1040.1  8426.7  1038.4  8626.1
GR1035.8  8870.7  1039.2  8882.3  1030.0  8906.1  1030.0  9429.5  1031.6  9432.5
GR1033.6  9465.9  1034.3  9531.5  1031.4  9573.0  1031.9  9592.8  1036.7  9615.6
GR1031.8  9659.5  1031.4  9770.7  1032.9  9782.1  1029.4  9854.5  1031.9  9869.3
GR1029.4  9924.3  1030.7 10065.3  1026.7 10247.0  1035.2 10288.8  1036.1 10312.9
GR1035.6 10620.5  1034.8 10841.9  1034.0 10847.5  1034.8 10947.5  1033.8 10988.6
GR1034.1 11072.8  1033.2 11092.4  1035.7 11109.8  1035.9 11151.3  1037.1 11164.0
GR1035.8 11184.6  1036.7 11198.0  1035.1 11214.8  1036.3 11231.4  1034.8 11244.9
GR1035.6 11279.1  1034.4 11296.8  1035.7 11345.3  1033.4 11353.5  1033.1 11388.4
GR1035.0 11390.4  1037.4 11416.6  1035.1 11427.0  1033.9 11612.9  1035.2 11918.3
GR1033.7 12029.0  1035.4 12049.5  1035.0 12282.6  1033.3 12306.7  1034.1 12609.1
GR1035.1 12942.0  1034.8 13067.5  1036.1 13073.7  1034.5 13086.5  1035.2 13108.0
GR1033.0 13133.3  1032.5 13203.6  1034.5 13221.6  1035.3 13542.0  1036.5 13836.8
GR1039.9 13845.1  1040.0 13859.8  1035.3 13871.1
HD10.343       10     9750   11416
X110.538       87   9573.5 10478.1     925     985 1033.23
X3                                9514.6    1045   10480    1045
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
GR1040.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
GR1041.2  7536.3  1043.3  7856.8  1042.5  7964.9  1043.8  7979.7  1040.8  8090.9
GR1038.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR1036.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1034.7  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
GR1038.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
GR1037.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR1035.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR1037.2 13424.5  1036.8 13435.8
HD10.538       10   9573.5 10478.1
X110.752       90   9651.8 10329.8    1070    1140 1124.93
X3                                9335    1045 10327.3    1045
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
GR1042.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
GR1039.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR1040.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
GR1041.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
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GR1036.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752      10    9335 10327.3
X110.846      91  9756.4 10308.2     510     480  500.68
X[redacted]                  8865    1045   10310    1045
G[redacted]46.7  4455.3  1042.9  4484.7  1043.7  4812.2  1043.8  5129.0  1043.8  5433.6
GR1044.1  5530.4  1046.4  5558.5  1041.5  5602.2  1045.1  5927.4  1044.9  6130.9
GR1043.3  6192.7  1044.4  6233.7  1043.6  6291.3  1045.2  6592.3  1045.2  6865.7
GR1043.5  6881.1  1046.0  6943.5  1044.7  7051.7  1046.2  7081.4  1044.9  7091.1
GR1046.9  7101.3  1043.9  7119.5  1046.3  7147.0  1045.8  7462.6  1049.2  7474.5
GR1044.0  7487.9  1046.2  7572.9  1048.6  7583.4  1046.3  7599.4  1045.6  7653.5
GR1043.4  7674.3  1043.0  7985.4  1041.5  8301.1  1042.5  8319.7  1042.0  8459.6
GR1043.9  8485.0  1042.8  8530.2  1044.1  8547.8  1044.3  8770.3  1042.4  8787.3
GR1042.1  8963.4  1043.0  9125.3  1041.7  9155.7  1042.6  9496.4  1041.8  9621.3
GR1040.7  9636.3  1039.3  9713.9  1039.0  9756.4  1034.8  9829.0  1033.3  9916.9
GR1031.6  9937.5  1035.3 10030.4  1037.4 10223.5  1033.7 10237.0  1033.6 10267.9
GR1038.8 10283.4  1042.9 10308.2  1040.5 10341.8  1042.0 10384.0  1041.2 10394.2
GR1044.4 10402.4  1042.7 10409.7  1044.3 10419.7  1042.4 10496.4  1043.7 10522.5
GR1042.7 10830.5  1043.1 10840.5  1040.9 10848.8  1040.5 10856.7  1043.7 10865.5
GR1042.8 10994.0  1040.8 11003.6  1043.6 11155.2  1042.4 11164.5  1042.9 11173.3
GR1041.7 11176.7  1043.5 11316.2  1042.3 11568.9  1041.2 11574.0  1044.0 11627.0
GR1040.0 11674.8  1040.2 11730.9  1042.9 11769.5  1041.4 11804.3  1038.8 11820.9
GR1038.2 11875.5  1043.1 11899.9  1042.7 11965.1  1043.9 11981.0  1041.9 12286.9
GR1042.2 12373.3
HD10.846      10    8865   10310
   ****************UPSTREAM END OF SAND AND GRAVEL MINES BETWEEN CAMELBACK ******
   ****************AND BETHANY HOME ROAD - PITS DEPTHS BASED ON AREA WEIGHTED****
   ****************PIT DEPTHS AS A FUNCTION OF TOTAL MINING AREA*****************
NC  0.05   0.095   0.045
X111.029      95  9513.1 10404.2    1035     865  963.30
X3                          9240    1050   10467    1050
GR1055.5  3356.7  1053.0  3607.3  1053.9  3617.6  1051.2  3623.8  1050.3  3635.8
GR1051.3  3641.5  1049.4  3661.8  1047.1  3741.2  1046.4  3861.8  1044.0  3889.2
GR1045.3  3899.9  1045.1  4187.0  1046.2  4194.5  1045.9  4514.8  1044.5  4858.6
GR1044.0  4890.1  1046.3  5011.7  1046.5  5170.4  1047.9  5180.1  1045.6  5308.8
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR[redacted]47.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
G[redacted]46.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR[redacted]46.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR1045.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR1045.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029      10    9240   10467
       -------GLENDALE AVENUE----------
X111.428      94  9814.2 10227.2    1960    2335    2160
X3                          9625.4    1053 10191.9    1053
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10  9625.4 10191.9
NC  0.15   0.055   0.035     0.3     0.5
   **************DOWNSTREAM LIMIT OF GLENDALE-1***************************
   ********************************************************************
X[redacted]1.557      95  9881.6 10100.9     675     675  677.68
X3                          8970    1058   10101    1058
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
```

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GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR 1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR 1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557      10    8970 10100.9
X111.847      95  9914.3 10113.4    1530    1530 1531.67
X3                     7310    1065   10173    1065
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    7310 10113.4
X112.042      62  9903.4   10070     990    1050 1028.61
X3                     6350    1070   10165    1070
GR 1066    5900    1058    5930    1058    6005    1059  6024.1  1059.2  6048.5
GR 1060  6057.8  1058.2  6082.7  1058.2  6096.6  1058.2  6138.2  1058.2  6154.2
GR1058.2  6173.8  1058.2  6190.9  1058.2  6201.8  1058.2  8555.6  1058.2  8631.6
GR1058.2  8641.8  1061.8  8660.4  1058.2    8806  1058.2  8910.3  1058.2  8998.8
GR1058.2  9007.9  1058.2  9078.3  1058.2  9101.9  1058.2  9111.5  1058.2  9145.2
GR1058.2  9148.5  1058.2  9164.4  1058.2  9181.1  1058.2  9201.8  1058.2  9211.2
GR1058.2  9267.4  1058.2  9290.8  1058.2  9298.9  1059.3  9367.2  1062.4  9377.5
GR1062.9  9390.5  1059.5    9402  1058.5  9412.2  1058.2  9418.8  1058.2  9447.6
GR1061.2  9485.4    1061  9536.3  1058.2  9574.9  1058.2    9588  1058.2  9609.8
GR1058.2  9615.8  1058.2  9622.9  1058.2  9667.5  1058.2  9802.1  1058.2  9840.1
GR1058.2  9853.8  1062.1  9867.5  1060.9  9871.4  1061.8  9900.2    1063  9903.4
GR1050.5    9940  1049.3  9955.3  1049.7  9979.1  1048.5  9992.6  1049.8   10044
GR  1062   10070    1068   10165
HD12.042      10    7200   10165
X112.359      73  9691.6 10061.0    1520    1680 1672.99
X3                     7600    1070   10100    1070
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      10    7600   10100
   ****************UPSTREAM LIMIT OF GLENDALE-1*******************************
   ****************************************************************************
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                     7850    1070   10200    1070
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR 1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
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GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
G[redacted]0.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
G[redacted]1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42      10    7850   10150
NC  .045    .040    .035     0.1     0.3
    **************DOWNSTREAM LIMT OF NORTHERN -1 ******************************
    *************DID NOT INCLUDE IN SAND AND GRAVEL MODEL AS PROPOSED PIT********
    *************IS OUTSIDE 100-YEAR FLOODPLAIN LIMITS ACCORDING TO LOMR*********
    ********************************************************************************
X1 12.47      89  9382.2 10296.2     230     240     255
X3                       7298.5    1070 11052.3    1070
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47      10    7500 10296.2
X112.816      94  9781.2 10376.3    1780    1850 1859.04
X3                       8483.3    1070   10488    1070
XL                       9781.2 10376.3
GR[redacted]5.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
G[redacted]3.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR[redacted]8.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
GR1069.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR1070.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816      10  8483.3   10375
   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007      94  9767.1 10186.1    1000    1030 1006.76
X3                       8750    1075   10239    1075
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR[redacted]1.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
G[redacted]2.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR[redacted]0.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007      10    8800   10186
NC  .045    .045    .035     0.3     0.5
   ***********UPSTREAM LIMIT OF NORTHERN-1*****************************************
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   ********************************************************************************
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
    **********DOWNSTREAM SILL LOCATION OF GRADE CONTROL**************
X[redacted]395       90  9303.0 10323.4    2020    2045 2049.55
X[redacted]                     9227.64    108010326.19    1080
GR1078.7  6969.6  1078.4  7004.1  1078.4  7205.7  1078.3  7353.8  1078.9  7483.1
GR1079.5  7489.5  1079.4  7499.6  1078.7  7509.5  1078.5  7655.7  1078.7  7806.6
GR1078.2  7957.5  1077.9  8102.9  1078.7  8145.4  1076.5  8158.4  1076.5  8173.2
GR1078.7  8185.3  1078.3  8254.3  1078.7  8259.8  1080.0  8265.5  1078.7  8270.5
GR1079.0  8290.1  1078.3  8301.2  1078.6  8359.9  1077.6  8410.2  1077.8  8452.9
GR1077.1  8491.4  1077.8  8506.2  1077.2  8533.7  1078.7  8556.1  1078.9  8579.0
GR1079.7  8591.4  1078.8  8600.4  1077.9  8644.0  1078.1  8651.6  1079.6  8665.3
GR1079.3  8690.2  1077.6  8697.3  1076.4  8708.5  1076.4  8715.0  1083.6  8732.3
GR1084.3  8734.9  1084.3  8751.5  1081.5  8760.9  1080.2  8771.5  1075.7  8788.8
GR1076.4  8814.5  1076.9  8815.8  1077.5  8829.2  1076.9  8884.6  1077.0  8902.8
GR1076.4  8916.5  1075.6  9003.0  1076.2  9069.6  1074.9  9102.5  1075.7  9136.5
GR1075.6  9195.2  1076.0  9209.5  1075.6  9217.5  1074.4  9233.4  1073.6  9241.0
GR1076.6  9269.3  1075.6  9286.8  1075.2  9303.0  1070.6  9350.5  1069.6  9373.2
GR1065.7  9386.0  1065.5  9407.9  1065.8  9453.0  1065.6  9501.7  1064.9  9518.0
GR1071.6  9531.5  1070.2  9602.9  1071.0  9703.0  1070.4  9775.2  1067.2  9788.7
GR1064.6  9795.7  1066.0  9845.3  1066.2  9882.4  1064.0  9889.3  1064.2  9988.1
GR1065.8  9991.3  1073.1 10009.0  1072.8 10053.0  1070.1 10098.5  1071.1 10198.2
GR1074.9 10229.0  1075.3 10240.9  1073.7 10254.0  1074.0 10259.9  1073.6 10295.0
HD13.395       10 9227.6410326.19
    **********UPSTREAM SILL LOCATION OF GRADE CONTROL******
X113.396       90  9303.0 10323.4      10      10      10
X3                      9227.64    108010326.19    1080
GR1078.7  6969.6  1078.4  7004.1  1078.4  7205.7  1078.3  7353.8  1078.9  7483.1
GR1079.5  7489.5  1079.4  7499.6  1078.7  7509.5  1078.5  7655.7  1078.7  7806.6
GR1078.2  7957.5  1077.9  8102.9  1078.7  8145.4  1076.5  8158.4  1076.5  8173.2
GR1078.7  8185.3  1078.3  8254.3  1078.7  8259.8  1080.0  8265.5  1078.7  8270.5
GR1079.0  8290.1  1078.3  8301.2  1078.6  8359.9  1077.6  8410.2  1077.8  8452.9
GR1077.1  8491.4  1077.8  8506.2  1077.2  8533.7  1078.7  8556.1  1078.9  8579.0
GR1079.7  8591.4  1078.8  8600.4  1077.9  8644.0  1078.1  8651.6  1079.6  8665.3
GR1079.3  8690.2  1077.6  8697.3  1076.4  8708.5  1076.4  8715.0  1083.6  8732.3
GR1084.3  8734.9  1084.3  8751.5  1081.5  8760.9  1080.2  8771.5  1075.7  8788.8
GR1076.4  8814.5  1076.9  8815.8  1077.5  8829.2  1076.9  8884.6  1077.0  8902.8
GR1076.4  8916.5  1075.6  9003.0  1076.2  9069.6  1074.9  9102.5  1075.7  9136.5
GR1075.6  9195.2  1076.0  9209.5  1075.6  9217.5  1074.4  9233.4  1073.6  9241.0
GR[redacted]6.6  9269.3  1075.6  9286.8  1075.2  9303.0  1070.6  9350.5  1069.6  9373.2
GR[redacted]65.7  9386.0  1065.5  9407.9  1065.8  9453.0  1065.6  9501.7  1064.9  9518.0
GR1071.6  9531.5  1070.2  9602.9  1071.0  9703.0  1070.4  9775.2  1067.2  9788.7
GR1064.6  9795.7  1066.0  9845.3  1066.2  9882.4  1064.0  9889.3  1064.2  9988.1
GR1065.8  9991.3  1073.1 10009.0  1072.8 10053.0  1070.1 10098.5  1071.1 10198.2
GR1074.9 10229.0  1075.3 10240.9  1073.7 10254.0  1074.0 10259.9  1073.6 10295.0
HD13.396       10  9227.6410326.19
    ********************************************************************
X113.467       89  8693.6 10286.7  2400.4  2425.4  2429.7
X3                        8783    1080 10203.4    1080
GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467       10    8783 10203.4
NC                       0.1     0.3
X113.952       93  9432.8 10076.3    2525    2585 2566.36
X3                        9400    1085   10384    1085
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR[redacted]82.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
G[redacted]4.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
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GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
G[redacted]6.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
G[redacted]0.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952      10    9400   10384
X114.430      95  9171.4 10301.1    2175    2625 2523.57
X3                   7800    1095   10520    1095
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
GR1092.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
GR1093.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
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GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
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GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
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GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7  1093.2 10940.6  1093.8 10984.2
HD14.430      10    8800 10301.1
X115.000      93  9346.3 10081.6    2700    3130  3009.7
X3                   9290    1105   10130    1105
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
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GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
GR1096.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
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G[redacted]9.3 11392.9  1098.1 11400.2  1096.6 11405.2  1096.5 11410.1  1097.8 11419.6
GR[redacted]8.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
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GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
GR1104.2 12758.9  1103.7 12782.7  1104.1 12821.1
HD15.000      10  9346.3   10130
X115.094      93  9336.0 10125.1     495     495  496.49
X3                   9234.4    1105   11152    1105
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
GR1098.7  9317.6  1099.1  9336.0  1093.7  9355.8  1092.1  9366.0  1093.0  9426.0
GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
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GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
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GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   10400
NC   .040    .045    .035
X11[redacted]374      92  9832.4 10085.5    1650    1260 1478.26
X[redacted]                  9822    1110   10390    1110
GR1[redacted]09.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
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GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
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GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
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G[redacted]04.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   10390
NC  .040    .040    .035
           ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719      91  9885.3 10059.7    1950    1635 1824.01
X3                     9385.2    1115   10150    1115
GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
X116.099      92  9804.0 10081.1    2010    2005 2002.13
X3                     9400    1115   10082    1115
GR[redacted]32.1  9191.9  1126.8  9200.4  1111.0  9233.0  1104.9  9259.9  1105.0  9274.3
G[redacted]04.8  9282.4  1106.9  9313.0  1108.3  9366.1  1109.2  9418.0  1109.2  9466.8
GR[redacted]10.2  9517.2  1109.5  9549.3  1109.5  9567.6  1108.4  9606.1  1105.8  9624.0
GR1106.1  9629.4  1106.4  9668.4  1106.2  9694.8  1106.5  9705.3  1107.2  9716.8
GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
GR1102.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
GR1113.5 11456.5  1111.4 11479.4  1111.7 11481.5  1113.2 11504.1  1113.1 11516.6
GR1112.4 11531.3  1112.5 11549.4  1113.1 11567.8  1113.4 11729.2  1113.2 11911.4
GR1113.5 12079.2  1113.9 12179.2  1114.1 12304.0  1114.4 12329.3  1114.1 12501.3
GR1113.9 12675.5  1114.0 12727.4  1114.2 12746.8  1114.1 12929.3  1114.6 13041.6
GR1115.1 13090.7  1115.1 13122.1
HD16.099      10    9400   10082
NC                     0.3     0.5
X116.482      90  9781.9 10219.8    1980    2160 2026.23
X3                   9787.92    112510241.84    1125
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
GR1139.3  9451.2  1138.5  9456.3  1137.2  9528.1  1136.8  9537.1  1137.1  9563.8
GR1136.6  9616.0  1135.9  9622.7  1134.7  9645.4  1133.3  9704.0  1131.9  9731.2
GR1130.9  9750.4  1130.6  9765.2  1126.1  9774.7  1122.1  9781.9  1117.0  9795.4
GR1114.2  9802.5  1111.1  9816.2  1109.7  9859.8  1108.9  9880.3  1108.6  9915.4
GR1107.7  9931.8  1105.6  9947.6  1105.8  9985.2  1108.0 10015.1  1109.8 10086.8
GR1108.8 10140.7  1109.1 10210.9  1117.6 10219.8  1119.6 10222.0  1120.1 10266.0
GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR1123.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
GR1121.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
GR1118.8 10994.6  1118.6 11064.6  1118.2 11105.9  1117.3 11151.7  1116.3 11206.3
GR[redacted]16.2 11210.6  1117.1 11245.1  1116.8 11253.8  1117.1 11286.7  1118.3 11329.8
G[redacted]18.3 11349.3  1118.5 11378.5  1118.7 11406.2  1119.3 11448.7  1119.7 11562.0
GR[redacted]20.2 11569.8  1120.5 11673.4  1120.6 11689.2  1120.7 11754.4  1121.0 11817.9
GR1121.1 11822.8  1122.0 11961.4  1122.4 11986.6  1122.8 12071.0  1123.0 12098.0
GR1123.1 12149.2  1123.1 12151.2  1123.2 12191.5  1124.0 12254.5  1124.0 12264.5
HD16.482      10 9787.82   10220
X116.506      72  9768.0 10245.4     125     125  126.72
X3                     9777.2    1125 10238.7    1125
GR1143.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
GR1140.0  9334.9  1139.6  9379.4  1139.0  9386.3  1138.3  9448.3  1138.4  9482.6
```

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GR1138.0  9525.0  1137.9  9526.8  1136.5  9625.1  1135.2  9710.2  1135.3  9731.2
GR1126.2  9750.8  1124.5  9756.7  1122.2  9768.0  1113.9  9802.5  1112.2  9807.7
GR1110.1  9853.7  1109.1  9878.2  1107.6  9903.9  1106.7  9917.3  1105.4  9933.8
G[redacted]05.6  9939.1  1105.9  9960.5  1105.8  9970.9  1106.6  9982.4  1108.1 10007.8
G[redacted]09.2 10031.5  1110.0 10081.1  1110.5 10104.0  1110.0 10129.9  1110.1 10176.4
GR1110.7 10177.1  1113.8 10221.4  1122.4 10245.4  1122.5 10247.4  1123.5 10250.2
GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506      10  9777.2 10238.7
    *************DOWNSTREAM END OF GRAND-1***********************************
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NC  0.05    0.05    0.04     0.1     0.3
X116.612      84  9808.2 10161.2     627     342     581
X3                          9799    1125 10186.3    1125
XL                        9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR1121.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR1119.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      10   10090 10186.3
NC  0.05    0.05    0.04     0.1     0.3
X[redacted]990      82  9810.0 10135.4    1990    1985    1993
X[redacted]                 9792.31    1130 10135.9    1130
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990      10    9800 10135.9
X117.458      92  9370.6 10225.3    3035    1705 2468.67
X3                          9280    1135   10250    1135
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR[redacted]91.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
G[redacted]95.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
HD17.458      10    9280   10250
    **************DOWNSTREAM END GREENWAY-1*********************************
    ************************************************************************
X117.638      89  9774.7 10288.4     955     895  949.45
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X3                          9285    1140   10360    1140
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
G[illegible]30.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
G[illegible]30.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638       10     9285   10360
NC 0.045     0.05    0.035
X117.821       92  9764.8 10227.7     950     970  964.24
X3                          8350    1145   10270    1145
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR[illegible]38.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
G[illegible]34.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR[illegible]41.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821       10     8350   10270
   ************UPSTREAM END OF GRAND-1*************************************
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X118.275       93  9752.1 10210.5    2170    2440 2398.82
X3                          8750    1145   10670    1145
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0  1149.4 13000.0
HD18.275       10     8750   10670
X118.839       92  9787.8 10337.0    2635    3185 2882.75
X3                          9250    1160   10350    1160
GR1159.3  8035.3  1160.1  8038.6  1154.0  8081.5  1152.0  8142.0  1151.8  8165.7
GR1145.2  8172.5  1142.4  8175.7  1135.6  8182.7  1126.5  8192.5  1119.8  8199.1
GR1119.8  8265.6  1136.1  8284.0  1141.6  8289.5  1151.1  8298.1  1150.6  8339.2
GR1152.4  8343.3  1147.4  8393.6  1149.7  8415.2  1150.8  8439.6  1151.2  8443.4
GR1149.9  8483.6  1144.3  8492.4  1143.1  8504.6  1142.9  8518.4  1143.5  8526.7
GR[illegible]43.5  8539.0  1141.4  8542.8  1138.4  8549.1  1139.2  8560.7  1139.1  8569.3
G[illegible]43.3  8578.2  1146.8  8592.3  1149.9  8594.8  1150.7  8597.1  1150.7  8600.4
GR1148.7  8619.6  1148.7  8627.7  1149.8  8634.1  1151.3  8649.9  1151.6  8695.7
GR1150.9  8746.0  1150.6  8796.3  1149.1  8837.3  1149.4  8854.9  1151.4  8869.2
GR1152.3  8960.5  1152.0  8966.7  1148.3  9004.8  1150.0  9017.9  1151.0  9023.1
GR1147.6  9041.7  1147.0  9087.8  1149.7  9104.9  1149.5  9108.5  1149.7  9149.0
GR1150.7  9199.0  1151.4  9285.5  1151.8  9359.0  1154.0  9367.0  1154.7  9374.4
GR1151.2  9388.1  1151.3  9420.2  1150.0  9435.1  1149.5  9446.3  1151.6  9476.4
GR1150.9  9511.1  1150.8  9556.2  1151.8  9665.4  1152.1  9705.2  1152.8  9716.6
GR1148.6  9747.1  1147.5  9774.5  1149.2  9787.8  1147.8  9825.0  1145.3  9845.2
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GR1145.1  9901.6  1147.0  9913.2  1146.0  9962.2  1145.0 10056.4  1144.6 10160.9
GR1145.3 10164.0  1146.7 10168.0  1146.8 10189.4  1146.1 10196.0  1145.1 10199.7
GR1144.9 10310.7  1146.1 10321.9  1147.1 10325.1  1147.5 10331.4  1150.1 10337.0
GR[illegible]2.2 10340.5  1159.1 10354.4
H[illegible]839      10    9250   10350
    *****************UPSTREAM END OF GREENWAY-1*******************************
    ************************************************************************
    **************PROPOSED GRADE CONTROL AT BELL*****************************
    *************DOWNSTREAM SILL OF CREST************************************

X118.960      74    9840 10223.7     530     690  634.97
X3                         9391    1156 10483.8    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.960      10    9440   10480
    ***********UPSTREAM SILL OF GRADE CONTROL *********************************
NC                          0.3     0.5
             --------------BELL ROAD-----------
X118.962      74    9840 10223.7      10      10      10
X3                         9391    1156 10483.8    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1156.6  8465.2
GR1147.5  8466.9  1147.8  8479.5  1147.5  8495.9  1158.1  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
G[illegible]3.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR[illegible]2.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962      10    9440   10480
   ***************************************************************************
NC  .045    .045   .035
X119.066      93  9885.7 10349.1     485     580  551.29
X3                         9350    1160   10778    1160
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR1154.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066      10    9350   10398
NC 0.045   0.045   0.035     0.1     0.3
X[illegible].446      91  9592.8 10078.6    1840    2400 2473.39
X[illegible]                       9170    1170   11361    1170
GR[illegible]9.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
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GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
         ---------UNION HILLS--------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X3                      9660    1175   11778    1175
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3                      9660    1185 10329.5    1185
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR1178.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
   ***************DOWNSTREAM END OF BEARDSLEY-1*****************************
   ************************************************************************
X120.958      90  9787.3 10383.8    1815    2044 2006.06
X3                      8780    1190 10383.9    1190
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      10    8780 10383.9
         ----------BEARDSLEY----------
X121.061      91  9850.0 10325.4     340     655  542.53
X3                      9200    1190   10350    1190
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
```

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GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
G[illegible]81.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
G[illegible]86.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      10    9200   10100
NC  .055    .055    .050
X121.157      94  9377.3 10376.3     340     630  509.07
X3                      9274.8    1195   10400    1195
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
G[illegible]89.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
G[illegible]89.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD[illegible].157      10  9377.3 10398.0
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                      9350    1195 10322.7    1195
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      10    9350 10322.7
NC  .045    .055    .035
     *********UPSTREAM END OF BEARDSLEY -1**************************************
     *********LOCATION OF ROSE GARDEN -1***************************************
     ******************************************************************************
     ********DOWNSTREAM SILL OF GRADE CONTROL AT ROSE GARDEN*******************
X121.893      93  9558.8 10146.5    2525    2070 2442.15
X3                      9546    1200   10680    1200
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR[illegible]98.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
G[illegible]98.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
```

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GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893      10  9558.8   10680
         ************UPSTREAM SILL GRADE CONTROL************************
X[redacted]894      93  9558.8 10146.5      10      10      10
X[redacted]                    9546    1200   10680    1200
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.894      10  9558.8   10680
    ******************************************************
       -------UPSTREAM OF DEER VALLEY ROAD--------
   ***********DOWNSTREAM END OF DEER VALLEY-1S, 1N, AND DEER VALLEY-2***********
   ************************************************************************
X122.177      89  9909.7 10533.6    1415    1510 1490.23
X3                     8765.7    1205 10533.7    1205
GR1207.0  8765.7  1207.1  8786.8  1204.9  8844.5  1203.0  8855.1  1199.5  8865.5
GR1199.8  8878.3  1197.7  9076.9  1201.5  9111.1  1201.8  9131.3  1203.9  9160.3
GR1204.1  9366.4  1203.1  9432.5  1200.7  9451.7  1202.2  9529.3  1201.7  9586.2
GR1202.1  9705.0  1200.6  9773.2  1199.6  9909.7  1197.1 10001.3  1196.9 10057.0
GR1196.2 10078.7  1201.5 10089.5  1196.9 10231.7  1196.0 10350.6  1196.0 10510.5
GR1200.7 10533.6  1197.5 10557.0  1194.4 10565.7  1197.7 10653.0  1196.0 10668.4
GR1193.8 10790.9  1194.5 10950.2  1197.8 10965.9  1202.7 10979.9  1202.4 11012.5
GR[redacted]1.0 11024.0  1201.8 11036.9  1212.9 11068.5  1203.3 11092.5  1202.5 11126.9
G[redacted]2.8 11163.1  1207.3 11173.2  1206.9 11197.3  1205.9 11206.1  1207.0 11344.6
GR[redacted]0.4 11352.1  1213.2 11360.4  1207.1 11376.6  1207.1 11600.9  1208.7 11813.7
GR1213.6 11826.7  1214.6 11832.4  1212.5 11856.3  1214.4 11897.1  1212.8 11966.7
GR1214.0 12077.6  1211.0 12191.7  1212.2 12252.6  1211.1 12304.1  1211.6 12311.6
GR1210.8 12326.4  1213.5 12334.0  1206.8 12349.9  1206.8 12409.5  1212.7 12439.6
GR1212.4 12476.5  1206.8 12489.2  1206.8 12564.8  1211.1 12576.8  1209.7 12583.4
GR1207.7 12667.9  1213.9 12678.3  1214.7 12678.9  1214.2 12696.7  1210.2 12709.6
GR1208.5 12713.4  1208.1 12737.7  1220.1 12763.9  1219.5 12790.0  1216.3 12811.3
GR1219.0 12823.9  1216.4 12834.3  1212.8 12843.9  1213.0 12857.8  1211.9 12881.8
GR1209.2 12892.3  1208.1 12903.1  1220.1 12936.6  1220.4 12953.7
HD22.177      10    8850 10533.7
NC  .045    .045    .035
X122.462      77  9887.4 10318.9    1530    1400 1478.14
X3                     9046.89    1210   11760    1210
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462      10  9050.4   11760
X122.745      92  9797.7 10147.8    1520    1270 1491.33
X3                     8914.99    1215   12094    1215
GR1225.1  8903.1  1207.9  8919.7  1208.2  8963.5  1207.5  9060.1  1207.7  9092.9
GR1206.4  9114.7  1206.1  9143.1  1208.9  9172.4  1211.8  9209.3  1212.0  9328.1
GR[redacted]1.9  9402.0  1212.9  9418.9  1212.4  9534.3  1211.5  9563.3  1211.0  9595.9
G[redacted]1.2  9640.5  1210.6  9677.3  1210.8  9692.3  1209.6  9711.3  1209.4  9723.7
GR[redacted]1.0  9745.9  1211.9  9797.7  1211.1  9835.1  1208.8  9954.1  1207.1  9981.3
GR1207.0 10008.3  1206.3 10036.6  1207.2 10049.9  1207.2 10119.2  1210.2 10147.8
GR1210.8 10219.0  1210.4 10251.5  1211.9 10260.4  1211.3 10309.2  1211.7 10324.5
GR1212.5 10377.1  1211.5 10388.9  1212.2 10429.8  1212.2 10482.5  1211.9 10494.4
GR1210.2 10515.1  1210.5 10539.3  1212.7 10587.8  1212.6 10693.2  1212.4 10746.0
GR1212.9 10851.1  1210.4 10874.3  1210.1 10904.0  1212.0 10941.3  1212.2 10956.6
GR1211.7 11009.3  1211.2 11028.1  1212.9 11064.9  1212.4 11099.8  1210.7 11127.4
GR1212.4 11180.0  1212.7 11259.2  1212.5 11272.7  1212.8 11327.7  1209.3 11351.0
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GR1208.3 11378.9  1207.9 11394.3  1206.2 11399.0  1207.0 11430.8  1206.0 11521.2
GR1209.3 11533.2  1209.6 11536.1  1210.0 11641.5  1210.0 11668.6  1208.1 11687.0
GR1210.0 11694.4  1209.8 11721.1  1210.6 11746.8  1211.1 11799.5  1210.6 11904.9
G[redacted]0.8 11957.6  1210.1 12011.8  1209.3 12027.9  1209.6 12051.8  1211.3 12062.3
G[redacted]1.9 12081.2  1212.6 12088.4  1213.4 12113.3  1214.8 12123.8  1214.9 12168.3
GR1215.3 12220.9  1215.3 12248.1  1215.9 12273.6  1216.2 12326.3  1217.0 12371.3
GR1222.8 12402.3  1222.5 12409.2
HD22.745      10 8914.99   12094
   ************UPSTREAM END OF DEER VALLEY SAND AND GRAVEL MINES***************
   ************************************************************************
   ************DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, AND 3E***************
   ************************************************************************
X122.935      94  9530.2 10351.6    2480    2125 2490.47
X3                    8484.93    1220   11640    1220
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   11640
       ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      93  9675.2 10060.2    2450    2360 2505.26
X3                    9550    1230   10970    1230
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
G[redacted]8.9 7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR[redacted]4.7 7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12250
HD23.409      10    9550   10970
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X3                    9650    1235   10675    1235
GR1249.2    6690  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
GR1192.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
GR[redacted]4.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
G[redacted]8.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR[redacted]8.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR1226.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR  1238 11521.1  1237.8 11533.8
HD23.692      10    9650   10675
NC  .055    .055    .050
X123.974      94  9716.2 10115.2    1420    1470 1489.37
X3                    9716    1240   10825    1240
GR1269.8    7400  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
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GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
G[redacted]5.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
G[redacted]9.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10    9716 10388.9
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
    ********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, 3E**********************
    ************************************************************************
NC  .045    .045    .035
X124.449       92  9496.2 10169.3    2380    2560 2506.65
X3                      9350.53    1245   11319    1245
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1[redacted]2.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
G[redacted]0.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR[redacted]8.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10 9350.53 11143.3
     ----------UPSTREAM OF HAPPY VALLEY ROAD----
     **************DOWNSTREAM SILL GRADE CONTROL AT HAPPY VALLEY RD
X124.543       91  9646.7 10243.6     495     495  500.50
X3                      9340    1245   11419    1245
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543      10    9340 11413.5
     **************UPSTREAM SILL OF GRADE CONTROL AT HAPPY VALLEY ********
X124.544       91  9646.7 10243.6     495     495  500.50
X3                      9340    1245   11419    1245
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
G[redacted]6.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
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GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
G[illegible]9.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
G[illegible]1.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.544      10     9340 11413.5
   ********************************************************************
NC   .05     .05     .035
X124.996       90  9774.0 10632.3    2310     2320 2378.18
X3                    9776.35    1255    12290     1255
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
HD24.996       10 9776.35 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478       93  9750.7 10127.1    2600     2485 2546.34
X3                      9750    1265    11715     1265
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
G[illegible]7.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR[illegible]5.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478       10  9750.7 10598.2
          ----------UPSTREAM OF JOMAX ----------
X125.666       66  9842.4 10115.1    1035      975  995.18
X3                      9830    1270    10810     1270
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666       10  9854.2 10388.0
X1 25.86       25    9940   10200    1575    1565    1585
X3                     9150    1275   10201    1275
G[illegible]300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86       10    9150   10200
     **************DOWNSTREAM LIMIT OF PINNACLE VISTA-1************************
     ********************************************************************
NC  0.06   0.065   0.035
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X1 25.94    22.0    9945   10117     450     420     430
X3                          9080    1275   10280    1275
GR1276.1    7527    1273    7678  1273.9    7868  1272.1  8087.0  1270.3  8382.0
G[illegible]0.3  8578.0  1268.1  8600.0  1271.4  8631.0  1271.2  8762.0  1270.1  9101.0
G[illegible]7.2  9241.0  1271.2  9532.0  1269.2  9945.0  1264.2 10000.0  1267.0 10117.0
GR1263.4 10185.0  1270.1 10242.0  1270.3 10425.0  1269.7 10480.0  1269.0 10780.0
GR1276.0 11050.0  1276.0   12000
HD 25.94      10    9080   10280
X1 26.29    26.0    9696   10120    1640    1875    1810
X3                          9380    1285   11060    1285
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13300.0
HD 26.29      10    9380   11060
NC  0.06    0.07   0.035
X1 26.63    22.0    9792   10187    1800    1840    1840
X3                          9780    1290   10770    1290
GR1310.9  9050.0  1310.0  9116.0  1288.0  9208.0  1286.8  9488.0  1282.7  9510.0
GR1282.7  9641.0  1284.1  9792.0  1279.5 10000.0  1281.8 10187.0  1280.9 10467.0
GR1279.4 10741.0  1282.9 10861.0  1283.0 11016.0  1285.4 11057.0  1285.6 11351.0
GR1283.8 12475.0  1286.4 13757.0  1288.6 13810.0  1348.8 13939.0  1348.8 13956.0
GR1345.6 13961.0  1345.6 14400.0
HD 26.63      10    9780   10770
    ******************UPSTREAM LIMIT OF PINNACLE VISTA-1*************************
    ****************************************************************************
X1 26.73    31.0    9898   10125     460     470     490
X3                          9870    1290   10850    1290
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73      10    9870   10850
X1 [illegible]7.03    23.0    9922   10079    1660    1020    1590
X[illegible]                9704    1295   10500    1295
GR[illegible]7.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03      10    9704   10500
NC 0.055   0.055   0.035
    ********************DOWNSTREAM END OF DIXLETA-1*****************************
    ****************************************************************************
X1 27.48    36.0    9894   10087    2860    2160    2390
X3                          8500    1305   10130    1305
GR1357.7  6865.0  1350.6  6903.0  1350.2  6923.0  1301.6  7048.0  1299.7  7138.0
GR1300.5  7579.0  1295.1  7603.0  1296.8  7764.0  1298.1  7834.0  1294.2  7891.0
GR1294.1  7961.0  1296.5  8010.0  1293.8  8054.0  1296.9  8084.0  1295.1  8126.0
GR1297.8  8226.0  1296.0  8427.0  1297.8  8611.0  1297.0  8717.0  1295.9  8742.0
GR1294.5  8960.0  1297.5  9033.0  1298.6  9348.0  1295.3  9547.0  1296.3  9669.0
GR1297.6  9742.0  1295.2  9753.0  1294.9  9894.0  1291.5 10000.0  1292.8 10087.0
GR1292.8 10157.0  1301.9 10203.0  1301.3 10736.0  1301.9 11132.0  1323.3 11258.0
GR1324.8 11319.0
HD 27.48      10    8500   10080
X1 27.68    35.0    9853   10078    1260    1040    1040
X3                          8930    1305   10101    1305
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68      10    8930   10101
X1 27.94    24.0    9944   10187    1370    1415    1405
X3                          9320    1310   10203    1310
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR[illegible]8.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
G[illegible]3.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94      10    9320   10200
    ****************UPSTREAM LIMIT OF DIXLETA-1*******************************
    ****************************************************************************
X1 28.12    27.0    9906   10076     990     960     950
X3                          9600    1315   10570    1315
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
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GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
G[redacted]2.7 11051.0  1314.2 11435.0
H[redacted].12      10    9600   10570
X1 28.67    37.0    9964   10192    2785    2925    2885
X3                         9950    1325   10300    1325
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67      10    9950   10300
X1 28.95    34.0    9946   10353    1550     940    1465
X3                         9946    1330   10600    1330
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95      10    9946   10600
X1 29.04    34.0    9828   10239     550     330     510
X3                         9827    1330   10630    1330
GR1360.0    9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04      10    9827   10630
X1 29.54    30.0    9846   10150    2750    2235    2640
X3                         9620    134010135.89    1340
GR[redacted]78.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
G[redacted]2.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR[redacted]28.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD 29.54      10    962010135.89
X129.611    31.0    9791   10094     315     315     375
X3                         9620    1340   10110    1340
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611      10    9620   10110
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025
X3                         9820    1345   10460    1345
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80      10    9882   10460
X1 30.07    17.0    9925   10098    1425    1440    1420
X3                         9780    135010276.81    1350
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07      10    978010276.81
X1 30.26    12.0    9749   10135     870    1090    1005
X3                         9748    1350   10260    1350
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR[redacted]63.6 10643.0  1389.4 10743.0
H[redacted].26      10    9748   10250
X1 30.73    14.0    9881   10075    2455    2470    2460
X3                         9864    1360   10180    1360
GR1369.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR1352.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73      10    9864   10180
X1 30.82    12.0    9924   10201     500     370     500
X3                      9901.06    1360   10280    1360
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GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD [illegible].82      10 9901.06   10280
X[illegible].39    17.0    9792   10080    2900    3165    2970
X3                          9550    1370   10320    1370
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39      10    9550   10320
X1 31.86    10.0    9894   10261    2550    2485    2505
X3                          9680    1375   10262    1375
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86      10    9680   10262
NC 0.045   0.050   0.045
X1 32.43    14.0    9852   10112    2885    2970    2980
X3                          9600    138510102.34    1385
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43      10    960010102.34
X1 32.72    28.0    9879   10150    1725    1145    1535
X3                          9617    1385   10453    1385
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72      10    9617   10453
X1 32.86    12.0    9928   10155     680     990     760
X3                          9807    1390   10332    1390
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86      10    9807   10200
X1 [illegible]2.92     9.0    9891   10143     290     370     310
X[illegible]                9876.07    1390   10180    1390
GR[illegible]33.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92      10    9890   10180
      ------------STATE ROUTE 74---------
X132.984      33    9962   10011     338     358     343
X3                          9824    1395   10082    1395
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       0       0       0
X132.998     9.0    9962   10108      72      72      72
      ------------**********************-------------
X3                         9842.69    139510108.06    1395
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
       ------------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170
X3                         9966.91    140510280.32    1405
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10 9966.9110280.32
X1 33.82    20.0    9861   10068    2165    2220    2175
X3                          9708    140510061.27    1405
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD[illegible]3.82      10    970810061.27
E[illegible]
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T5    NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T6    BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1            1       0
I4            4       1      10
LQ         5000    7000   17000   55000
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LT          6457   10880   33475  146960
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
LF    MS 0.21035 0.22940 0.21429 0.21542
LF    CS 0.23112 0.22521 0.22541 0.25124
LF   VCS 0.36207 0.32486 0.38978 0.39271
LF   VFG 0.00367 0.00255 0.00203 0.00119
LF    FG 0.00683 0.00452 0.00379 0.00284
LF    MG 0.01083 0.00681 0.00677 0.00652
LF    CG 0.00587 0.00134 0.00686 0.01048
LF   VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF         5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075       2
PF         5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18      82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075       1
PF         8.000       1      19    12.5      99     9.5      98     6.3      96
PFC 4.75      95    2.36      91       2      90    1.18      79     0.6      54
PFC0.425      37     0.3      22    0.15       5   0.075       3
PF         8.992       1      50    37.5      98      25      97      19      95
PFC 12.5      94     9.5      91     6.3      88    4.75      85    2.36      80
PFC    2      78    1.18      67     0.6      44   0.425      29     0.3      18
PFC 0.15       8   0.075       5
PF         9.885       1      50    37.5      99      25      94      19      92
PFC 12.5      90     9.5      89     6.3      87    4.75      86    2.36      82
PFC    2      79    1.18      65     0.6      30   0.425      16     0.3      11
PFC 0.15       7   0.075       5
PF        11.029       1      50    37.5      99      25      96      19      93
PFC 12.5      88     9.5      83     6.3      77    4.75      73    2.36      66
PFC    2      62    1.18      46     0.6      18   0.425       9     0.3       6
PFC 0.15       2   0.075       0
PF        11.428       1    37.5      25      98      19      93    12.5      86
PFC  9.5      81     6.3      73    4.75      67    2.36      61       2      59
PFC 1.18      48     0.6      33   0.425      27     0.3      24    0.15      20
PFC0.075      18
PF        12.470       1      50    37.5      95      25      88      19      82
PFC 12.5      75     9.5      70     6.3      64    4.75      61    2.36      48
PFC    2      46    1.18      35     0.6      18   0.425       9     0.3       4
PFC 0.15       1   0.075       0
PF        13.467       1    37.5      25      99      19    98.5    12.5      98
PFC  9.5      97     6.3    96.5    4.75    96.2    2.36    96.1       2      96
PFC 1.18      93     0.6      79   0.425      58     0.3      33    0.15       7
PFC0.075       1
PF        14.430       1    37.5      25      99      19      99    12.5      99
PFC  9.5      99     6.3      99    4.75      98    2.36      95       2      93
PFC 1.18      80     0.6      46   0.425      25     0.3      13    0.15       4
PFC0.075       2
PF        15.719       1    62.5    37.5      88      25      85      19      80
PFC 12.5      76     9.5      73     6.3      69    4.75      66    2.36      62
PFC    2      59    1.18      45     0.6      28   0.425      23     0.3      21
PFC 0.15      13   0.075       5
PF        16.482       1      25      19      99    12.5      97     9.5      96
PFC  6.3      92    4.75      90    2.36      85       2      81    1.18      62
PFC  0.6      24   0.425       9     0.3       4    0.15       1   0.075       0
PF        16.612       1      75    37.5      92      25      85      19      80
PFC 12.5      73     9.5      70     6.3      65    4.75      62    2.36      49
PFC    2      44    1.18      29     0.6      16   0.425      11     0.3       6
PFC 0.15       2   0.075       1
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PF        16.990       1      50    37.5      98      25      95      19      93
PFC 12.5      91     9.5      90     6.3      88    4.75      87    2.36      84
PFC    2      82    1.18      75     0.6      58   0.425      41     0.3      22
PF  .15       5   0.075       2
PF        17.821       1      50    37.5      92      25      85      19      73
PFC 12.5      60     9.5      53     6.3      47    4.75      44    2.36      36
PFC    2      34    1.18      25     0.6      12   0.425       6     0.3       3
PFC 0.15       1   0.075       0
PF        18.275       1      50    37.5      94      25      83      19      76
PFC 12.5      66     9.5      59     6.3      50    4.75      45    2.36      39
PFC    2      36    1.18      27     0.6      19   0.425      15     0.3      13
PFC 0.15      11   0.075       9
PF        18.962       1    62.5    37.5      87      25      75      19      70
PFC 12.5      63     9.5      59     6.3      54    4.75      50    2.36      45
PFC    2      43    1.18      34     0.6      19   0.425      11     0.3       5
PFC 0.15       1   0.075       0
PF        19.920       1      50    37.5      96      25      87      19      82
PFC 12.5      75     9.5      70     6.3      65    4.75      61    2.36      53
PFC    2      50    1.18      35     0.6      14   0.425       7     0.3       5
PFC 0.15       2   0.075       1
PF        21.061       1    62.5    37.5      85      25      76      19      69
PFC 12.5      59     9.5      53     6.3      45    4.75      40    2.36      34
PFC    2      32    1.18      25     0.6      15   0.425      11     0.3       9
PFC 0.15       6   0.075       5
PF        21.893       1      50    37.5      98      25      98      19      92
PFC 12.5      83     9.5      77     6.3      68    4.75      63    2.36      51
PFC    2      46    1.18      27     0.6      10   0.425       5     0.3       3
PFC 0.15       1   0.075       1
PF        22.462       1    62.5    37.5      91      25      83      19      78
PFC 12.5      73     9.5      68     6.3      62    4.75      58    2.36      48
PFC    2      45    1.18      32     0.6      15   0.425       7     0.3       3
PFC 0.15       0   0.075       0
PF        23.409       1    62.5    37.5      91      25      83      19      75
PFC 12.5      66     9.5      61     6.3      54    4.75      51    2.36      44
PFC    2      42    1.18      32     1.6      18   0.425      11     0.3       6
PFC 0.15       2   0.075       2
PF        24.543       1    62.5    37.5      84      25      76      19      70
PFC 12.5      64     9.5      60     6.3      54    4.75      52    2.36      47
PFC    2      45    1.18      36     0.6      21   0.425      13     0.3       9
PF  .15       4   0.075       2
PF        25.666       1      50    37.5      97      25      88      19      81
PFC 12.5      74     9.5      69     6.3      64    4.75      61    2.36      54
PFC    2      52    1.18      43     0.6      21   0.425       8     0.3       3
PFC 0.15       2   0.075       1
PF        25.860       1    37.5      25      98      19      96    12.5      91
PFC  9.5      87     6.3      80    4.75      74    2.36      56       2      46
PFC 1.18      27     0.6       7   0.425       3     0.3       2    0.15       2
PFC0.075       1
PF        26.290       1      19     9.5      98     6.3      97    4.75      92
PFC 2.36      84       2      80    1.18      22     0.6      18   0.425       6
PFC  0.3       3    0.15       2   0.075       2
PF        26.730       1      50    37.5      96      25      93      19      92
PFC 12.5      88     9.5      84     6.3      80    4.75      77    2.36      67
PFC    2      62    1.18      39     0.6      14   0.425       9     0.3       7
PFC 0.15       6   0.075       6
PF        27.680       1      50    37.5      99      25      97      19      92
PFC 12.5      88     9.5      85     6.3      78    4.75      73    2.36      61
PFC    2      56    1.18      34     0.6      10   0.425       5     0.3       3
PFC 0.15       3   0.075       3
PF        30.070       1      50    37.5      97      25      88      19      84
PFC 12.5      73     9.5      67     6.3      55    4.75      53    2.36      43
PFC    2      40    1.18      31     0.6      21   0.425      17     0.3      14
PFC 0.15      11   0.075       9
PF        30.820       1    37.5      25      99      19      97    12.5      95
PFC  9.5      94     6.3      90    4.75      89    2.36      86       2      85
PFC 1.18      76     0.6      61   0.425      50     0.3      35    0.15      11
PFC0.075       4
PF        31.860       1    37.5      25      94      19      92    12.5      91
PFC  8.5      90     6.3      89    4.75      88    2.36      88       2      88
PFC 1.18      86     0.6      74   0.425      60     0.3      43    0.15      17
PFC0.075       8
PF        32.430       1   32.64    2.36      99       2      98    1.18      95
PFC  0.6      84   0.425      69     0.3      52    0.15      25   0.075      12
PF        32.998       1    62.5    37.5      97      25      91      19      84
PF  12.5      74     9.5      67     6.3      57    4.75      51    2.36      40
P     2      37    1.18      27     0.6      18   0.425      14     0.3      12
PF  0.15      10   0.075       7
$LOCAL
LQL          0.1    1000    5000   10000   25000
LTL          0.1    1094    6855   16015   51300
LF   VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL   FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL   MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL   CS 0.10623 0.10623 0.11610 0.11564 0.11399
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LFL  VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL  VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL   FG 0.00076 0.00076 0.00197 0.00380 0.00293
L[redacted] MG 0.00056 0.00056 0.00028 0.00067 0.00050
L[redacted] CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL  VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$HYD
$RATING
RC            12    5000    5000          912.55  913.39   913.9  914.53   914.9
RC        915.38   915.8  916.05   916.3  916.70   917.0  917.24
        ***********RUN 30 DAYS OF 9,000 CFS ************************
*   AB  TIME STEP NO 1
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 2
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 3
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 4
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 5
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 6
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 7
Q   9000
T     60
X           0.01       1
*[redacted]B  TIME STEP NO 8
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 9
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 10
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 11
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 12
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 13
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 14
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 15
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 16
Q   9000
T     60
X           0.01       1
*[redacted]B  TIME STEP NO  17
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 18
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 19
```

```
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 20
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 21
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 22
Q   9000
T     60
X           0.01       1
*   AB TIME STEP NO 23
Q   9000
T     60
X           0.01       1
*   AB  TIM STEP NO  24
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 25
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 27
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 28
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 29
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 30
Q   9000
T     60
X          0.005       1
    $DREDGEB
    $NODREDGE
       -----100-YEAR HYDROGRAPH------
*   AB  TIME STEP NO 31
Q   9000     100
T     60      60
X          0.005    0.06
*       TIME STEP NO 32
Q   9000     100
W   0.01
*   AB  TIME STEP NO 33
Q   9000     800
X         0.0005    0.08
*       TIME STEP NO 34
Q   9000     800
W   0.01
*   AB  TIME STEP NO 35
Q  18000    7000
X          0.005    0.04
*       TIME STEP NO 36
Q  18000    7000
W   0.01
*   AB  TIME STEP NO 37
Q  36000   17000
X          0.005    0.06
*       TIME STEP NO 38
Q  36000   17000
W   0.01
*   AB  TIME STEP NO 39
Q  44000   20000
X          0.005    0.04
*       TIME STEP NO 40
Q  44000   20000
W   0.01
*   AB  TIME STEP NO 41
Q  54000   24000
X          0.005    0.04
```

```
*       TIME STEP NO 42
Q  54000   24000
W   0.01
*   AB  TIME STEP NO 43
Q  52000   22000
X           0.005    0.04
*       TIME STEP NO 44
Q  52000   22000
W   0.01
*   AB  TIME STEP NO 45
Q  44000   18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000   18000
W   0.01
*   AB  TIME STEP NO 47
Q  30000   12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000   12000
W   0.01
*   AB  TIME STEP NO 49
Q  20000    8000
X          0.001    0.06
*       TIME STEP NO 50
Q  20000    8000
W   0.01
*   AB  TIME STEP NO 51
Q   9000    4000
X          0.001    0.13
*       TIME STEP NO 52
Q   9000    4000
W   0.01
*   AB  TIME STEP NO 53
Q   5500     500
X           0.01    0.33
*       TIME STEP NO 54
Q   5500     500
W   0.01
S
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T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      ENCHGCS.DAT SEPT 26 2001  ENCROACHED FLOODWAY MODEL
        WITH GRADE CONTROL STRUCTURES AT 13.395 (D/S OF OLIVE AVE),
        21.893 (0.5 MI UPSTREAM OF BEARDSLEY ROAD), AND 24.543 (ESTRELLA PKWY).
    ********************************************************************************

     THIS ENCHGCS.DAT MODEL IS BASED ON ENCH.DAT WHICH IS THE ENCROACHEMNT
     MODEL OF THE AGUA FRIA RIVER WITH 50% SEDIMENT INFLOW
     ENCH.DAT IS THE FULLY ENCROACHED HEC-6 SEDIMENT TRANSPORT MODEL OF THE
     AGUA FRIA RIVER. EACH CROSS SECTION IS ENCROACHED TO THE FLOODWAY LIMITS PER
     ENCROACHMENT STATIONS DEVELOPED IN THE FLOOD INSURANCE STUDY AND HEC-2 MDOEL BY COE & VAN LOO
     AND BY KHA/LTM HEC-RAS MODEL OF THE AGUA FRIA RIVER.  THIS ENCHGCS.DAT INCLUDES
     THREE GRADE CONTORL STRUCTURES THE LOCATIONS ARE NOTED ABOVE.
     D:\AF\EN\ENCHGCS.DAT
    ********************************************************************************
NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0
X3                          9300     920   11600     920
GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6 10136.    913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1 10590.    916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1 11265.    911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1 11911.    914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5 12758.    916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5 15403.    920.3 15459.0
HD  0.16      10    9300   11600
NC 0.045    0.10   0.035
X1  0.44      44    9798   10420    1510    1465    1485
X3                          8970     923   11640     923
GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8970   11640
NC 0.048   0.074   0.035
X1  0.63      36    9888   10209    1055     985    1010
X3                          8970     926   11440     926
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8970   11440
NC 0.050   0.066   0.035
X1  0.73      39    9917   10162     510     490     500
X3                          8980     927   11280     927
GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8980   11280
      ******************************************************
      ************BEGIN BROADWAY 1W AND 1E********************
NC 0.045    0.07   0.035
X1  1.01      35    9682   10471    1380    1375    1375
X3                          9300     930   11250     930
GR 928.9  4205.0   928.5  5661.0   929.2  6721.0   928.4  7602.0   928.7  8490.0
GR 928.7  8566.0   928.2  8695.0   928.3  8740.0   928.5  9048.0   928.6  9151.0
GR 928.8  9185.0   922.0  9235.0   921.8  9300.0   921.4  9400.0   924.5  9437.0
GR 924.9  9682.0   921.5 10000.0   921.2 10380.0   921.2 10405.0   924.0 10471.0
GR 924.0 10505.    924.0 10677.0   924.0 10694.0   924.0 10715.0   922.9 10733.0
GR 923.6 10830.    929.5 10849.0   924.2 10867.0   925.3 11259.0   930.4 11284.0
GR 930.4 11298.    924.4 11319.0   924.6 12194.0   929.7   13800   932.0   14000
HD  1.01      10    9300   11250             912   10400   10750
NC 0.045   0.077   0.035
X1  1.10      37    9719   10678     500     470     490
X3                          9450     931   11220     931
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GR 929.3  6000.0   930.4  6858.0   929.4  7741.0   929.3  8585.0   929.3  8600.0
GR 929.6  8801.0   928.2  9000.0   931.4  9071.0   919.5  9267.0   920.8  9325.0
GR 923.6  9368.0   924.3  9660.0   923.6  9700.0   923.2  9719.0   922.5 10000.0
GR 923.1 10141.0   923.0 10171.0   923.0 10387.0   923.0 10419.0   923.0 10556.0
GR 923.0 10595.0   925.5 10678.0   925.5 10729.0   924.0 10913.0   924.0 10941.0
GR 924.0 10966.0   924.7 11005.0   927.9 11017.0   927.9 11033.0   924.6 11128.0
GR 929.4 11150.0   925.5 11188.0   925.5 11400.0   925.6 11660.0   926.3 12105.0
GR 928.0   13150   930.3   13600
HD  1.10      10    9450   11220             912   10050   11300
NC 0.045   0.069   0.035
X1  1.17    25.0    9917   10654     560     490     540
X3                          9400     932   11020     932
GR 932.2  6215.0   929.9  7229.0   929.9  7805.0   929.7  8500.0   929.7  8639.0
GR 926.5  8784.0   927.1  9032.0   928.5  9439.0   926.8  9778.0   927.2  9917.0
GR 923.7  9929.0   923.6  9940.0   924.3 10000.0   923.6 10113.0   924.3 10142.0
GR 924.3 10608.0   926.6 10620.0   926.6 10654.0   924.0 10704.0   927.0 11220.0
GR 927.3 11266.0   926.6 11765.0   926.8 12280.0   930.3   13060   934.0   13150
HD  1.17      10    9400   11020
NC 0.045   0.069   0.035
X1  1.25    24.0    9974   10742     480     490     485
X3                          9200     933   10700     933
GR 933.2  6235.0   931.2  6887.0   932.2  8114.0   932.2  8340.0   932.2  8429.0
GR 927.9  8531.0   930.3  8831.0   927.5  9204.0   930.3  9306.0   929.1  9974.0
GR 926.2  9990.0   924.4 10000.0   924.4 10533.0   924.4 10571.0   924.4 10594.0
GR 924.4 10702.0   929.8 10742.0   930.1 11083.0   929.4 11240.0   928.7 11410.0
GR 928.5 12013.0   930.4 12109.0   936.0   12500   940.0   13000
HD  1.25      10    9200   10700
      ************END BROADWAY 1W AND 1E*******************
      ******************************************************
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456     485     500     495
X3                          8853     935   10470     935
GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8853   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480
X3                          8350     940   10285     940
GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965
X3                          8410     942 10071.1     942
GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
GR 944.8 10079.1
HD  2.02      10    8410   10070
NC   .04     .04    .035
X1  2.60      26    9437   10850    2700    2945    3320
X3                          9300     950 11144.3     950
GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60      10    9437   10850
X1  2.80      19    9200   11222    1250     655    1000
X3                          9160     952 11209.3     952
GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80      10    9160   10850
X1  3.27      17  9692.6 11130.5    2800    1995    2505
X3                          9692     955 11120.3     955
GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
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GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27      10    9692 11120.3
X[illegible].37      17  9716.5 10970.3     585     460     510
X[illegible]                  9750     955 10952.4     955
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37      10    9750 10952.4
X1  3.43      12  9758.5 10873.4     925     795     850
X3                  9700     956 10856.9     956
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43      10    9700 10856.9
X1 3.729     6.0    9420   10603    1575    1585    1580
X3                  9422.4     962 10596.3     962
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729      10  9422.4 10596.3
NC                    0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
X3                  9407.8     962 10592.8     962
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734      10  9407.8 10592.8
X1 3.757     7.0    9425   10555     120     120     120
X[illegible]                9436.8     962 10547.4     962
GR [illegible]68.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757      10  9436.8 10547.4
X1 3.767      92  9428.1 10572.0      50      50      50
X3                  9441.2     962 10559.1     962
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   966.1  9762.0
GR 966.1  9778.0   952.9  9778.1   952.9  9915.0   966.1  9915.1   966.1  9931.1
GR 952.9  9931.2   952.9 10068.9   966.1 10069.0   966.1 10085.0   952.9 10085.1
GR 952.9 10220.9   966.1 10221.0   966.1 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767      10  9441.2 10559.1
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
X3                  9454.5     965 10566.5     965
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0  9454.5 10566.5
X1 4.094     7.0    9440   10578      10      10      10
X3                  9458.1     965 10563.7     965
GR [illegible]73.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
G[illegible]73.0 10578.0   973.0 10582.0
HD [illegible]4.094       0  9458.1 10563.7
X1  4.30     7.0    9458   10594    1040    1040    1040
X3                  9467.6     970 10580.8     970
GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205    2065    2135
X3                  9460.5     970 10567.9     970
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GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10  9460.5 10567.9
X[redacted]754    53.0  9402.5 10572.3     150     310     225
X[redacted]                    9438.5     970 10562.4     970
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754      10  9438.5 10562.4
X1  4.79     6.0     9440 10562.4     357     187     277
X3                    9458.38     97010573.63     970
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79      10 9458.3810573.63
X1  5.15     9.0     9291   10713    1780    1960    1873
X3                    9306.95     97510695.61     975
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15      10 9306.95   10590
          ----------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201     9.0     9291   10713     180     360     270
X3                    9304.89     97510696.92     975
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
GR 969.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
HD 5.201       0 9304.8910696.92
X1 5.203     9.0     9291   10713      10      10      10
X3                    9306.07     97510695.56     975
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203       0 9306.0710695.56
X1 5.290      82  9250.8 10672.4     505     675     585
X[redacted]                    9267.73     98010653.67     980
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290      10 9267.7310653.67
X1 5.380    20.0  9266.0 10656.0     305     645     465
X3                    9351.35     98010643.74     980
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380      10 9351.3510643.74
          ----------MCDOWELL ROAD------
X1 5.689      42  9371.3 10552.8    1320    1740    1620
X3                    9385.82     98510538.28     985
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR[redacted]3.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
G[redacted].85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689      10 9385.8210538.28
X1 5.750    22.0  9426.0 10579.0     370     370     370
X3                    9452.74     98510571.99     985
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
GR 973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
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GR 989.2 10579.0   989.6 10596.0
HD 5.750      10 9452.7410571.99
X1 5.900    17.0  9429.0 10561.0     945     950     950
X                      9439.5     98510552.01     985
G 3.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900   10     9439.510552.01
         -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0     907     897     902
X3                     9424.2     99010536.34     990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068       0  9424.210536.34
X1 6.070    15.0  9416.0 10545.0       8       8       8
X3                     9424.2     99010536.34     990
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070       0  9424.210536.34
X1 6.430    20.0  9452.0 10537.0    2045    1850    1945
X3                     9461.07      995 10527.6     995
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430      10 9461.07 10527.6
X1 6.820    17.0  9444.0 10573.0    2145    1820    1980
X3                     9457.95     99510564.05     995
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820      10 9457.9510564.05
          -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0     357     357     357
X3                     9454.42    100010564.82    1000
G 4.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 89.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888       0 9454.4210564.82
X1 6.890    16.0  9439.0 10577.0       8       8       8
X3                     9454.42    100010564.82    1000
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890       0 9454.4210564.82
X1 6.910    17.0  9430.0 10579.0     105     115     110
X3                     9443.21    1000   10568    1000
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0  1000.2 10037.0
GR1000.2 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910      10 9443.21   10568
X1 6.930    17.0  9413.0 10573.0     105     105     105
X3                     9432.07    100010564.01    1000
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930      10 9432.0710564.01
X1 6.990    19.0  9400.0 10559.0     315     355     335
X3                     9419.31    100010549.14    1000
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   998.4 10313.0   998.4 10323.0   998.4 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10 9419.3110549.14
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
X3                     9517.21    100510497.13    1005
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
G 5.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10 9517.2110497.13
         -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0    2805    2480    2625
X3                     9318    1010 10703.6    1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
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GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
G[redacted]6.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
G[redacted]6.3 12943.0  1016.3 12959.0
HD 7.988        0    9318 10703.6
X1 7.990     37.0  9293.0 10732.0      10      10    10.5
X3                      9318    1010 10703.6    1010
GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338:0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.990        0    9318 10703.6
NC                        .3      .5
         ---------INDIAN SCHOOL ROAD------
X1 8.000       85  9235.5  10725.      50      50      50
X3                      9249.4    1010 10711.1    1010
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000       10  9249.4 10711.1
[redacted]********** DOWNSTREAM LIMIT OF INDIAN SCHOOL 1-S *****************
**********************************************************************
NC                        0.1     0.3
X1 8.105       91  9493.9 10978.6     405     745  522.59
X3                      9470    1010 10970.7    1010
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105       10    9470 10970.7
X1 8.198       92  9458.7 10971.0     420     620  490.43
X3                    9470.38    1010 10963.8    1010
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR[redacted]14.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
G[redacted]2.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
```

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GR1012.9 11568.6  1013.0 11705.6
HD 8.198      10 9470.38 10963.8
NC  .040    .040    .035
     ----------Gravel Mine Between Camelback Road and Indian School----------
     ************DOWNSTREAM LIMIT OF INDIAN SCHOOL 2-S*****************
     ********************************************************************
X1 8.433      87  9583.1 10597.5    1155    1365 1241.36
X3                     9009.5    1015   10975    1015
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433      10  9009.5 10597.5
  *GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
  *EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768      73  9584.7 10102.8    1735    1765 1764.77
X3                     8182.6    1020   11105    1020
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR1008.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
GR1013.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10  8182.6   11000
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                     9300    1025   11465    1025
GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992      10    9700 11458.9
     ************UPSTREAM LIMIT OF INDIAN SCHOOL 2-S**********************
     ********************************************************************
NC  0.05    0.05   0.035     0.3     0.5
     *************U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE**************
     ************BEGIN SAND AND GRAVEL MINES BETWEEN CAMELBACK AND BETHANY HOME***
     ********************************************************************************
X1 [redacted]266      93  9725.9 11607.3    1539     889 1430.62
X3                     9439.6    1026   11620    1026
GR1024.3  7822.4  1024.5  8138.1  1024.7  8447.1  1024.9  8756.0  1024.2  9091.8
GR1023.4  9402.0  1023.3  9418.1  1024.2  9423.6  1021.6  9432.7  1024.2  9439.6
GR1022.9  9444.9  1022.4  9529.5  1020.2  9575.9  1022.3  9661.6  1022.1  9725.9
GR1013.9  9852.8  1017.2 10006.0  1013.9 10058.2  1013.7 10086.7  1017.3 10103.7
GR1016.8 10209.4  1015.7 10230.4  1016.6 10257.2  1014.7 10308.2  1014.3 10344.1
GR1018.0 10369.8  1017.8 10486.5  1019.5 10508.4  1021.4 10604.4  1021.3 10654.4
GR1019.6 10685.0  1019.7 10704.5  1016.3 10751.4  1017.9 10770.7  1021.4 10905.8
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GR1020.8 11021.8  1021.6 11204.6  1020.8 11252.1  1017.1 11283.4  1018.2 11404.6
GR1017.7 11468.4  1021.5 11607.3  1018.7 11635.1  1017.1 11660.6  1023.1 11704.5
GR1022.8 11728.9  1017.3 11752.5  1017.5 11789.2  1023.8 11815.8  1024.4 11854.6
GR[illegible]2.1 11954.6  1023.1 12278.8  1021.6 12459.7  1020.1 12472.3  1021.7 12489.4
GR[illegible]0.8 12507.6  1022.4 12660.6  1019.8 12672.3  1019.0 12686.2  1021.1 12714.1
GR1020.8 12727.1  1022.4 12754.6  1021.7 13004.7  1020.1 13039.2  1022.2 13104.7
GR1021.4 13173.2  1018.6 13185.1  1018.2 13192.5  1022.7 13202.6  1018.5 13212.1
GR1019.0 13244.7  1023.0 13254.3  1018.1 13265.2  1019.3 13347.4  1020.2 13359.6
GR1020.5 13394.8  1018.9 13405.5  1020.6 13454.7  1020.8 13490.7  1022.7 13501.3
GR1023.2 13532.9  1022.0 13542.7  1022.7 13554.9  1023.2 13887.5  1023.1 14188.9
GR1023.3 14504.7  1023.0 14515.6  1024.2 14522.5  1023.3 14526.3  1023.2 14854.7
GR1023.8 15204.7  1024.1 15254.7  1024.1 15454.2
HD 9.266      10    9440   11620
NC  0.05    0.05   0.035     0.1     0.3
X1 9.435      83  9548.8 11146.3     875     915  889.44
X3                       8158    1030 11141.8    1030
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
GR1020.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
GR1025.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR1024.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD 9.435      10  9548.8 11141.8
QT
X1 9.696      91  9602.6 10996.2    1430    1330 1383.24
X3                       9570    1030   11080    1030
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR[illegible]8.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
G[illegible]9.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
GR1024.7 10030.2  1025.6 10107.8  1025.2 10146.5  1024.5 10147.3  1024.7 10232.4
GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR1027.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
GR1023.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR1021.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696      10    9600   11080
         -------SOUTH OF GLENDALE AIRPORT------
      --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40
X3                       9327.8    1035   10725    1035
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
GR1029.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR1023.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
GR1029.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
GR1028.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
G[illegible]1.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
G[illegible]1.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
GR1035.2 15177.3
HD 9.885      10  9327.8 10706.6
X110.167      91  9412.5 10272.2    1820    1135 1491.12
X3                       9380    1035   10380    1035
GR1036.2  7129.0  1037.7  7194.5  1035.7  7205.8  1037.3  7277.2  1037.1  7420.3
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GR1039.4  7453.6  1037.1  7485.2  1038.7  7507.3  1037.7  7579.8  1038.3  7590.5
GR1037.3  7594.2  1037.3  7713.7  1036.2  7723.0  1036.4  7888.6  1038.2  7925.2
GR1037.1  7939.2  1035.1  8120.7  1036.1  8128.4  1036.5  8429.0  1035.2  8480.7
G[redacted]7.0  8786.9  1035.9  8921.4  1037.0  8943.4  1036.8  8974.4  1031.8  9018.5
G[redacted]9.2  9040.9  1034.5  9055.3  1033.7  9126.3  1036.7  9148.2  1033.3  9165.5
GR1033.8  9220.1  1033.4  9233.3  1034.7  9240.3  1038.4  9252.7  1035.6  9256.7
GR1033.3  9272.8  1033.5  9412.5  1030.1  9441.5  1028.9  9508.9  1029.9  9773.1
GR1023.3 10025.7  1023.7 10040.0  1025.8 10051.5  1026.7 10190.6  1028.9 10206.1
GR1028.6 10254.0  1031.0 10272.2  1033.1 10498.3  1032.9 10848.3  1033.0 11148.3
GR1032.2 11453.2  1030.3 11467.7  1032.9 11483.3  1032.3 11523.7  1030.0 11546.4
GR1034.0 11563.1  1032.4 11603.2  1032.6 11807.8  1033.8 11846.8  1032.4 11877.0
GR1034.1 11898.4  1033.1 11953.6  1033.7 11977.0  1036.3 11989.1  1031.3 12008.1
GR1033.4 12031.2  1033.2 12088.4  1031.7 12103.8  1033.5 12114.2  1032.3 12117.7
GR1034.5 12198.3  1033.1 12499.2  1032.6 12530.4  1034.2 12592.6  1032.8 12620.5
GR1032.5 12695.9  1030.5 12748.7  1033.1 12905.5  1030.4 13006.4  1032.1 13048.1
GR1033.2 13355.8  1033.5 13581.8  1034.8 13585.3  1031.2 13629.7  1033.4 13936.1
GR1032.9 14248.3  1033.1 14395.7  1037.8 14406.5  1038.1 14419.7  1033.2 14430.0
GR1033.1 14443.1
HD10.167       10     9380   10380
NC  0.05    0.05    0.045
X110.343       78  9782.1 10288.8     910     695  923.51
X3                      9750    1040   11416    1040
GR1043.6  5749.1  1044.2  5780.6  1038.7  5851.9  1039.0  6019.2  1039.2  6332.0
GR1039.2  6402.4  1036.8  6515.4  1039.7  6852.7  1039.1  7156.0  1038.6  7398.1
GR1040.0  7472.0  1039.8  7821.6  1039.2  8124.2  1040.1  8426.7  1038.4  8626.1
GR1035.8  8870.7  1039.2  8882.3  1030.0  8906.1  1030.0  9429.5  1031.6  9432.5
GR1033.6  9465.9  1034.3  9531.5  1031.4  9573.0  1031.9  9592.8  1036.7  9615.6
GR1031.8  9659.5  1031.4  9770.7  1032.9  9782.1  1029.4  9854.5  1031.9  9869.3
GR1029.4  9924.3  1030.7 10065.3  1026.7 10247.0  1035.2 10288.8  1036.1 10312.9
GR1035.6 10620.5  1034.8 10841.9  1034.0 10847.5  1034.8 10947.5  1033.8 10988.6
GR1034.1 11072.8  1033.2 11092.4  1035.7 11109.8  1035.9 11151.3  1037.1 11164.0
GR1035.8 11184.6  1036.7 11198.0  1035.1 11214.8  1036.3 11231.4  1034.8 11244.9
GR1035.6 11279.1  1034.4 11296.8  1035.7 11345.3  1033.4 11353.5  1033.1 11388.4
GR1035.0 11390.4  1037.4 11416.6  1035.1 11427.0  1033.9 11612.9  1035.2 11918.3
GR1033.7 12029.0  1035.4 12049.5  1035.0 12282.6  1033.3 12306.7  1034.1 12609.1
GR1035.1 12942.0  1034.8 13067.5  1036.1 13073.7  1034.5 13086.5  1035.2 13108.0
GR1033.0 13133.3  1032.5 13203.6  1034.5 13221.6  1035.3 13542.0  1036.5 13836.8
GR1039.9 13845.1  1040.0 13859.8  1035.3 13871.1
HD[redacted].343       10     9750   11416
X[redacted]538       87  9573.5 10478.1     925     985 1033.23
X3                      9514.6    1045   10480    1045
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
GR1040.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
GR1041.2  7536.3  1043.3  7856.8  1042.5  7964.9  1043.8  7979.7  1040.8  8090.9
GR1038.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR1036.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1034.7  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
GR1038.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
GR1037.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR1035.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR1037.2 13424.5  1036.8 13435.8
HD10.538       10  9573.5 10478.1
X110.752       90  9651.8 10329.8    1070    1140 1124.93
X3                      9335    1045 10327.3    1045
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
G[redacted]2.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
G[redacted]9.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR1040.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
GR1041.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
GR1036.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752       10     9335 10327.3
X110.846       91  9756.4 10308.2     510     480  500.68
X3                      8865    1045   10310    1045
GR1046.7  4455.3  1042.9  4484.7  1043.7  4812.2  1043.8  5129.0  1043.8  5433.6
```

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GR1044.1  5530.4  1046.4  5558.5  1041.5  5602.2  1045.1  5927.4  1044.9  6130.9
GR1043.3  6192.7  1044.4  6233.7  1043.6  6291.3  1045.2  6592.3  1045.2  6865.7
GR1043.5  6881.1  1046.0  6943.5  1044.7  7051.7  1046.2  7081.4  1044.9  7091.1
GR[illegible]6.9  7101.3  1043.9  7119.5  1046.3  7147.0  1045.8  7462.6  1049.2  7474.5
GR[illegible]4.0  7487.9  1046.2  7572.9  1048.6  7583.4  1046.3  7599.4  1045.6  7653.5
GR1043.4  7674.3  1043.0  7985.4  1041.5  8301.1  1042.5  8319.7  1042.0  8459.6
GR1043.9  8485.0  1042.8  8530.2  1044.1  8547.8  1044.3  8770.3  1042.4  8787.3
GR1042.1  8963.4  1043.0  9125.3  1041.7  9155.7  1042.6  9496.4  1041.8  9621.3
GR1040.7  9636.3  1039.3  9713.9  1039.0  9756.4  1034.8  9829.0  1033.3  9916.9
GR1031.6  9937.5  1035.3 10030.4  1037.4 10223.5  1033.7 10237.0  1033.6 10267.9
GR1038.8 10283.4  1042.9 10308.2  1040.5 10341.8  1042.0 10384.0  1041.2 10394.2
GR1044.4 10402.4  1042.7 10409.7  1044.3 10419.7  1042.4 10496.4  1043.7 10522.5
GR1042.7 10830.5  1043.1 10840.5  1040.9 10848.8  1040.5 10856.7  1043.7 10865.5
GR1042.8 10994.0  1040.8 11003.6  1043.6 11155.2  1042.4 11164.5  1042.9 11173.3
GR1041.7 11176.7  1043.5 11316.2  1042.3 11568.9  1041.2 11574.0  1044.0 11627.0
GR1040.0 11674.8  1040.2 11730.9  1042.9 11769.5  1041.4 11804.3  1038.8 11820.9
GR1038.2 11875.5  1043.1 11899.9  1042.7 11965.1  1043.9 11981.0  1041.9 12286.9
GR1042.2 12373.3
HD10.846      10    8865   10310
   ****************UPSTREAM END OF SAND AND GRAVEL MINES BETWEEN CAMELBACK ******
   ****************AND BETHANY HOME ROAD - PITS DEPTHS BASED ON AREA WEIGHTED****
   ****************PIT DEPTHS AS A FUNCTION OF TOTAL MINING AREA*****************
NC  0.05   0.095   0.045
X111.029       95  9513.1 10404.2    1035     865  963.30
X3                        9240    1050   10467    1050
GR1055.5  3356.7  1053.0  3607.3  1053.9  3617.6  1051.2  3623.8  1050.3  3635.8
GR1051.3  3641.5  1049.4  3661.8  1047.1  3741.2  1046.4  3861.8  1044.0  3889.2
GR1045.3  3899.9  1045.1  4187.0  1046.2  4194.5  1045.9  4514.8  1044.5  4858.6
GR1044.0  4890.1  1046.3  5011.7  1046.5  5170.4  1047.9  5180.1  1045.6  5308.8
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR1046.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR[illegible]6.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
G[illegible]9.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR[illegible]2.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR1045.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
GR1045.7 11513.6  1047.7 11765.0  1046.2 11797.1  1047.8 11809.8  1048.6 11874.4
HD11.029      10    9240   10467
      -------GLENDALE AVENUE----------
X111.428       94  9814.2 10227.2    1960    2335    2160
X3                       9625.4    1053 10191.9    1053
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10  9625.4 10191.9
NC  0.15   0.055   0.035     0.3     0.5
    ***************DOWNSTREAM LIMIT OF GLENDALE-1*****************************
    ************************************************************************
X111.557       95  9881.6 10100.9     675     675  677.68
X3                       8970    1058   10101    1058
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR[illegible]9.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
G[illegible]1.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR[illegible]1.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
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GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557      10    8970 10100.9
X111.847      95  9914.3 10113.4    1530    1530 1531.67
X3                   7310    1065   10173    1065
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    7310 10113.4
X112.042      62  9903.4   10070     990    1050 1028.61
X3                   6350    1070   10165    1070
GR  1066    5900    1058    5930    1058    6005    1059  6024.1  1059.2  6048.5
GR  1060  6057.8  1058.2  6082.7  1058.2  6096.6  1058.2  6138.2  1058.2  6154.2
GR1058.2  6173.8  1058.2  6190.9  1058.2  6201.8  1058.2  8555.6  1058.2  8631.6
GR1058.2  8641.8  1061.8  8660.4  1058.2    8806  1058.2  8910.3  1058.2  8998.8
GR1058.2  9007.9  1058.2  9078.3  1058.2  9101.9  1058.2  9111.5  1058.2  9145.2
GR1058.2  9148.5  1058.2  9164.4  1058.2  9181.1  1058.2  9201.8  1058.2  9211.2
GR1058.2  9267.4  1058.2  9290.8  1058.2  9298.9  1059.3  9367.2  1062.4  9377.5
GR1062.9  9390.5  1059.5    9402  1058.5  9412.2  1058.2  9418.8  1058.2  9447.6
GR1061.2  9485.4    1061  9536.3  1058.2  9574.9  1058.2    9588  1058.2  9609.8
GR1058.2  9615.8  1058.2  9622.9  1058.2  9667.5  1058.2  9802.1  1058.2  9840.1
GR1058.2  9853.8  1062.1  9867.5  1060.9  9871.4  1061.8  9900.2    1063  9903.4
GR1050.5    9940  1049.3  9955.3  1049.7  9979.1  1048.5  9992.6  1049.8   10044
GR  1062   10070    1068   10165
HD12.042      10    7200   10165
X112.359      73  9691.6 10061.0    1520    1680 1672.99
X3                   7600    1070   10100    1070
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359      10    7600   10100
   ****************UPSTREAM LIMIT OF GLENDALE-1*******************************
   ****************************************************************************
X1 12.42      90  9014.1 10111.3     380     270  302.47
X3                   7850    1070   10200    1070
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
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GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42      10    7850   10150
NC  .045    .040    .035     0.1     0.3
    **************DOWNSTREAM LIMT OF NORTHERN -1 ******************************
    *************DID NOT INCLUDE IN SAND AND GRAVEL MODEL AS PROPOSED PIT********
    *************IS OUTSIDE 100-YEAR FLOODPLAIN LIMITS ACCORDING TO LOMR********
    ***************************************************************************
X1 12.47      89  9382.2 10296.2     230     240     255
X3                      7298.5    1070 11052.3    1070
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47      10    7500 10296.2
X112.816      94  9781.2 10376.3    1780    1850 1859.04
X3                      8483.3    1070   10488    1070
XL                      9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR1068.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
GR1069.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
GR1070.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR1070.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1069.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816      10  8483.3   10375
   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007      94  9767.1 10186.1    1000    1030 1006.76
X3                      8750    1075   10239    1075
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
GR1072.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR1070.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
GR  1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
HD13.007      10    8800   10186
NC  .045    .045    .035     0.3     0.5
   ***********UPSTREAM LIMIT OF NORTHERN-1*****************************************
   ***********DOWSTREAM SILL OF PROPOSED GRADE CONTROL AT OLIVE*******************
   ***************************************************************************
X113.395      32  9303.0 10323.4    2020    2045 2049.25
X3                    9227.64    108010326.19    1080
GR1076.6  9269.3  1075.6  9286.8  1066.0  9303.0  1066.0  9350.5  1066.0  9373.2
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GR1066.0  9386.0  1066.0  9407.9  1066.0  9453.0  1066.0  9501.7  1066.0  9518.0
GR1066.0  9531.5  1066.0  9602.9  1066.0  9703.0  1066.0  9775.2  1066.0  9788.7
GR1066.0  9795.7  1066.0  9845.3  1066.0  9882.4  1066.0  9889.3  1066.0  9988.1
G[redacted]6.0  9991.3  1066.0 10009.0  1066.0 10053.0  1066.0 10098.5  1066.0 10198.2
G[redacted]6.0 10229.0  1066.0 10240.9  1066.0 10254.0  1066.0 10259.9  1066.0 10295.0
GR1066.0 10323.4  1084.7 10352.8
HD13.395       0 9227.6410326.19
   ***********UPSTREAM SILL OF PROPOSED GRADE CONTROL STRUCTURE*****************
X113.396      32  9303.0 10323.4      10      10      10
X3                      9227.64    108010326.19    1080
GR1076.6  9269.3  1075.6  9286.8  1066.0  9303.0  1066.0  9350.5  1066.0  9373.2
GR1066.0  9386.0  1066.0  9407.9  1066.0  9453.0  1066.0  9501.7  1066.0  9518.0
GR1066.0  9531.5  1066.0  9602.9  1066.0  9703.0  1066.0  9775.2  1066.0  9788.7
GR1066.0  9795.7  1066.0  9845.3  1066.0  9882.4  1066.0  9889.3  1066.0  9988.1
GR1066.0  9991.3  1066.0 10009.0  1066.0 10053.0  1066.0 10098.5  1066.0 10198.2
GR1066.0 10229.0  1066.0 10240.9  1066.0 10254.0  1066.0 10259.9  1066.0 10295.0
GR1066.0 10323.4  1084.7 10352.8
HD13.396       0 9227.6410326.19
   ********************************************************************************
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467      89  8693.6 10286.7   370.4   370.4   370.4
X3                      8783    1080 10203.4    1080
GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR 1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
G[redacted]0.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD[redacted].467      10    8783 10203.4
NC                      0.1     0.3
X113.952      93  9432.8 10076.3    2525    2585 2566.36
X3                      9400    1085   10384    1085
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
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GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
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GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952      10    9400   10384
X114.430      95  9171.4 10301.1    2175    2625 2523.57
X3                      7800    1095   10520    1095
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
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GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
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X                          9290    1105   10130    1105
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HD15.000      10  9346.3   10130
X115.094      93  9336.0 10125.1     495     495  496.49
X3                         9234.4    1105   11152    1105
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
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GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
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G[illegible]8.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
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GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   10400
NC  .040    .045    .035
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X3                         9822    1110   10390    1110
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GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR1101.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
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GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
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GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   10390
NC  .040    .040    .035
           ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
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GR[illegible]0.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
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GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1114.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
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GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
X116.099       92  9804.0 10081.1    2010    2005 2002.13
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GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
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GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
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NC                        0.3     0.5
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HD16.482      10 9787.82   10220
X116.506       72  9768.0 10245.4     125     125  126.72
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GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506      10  9777.2 10238.7
    **************DOWNSTREAM END OF GRAND-1************************************
    ********************************************************************************
NC  0.05    0.05    0.04     0.1     0.3
X1[illegible]612       84  9808.2 10161.2     627     342     581
X[illegible]                      9799    1125 10186.3    1125
XL                      9808.2   10300
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
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GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
G[redacted]21.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
G[redacted]21.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR1119.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612      10   10090 10186.3
NC  0.05    0.05    0.04     0.1     0.3
X116.990      82  9810.0 10135.4    1990    1985    1993
X3                      9792.31    1130 10135.9    1130
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990      10    9800 10135.9
X117.458      92  9370.6 10225.3    3035    1705 2468.67
X3                      9280    1135   10250    1135
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR[redacted]23.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
G[redacted]28.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
HD17.458      10    9280   10250
     **************DOWNSTREAM END GREENWAY-1**********************************
     ********************************************************************************
X117.638      89  9774.7 10288.4     955     895  949.45
X3                      9285    1140   10360    1140
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1133.5  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
G[redacted]34.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
G[redacted]31.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4
HD17.638      10    9285   10360
NC 0.045    0.05   0.035
X117.821      92  9764.8 10227.7     950     970  964.24
X3                      8350    1145   10270    1145
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
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GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
G[redacted]137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
G[redacted]137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1148.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821      10    8350   10270
   ************UPSTREAM END OF GRAND-1*************************************
   ***************************************************************************
X118.275      93  9752.1 10210.5    2170    2440 2398.82
X3                       8750 .    1145   10670    1145
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0  1149.4 13000.0
H[redacted]275      10    8750   10670
X11[redacted].839      92  9787.8 10337.0    2635    3185 2882.75
X3                       9250    1160   10350    1160
GR1159.3  8035.3  1160.1  8038.6  1154.0  8081.5  1152.0  8142.0  1151.8  8165.7
GR1145.2  8172.5  1142.4  8175.7  1135.6  8182.7  1126.5  8192.5  1119.8  8199.1
GR1119.8  8265.6  1136.1  8284.0  1141.6  8289.5  1151.1  8298.1  1150.6  8339.2
GR1152.4  8343.3  1147.4  8393.6  1149.7  8415.2  1150.8  8439.6  1151.2  8443.4
GR1149.9  8483.6  1144.3  8492.4  1143.1  8504.6  1142.9  8518.4  1143.5  8526.7
GR1143.5  8539.0  1141.4  8542.8  1138.4  8549.1  1139.2  8560.7  1139.1  8569.3
GR1143.3  8578.2  1146.8  8592.3  1149.9  8594.8  1150.7  8597.1  1150.7  8600.4
GR1148.7  8619.6  1148.7  8627.7  1149.8  8634.1  1151.3  8649.9  1151.6  8695.7
GR1150.9  8746.0  1150.6  8796.3  1149.1  8837.3  1149.4  8854.9  1151.4  8869.2
GR1152.3  8960.5  1152.0  8966.7  1148.3  9004.8  1150.0  9017.9  1151.0  9023.1
GR1147.6  9041.7  1147.0  9087.8  1149.7  9104.9  1149.5  9108.5  1149.7  9149.0
GR1150.7  9199.0  1151.4  9285.5  1151.8  9359.0  1154.0  9367.0  1154.7  9374.4
GR1151.2  9388.1  1151.3  9420.2  1150.0  9435.1  1149.5  9446.3  1151.6  9476.4
GR1150.9  9511.1  1150.8  9556.2  1151.8  9665.4  1152.1  9705.2  1152.8  9716.6
GR1148.6  9747.1  1147.5  9774.5  1149.2  9787.8  1147.8  9825.0  1145.3  9845.2
GR1145.1  9901.6  1147.0  9913.2  1146.0  9962.2  1145.0 10056.4  1144.6 10160.9
GR1145.3 10164.0  1146.7 10168.0  1146.8 10189.4  1146.1 10196.0  1145.1 10199.7
GR1144.9 10310.7  1146.1 10321.9  1147.1 10325.1  1147.5 10331.4  1150.1 10337.0
GR1152.2 10340.5  1159.1 10354.4
HD18.839      10    9250   10350                .
    *****************UPSTREAM END OF GREENWAY-1*******************************
    ***************************************************************************
    ***************** PROPOSED GRADE CONTROL STRUCTURE DOWNSTREAM OF ***********
    ***************** BELL ROAD BRIDGE                               ***********
    ***************  DOWNSTREAM SILL OF GRADE CONTROL                ***********
    ***************************************************************************
X118.960      24    9840 10223.7     530     690  634.97
X3                       9391    1156 10483.8    1156
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1147.0    9435  1147.4    9840
GR1147.0  9848.8  1147.0  9882.3  1147.0    9948  1147.0 10060.6  1147.0   10071
GR1147.0 10072.1  1147.0 10223.7  1147.0 10226.4  1147.0 10251.3  1147.0 10260.2
GR1147.0 10281.3  1147.0 10286.7  1147.0 10415.8  1147.0 10465.7  1170.7 10522.1
G[redacted]70.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
H[redacted]962       0    9440   10480
    *****************UPSTREAM SILL OF PROPOSED GRADE CONTROL AT BELL *********
NC                     0.3     0.5
             *************-BELL ROAD***********
X118.962      74    9840 10223.7      10      10      10
X3                       9391    1156 10483.8    1156
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1147.0    9435  1147.4    9840
GR1147.0  9848.8  1147.0  9882.3  1147.0    9948  1147.0 10060.6  1147.0   10071
GR1147.0 10072.1  1147.0 10223.7  1147.0 10226.4  1147.0 10251.3  1147.0 10260.2
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GR1147.0 10281.3  1147.0 10286.7  1147.0 10415.8  1147.0 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962       0    9440   10480
N[redacted].045    .045    .035
X[redacted].066      93  9885.7 10349.1     485     580  551.29
X3                            9350    1160   10778    1160
GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
GR1163.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
GR1159.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR1154.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066      10    9350   10398
NC 0.045   0.045   0.035     0.1     0.3
X119.446      91  9592.8 10078.6    1840    2400 2473.39
X3                            9170    1170   11361    1170
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR[redacted]158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
G[redacted]62.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR[redacted]63.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446      10  9174.8 10915.1
         ---------UNION HILLS--------
X119.920      92  9744.6 10129.1    2510    2450 2499.03
X3                            9660    1175   11778    1175
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920      10  9744.6 11130.2
X120.579      90  9825.6 10324.2    3420    3400 3482.23
X3                            9660    1185 10329.5    1185
GR[redacted]87.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
G[redacted]81.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR[redacted]81.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
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GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
G[redacted]79.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
G[redacted]78.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579      10  9705.1 10324.2
   ****************DOWNSTREAM END OF BEARDSLEY-1*****************************
   ************************************************************************
X120.958      90  9787.3 10383.8    1815    2044 2006.06
X3                    8780    1190 10383.9    1190
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      10    8780 10383.9
         ----------BEARDSLEY----------
X121.061      91  9850.0 10325.4     340     655  542.53
X3                    9200    1190   10350    1190
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR[redacted]82.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
G[redacted]84.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR[redacted]81.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      10    9200   10100
NC  .055    .055    .050
X121.157      94  9377.3 10376.3     340     630  509.07
X3                    9274.8    1195   10400    1195
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR[redacted]87.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
G[redacted]89.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
GR1189.9 11240.1  1188.9 11348.5  1189.6 11427.1  1197.9 11459.8
HD21.157      10  9377.3 10398.0
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                    9350    1195 10322.7    1195
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
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GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
G[redacted]90.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
G[redacted]89.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      10    9350 10322.7
NC  .045    .055    .035
     *********UPSTREAM END OF BEARDSLEY -1**************************************
     *********LOCATION OF ROSE GARDEN -1***************************************
     ******************************************************************************
     *********DOWNSTREAM SILL OF PROPOSED GRADE CONTROL************************
X121.893      30  9558.8 10146.5    2525    2070 2442.15
X3                    9546    1200   10680    1200
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1191.0  9576.0  1191.0  9660.8
GR1191.0  9708.0  1191.0  9788.3  1191.0  9798.3  1191.0  9857.6  1191.0  9914.6
GR1191.0 10013.5  1191.0 10023.1  1191.0 10040.6  1191.0 10070.2  1191.0 10096.6
GR1191.0 10112.4  1191.0 10146.5  1191.0 10313.7  1191.0 10374.9  1191.0 10402.2
GR1191.0 10443.8  1191.0 10529.3  1191.0 10545.6  1191.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
HD21.893       0  9558.8   10680
     **********UPSTREAM SILL OF PROPOSED GRADE CONTROL************************
X121.894      30  9558.8 10146.5      10      10      10
X3                    9546    1200   10680    1200
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1191.0  9576.0  1191.0  9660.8
GR1191.0  9708.0  1191.0  9788.3  1191.0  9798.3  1191.0  9857.6  1191.0  9914.6
GR1191.0 10013.5  1191.0 10023.1  1191.0 10040.6  1191.0 10070.2  1191.0 10096.6
GR1191.0 10112.4  1191.0 10146.5  1191.0 10313.7  1191.0 10374.9  1191.0 10402.2
GR1191.0 10443.8  1191.0 10529.3  1191.0 10545.6  1191.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
HD21.894       0  9558.8   10680
       -------UPSTREAM OF DEER VALLEY ROAD--------
   ***********DOWNSTREAM END OF DEER VALLEY-1S, 1N, AND DEER VALLEY-2***********
   ******************************************************************************
X[redacted]177      89  9909.7 10533.6    1415    1510 1490.23
X3                    8765.7    1205 10533.7    1205
GR1207.0  8765.7  1207.1  8786.8  1204.9  8844.5  1203.0  8855.1  1199.5  8865.5
GR1199.8  8878.3  1197.7  9076.9  1201.5  9111.1  1201.8  9131.3  1203.9  9160.3
GR1204.1  9366.4  1203.1  9432.5  1200.7  9451.7  1202.2  9529.3  1201.7  9586.2
GR1202.1  9705.0  1200.6  9773.2  1199.6  9909.7  1197.1 10001.3  1196.9 10057.0
GR1196.2 10078.7  1201.5 10089.5  1196.9 10231.7  1196.0 10350.6  1196.0 10510.5
GR1200.7 10533.6  1197.5 10557.0  1194.4 10565.7  1197.7 10653.0  1196.0 10668.4
GR1193.8 10790.9  1194.5 10950.2  1197.8 10965.9  1202.7 10979.9  1202.4 11012.5
GR1201.0 11024.0  1201.8 11036.9  1212.9 11068.5  1203.3 11092.5  1202.5 11126.9
GR1202.8 11163.1  1207.3 11173.2  1206.9 11197.3  1205.9 11206.1  1207.0 11344.6
GR1210.4 11352.1  1213.2 11360.4  1207.1 11376.6  1207.1 11600.9  1208.7 11813.7
GR1213.6 11826.7  1214.6 11832.4  1212.5 11856.3  1214.4 11897.1  1212.8 11966.7
GR1214.0 12077.6  1211.0 12191.7  1212.2 12252.6  1211.1 12304.1  1211.6 12311.6
GR1210.8 12326.4  1213.5 12334.0  1206.8 12349.9  1206.8 12409.5  1212.7 12439.6
GR1212.4 12476.5  1206.8 12489.2  1206.8 12564.8  1211.1 12576.8  1209.7 12583.4
GR1207.7 12667.9  1213.9 12678.3  1214.7 12678.9  1214.2 12696.7  1210.2 12709.6
GR1208.5 12713.4  1208.1 12737.7  1220.1 12763.9  1219.5 12790.0  1216.3 12811.3
GR1219.0 12823.9  1216.4 12834.3  1212.8 12843.9  1213.0 12857.8  1211.9 12881.8
GR1209.2 12892.3  1208.1 12903.1  1220.1 12936.6  1220.4 12953.7
HD22.177      10    8850 10533.7
NC  .045    .045    .035
X122.462      77  9887.4 10318.9    1530    1400 1478.14
X3                  9046.89    1210   11760    1210
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
G[redacted]03.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
G[redacted]05.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462      10  9050.4   11760
X122.745      92  9797.7 10147.8    1520    1270 1491.33
X3                  8914.99    1215   12094    1215
GR1225.1  8903.1  1207.9  8919.7  1208.2  8963.5  1207.5  9060.1  1207.7  9092.9
GR1206.4  9114.7  1206.1  9143.1  1208.9  9172.4  1211.8  9209.3  1212.0  9328.1
```

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GR1211.9  9402.0  1212.9  9418.9  1212.4  9534.3  1211.5  9563.3  1211.0  9595.9
GR1211.2  9640.5  1210.6  9677.3  1210.8  9692.3  1209.6  9711.3  1209.4  9723.7
GR1211.0  9745.9  1211.9  9797.7  1211.1  9835.1  1208.8  9954.1  1207.1  9981.3
G[redacted]7.0 10008.3  1206.3 10036.6  1207.2 10049.9  1207.2 10119.2  1210.2 10147.8
G[redacted]0.8 10219.0  1210.4 10251.5  1211.9 10260.4  1211.3 10309.2  1211.7 10324.5
GR1212.5 10377.1  1211.5 10388.9  1212.2 10429.8  1212.2 10482.5  1211.9 10494.4
GR1210.2 10515.1  1210.5 10539.3  1212.7 10587.8  1212.6 10693.2  1212.4 10746.0
GR1212.9 10851.1  1210.4 10874.3  1210.1 10904.0  1212.0 10941.3  1212.2 10956.6
GR1211.7 11009.3  1211.2 11028.1  1212.9 11064.9  1212.4 11099.8  1210.7 11127.4
GR1212.4 11180.0  1212.7 11259.2  1212.5 11272.7  1212.8 11327.7  1209.3 11351.0
GR1208.3 11378.9  1207.9 11394.3  1206.2 11399.0  1207.0 11430.8  1206.0 11521.2
GR1209.3 11533.2  1209.6 11536.1  1210.0 11641.5  1210.0 11668.6  1208.1 11687.0
GR1210.0 11694.4  1209.8 11721.1  1210.6 11746.8  1211.1 11799.5  1210.6 11904.9
GR1210.8 11957.6  1210.1 12011.8  1209.3 12027.9  1209.6 12051.8  1211.3 12062.3
GR1211.9 12081.2  1212.6 12088.4  1213.4 12113.3  1214.8 12123.8  1214.9 12168.3
GR1215.3 12220.9  1215.3 12248.1  1215.9 12273.6  1216.2 12326.3  1217.0 12371.3
GR1222.8 12402.3  1222.5 12409.2
HD22.745      10 8914.99   12094
   ***********UPSTREAM END OF DEER VALLEY SAND AND GRAVEL MINES***************
   ***************************************************************************
   ***********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, AND 3E****************
   ***************************************************************************
X122.935      94  9530.2 10351.6    2480    2125 2490.47
X3                8484.93    1220   11640    1220
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
G[redacted]3.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
G[redacted]2.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
G[redacted]3.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   11640
          ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409      93  9675.2 10060.2    2450    2360 2505.26
X3                    9550    1230   10970    1230
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
GR  1227 11995.5  1226.6 12052.6    1229   12250
HD23.409      10    9550   10970
X123.692      92  9869.5 10339.2    1460    1455 1492.88
X3                    9650    1235   10675    1235
GR1249.2    6690  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
GR  1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
G[redacted]4.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
G[redacted]2.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
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GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR1228.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR1226.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR1241238 11521.1  1237.8 11533.8
HD23.692      10    9650   10675
NC  .055    .055    .050
X123.974      94  9716.2 10115.2    1420    1470 1489.37
X3                    9716    1240   10825    1240
GR1269.8    7400  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10    9716 10388.9
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
    ********DOWNSTREAM END OF PINNACLE 1S, 1N, 2, 3W, 3E**********************
    ************************************************************************
NC  .045    .045    .035
X124.449      92  9496.2 10169.3    2380    2560 2506.65
X3                  9350.53    1245   11319    1245
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10 9350.53 11143.3
        ----------UPSTREAM OF HAPPY VALLEY ROAD----
       *******PROPOSED GRADE CONTROL STRUCTURE AT NEW ESTRELLA PKWY***********
       *******DOWNSTREAM SILL*************************************************
X124.543      56  9646.7 10243.6     495     495  500.50
X3                    9340    1245   11419    1245
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1239.0  9358.2  1239.0  9382.8  1239.0  9435.3
GR1239.0  9582.1  1239.0  9594.4  1239.0  9622.9  1239.0  9646.7  1239.0  9709.0
GR1239.0  9742.6  1239.0  9751.8  1239.0  9766.1  1239.0  9793.5  1239.0  9796.0
GR1239.0  9806.8  1239.0  9821.0  1239.0  9874.8  1239.0  9923.3  1239.0  9952.8
GR1239.0  9966.8  1239.0 10077.7  1239.0 10212.4  1239.0 10229.1  1239.0 10243.6
GR1239.0 10280.9  1239.0 10333.8  1239.0 10386.8  1239.0 10439.4  1239.0 10550.6
GR1239.0 10565.8  1239.2 10598.0  1239.0 10619.5  1239.0 10703.7  1239.0 10780.2
GR1239.0 10859.1  1239.2 10869.5  1239.0 10915.2  1239.0 11080.7  1239.0 11105.3
GR1239.0 11119.9  1239.2 11166.5  1239.0 11241.2  1239.0 11244.2  1239.0 11247.1
GR1239.0 11285.1  1239.2 11331.3  1239.0 11360.1  1239.0 11366.3  1239.0 11413.5
GR1259.5 11435.6
HD24.543       0    9340 11413.5
       ********UPSTREAM SILL OF GRADE CONTROL STRUCTURE************************
X124.544      56  9646.7 10243.6      10      10      10
X3                    9340    1245   11419    1245
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1239.0  9358.2  1239.0  9382.8  1239.0  9435.3
GR1239.0  9582.1  1239.0  9594.4  1239.0  9622.9  1239.0  9646.7  1239.0  9709.0
GR1239.0  9742.6  1239.0  9751.8  1239.0  9766.1  1239.0  9793.5  1239.0  9796.0
GR1239.0  9806.8  1239.0  9821.0  1239.0  9874.8  1239.0  9923.3  1239.0  9952.8
GR1239.0  9966.8  1239.0 10077.7  1239.0 10212.4  1239.0 10229.1  1239.0 10243.6
GR1239.0 10280.9  1239.0 10333.8  1239.0 10386.8  1239.0 10439.4  1239.0 10550.6
GR1239.0 10565.8  1239.2 10598.0  1239.0 10619.5  1239.0 10703.7  1239.0 10780.2
```

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GR1239.0 10859.1  1239.2 10869.5  1239.0 10915.2  1239.0 11080.7  1239.0 11105.3
GR1239.0 11119.9  1239.2 11166.5  1239.0 11241.2  1239.0 11244.2  1239.0 11247.1
GR1239.0 11285.1  1239.2 11331.3  1239.0 11360.1  1239.0 11366.3  1239.0 11413.5
G[redacted]9.5 11435.6
H[redacted].544       0    9340 11413.5
      ********************************************************************
NC   .05     .05    .035
X124.996      90  9774.0 10632.3    2310    2320 2378.18
X3                    9776.35    1255   12290    1255
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
HD24.996      10 9776.35 11205.1
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478      93  9750.7 10127.1    2600    2485 2546.34
X3                    9750    1265   11715    1265
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR[redacted]53.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
G[redacted]58.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR[redacted]57.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478      10  9750.7 10598.2
          ----------UPSTREAM OF JOMAX ----------
X125.666      66  9842.4 10115.1    1035     975  995.18
X3                    9830    1270   10810    1270
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666      10  9854.2 10388.0
X1 25.86      25    9940   10200    1575    1565    1585
X3                    9150    1275   10201    1275
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
G[redacted]1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
G[redacted]1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86      10    9150   10200
     **************DOWNSTREAM LIMIT OF PINNACLE VISTA-1**************************
     ********************************************************************
NC  0.06   0.065   0.035
X1 25.94    22.0    9945   10117     450     420     430
X3                    9080    1275   10280    1275
GR1276.1    7527    1273    7678  1273.9    7868  1272.1  8087.0  1270.3  8382.0
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GR1270.3  8578.0  1268.1  8600.0  1271.4  8631.0  1271.2  8762.0  1270.1  9101.0
GR1267.2  9241.0  1271.2  9532.0  1269.2  9945.0  1264.2 10000.0  1267.0 10117.0
GR1263.4 10185.0  1270.1 10242.0  1270.3 10425.0  1269.7 10480.0  1269.0 10780.0
GR[illegible]6.0 11050.0  1276.0   12000
HD[illegible]5.94      10    9080   10280
X1 26.29    26.0    9696   10120    1640    1875    1810
X3                         9380    1285   11060    1285
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13300.0
HD 26.29      10    9380   11060
NC  0.06    0.07   0.035
X1 26.63    22.0    9792   10187    1800    1840    1840
X3                         9780    1290   10770    1290
GR1310.9  9050.0  1310.0  9116.0  1288.0  9208.0  1286.8  9488.0  1282.7  9510.0
GR1282.7  9641.0  1284.1  9792.0  1279.5 10000.0  1281.8 10187.0  1280.9 10467.0
GR1279.4 10741.0  1282.9 10861.0  1283.0 11016.0  1285.4 11057.0  1285.6 11351.0
GR1283.8 12475.0  1286.4 13757.0  1288.6 13810.0  1348.8 13939.0  1348.8 13956.0
GR1345.6 13961.0  1345.6 14400.0
HD 26.63      10    9780   10770
    ******************UPSTREAM LIMIT OF PINNACLE VISTA-1*************************
    ****************************************************************************
X1 26.73    31.0    9898   10125     460     470     490
X3                         9870    1290   10850    1290
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73      10    9870   10850
X1 27.03    23.0    9922   10079    1660    1020    1590
X3                         9704    1295   10500    1295
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR[illegible]87.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
G[illegible]8.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03      10    9704   10500
NC 0.055   0.055   0.035
   ******************DOWNSTREAM END OF DIXLETA-1*****************************
   ****************************************************************************
X1 27.48    36.0    9894   10087    2860    2160    2390
X3                         8500    1305   10130    1305
GR1357.7  6865.0  1350.6  6903.0  1350.2  6923.0  1301.6  7048.0  1299.7  7138.0
GR1300.5  7579.0  1295.1  7603.0  1296.8  7764.0  1298.1  7834.0  1294.2  7891.0
GR1294.1  7961.0  1296.5  8010.0  1293.8  8054.0  1296.9  8084.0  1295.1  8126.0
GR1297.8  8226.0  1296.0  8427.0  1297.8  8611.0  1297.0  8717.0  1295.9  8742.0
GR1294.5  8960.0  1297.5  9033.0  1298.6  9348.0  1295.3  9547.0  1296.3  9669.0
GR1297.6  9742.0  1295.2  9753.0  1294.9  9894.0  1291.5 10000.0  1292.8 10087.0
GR1292.8 10157.0  1301.9 10203.0  1301.3 10736.0  1301.9 11132.0  1323.3 11258.0
GR1324.8 11319.0
HD 27.48      10    8500   10080
X1 27.68    35.0    9853   10078    1260    1040    1040
X3                         8930    1305   10101    1305
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68      10    8930   10101
X1 27.94    24.0    9944   10187    1370    1415    1405
X3                         9320    1310   10203    1310
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD[illegible]7.94      10    9320   10200
   ****************UPSTREAM LIMIT OF DIXLETA-1*****************************
   ****************************************************************************
X1 28.12    27.0    9906   10076     990     960     950
X3                         9600    1315   10570    1315
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
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GR1312.7 11051.0  1314.2 11435.0
HD 28.12      10    9600   10570
X1 28.67    37.0    9964   10192    2785    2925    2885
X[redacted]                 9950    1325   10300    1325
G[redacted]72.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR1320.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR1322.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67      10    9950   10300
X1 28.95    34.0    9946   10353    1550     940    1465
X3                  9946    1330   10600    1330
GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR1324.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
GR1326.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR1355.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95      10    9946   10600
X1 29.04    34.0    9828   10239     550     330     510
X3                  9827    1330   10630    1330
GR1360.0    9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04      10    9827   10630
X1 29.54    30.0    9846   10150    2750    2235    2640
X3                  9620    134010135.89    1340
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR[redacted]26.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
G[redacted]7.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR[redacted]45.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD 29.54      10    962010135.89
X129.611    31.0    9791   10094     315     315     375
X3                  9620    1340   10110    1340
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611      10    9620   10110
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025
X3                  9820    1345   10460    1345
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR1342.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
GR1337.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR1349.2 10676.0
HD 29.80      10    9882   10460
X1 30.07    17.0    9925   10098    1425    1440    1420
X3                  9780    135010276.81    1350
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07      10    978010276.81
X1 30.26    12.0    9749   10135     870    1090    1005
X3                  9748    1350   10260    1350
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26      10    9748   10250
X1 30.73    14.0    9881   10075    2455    2470    2460
X[redacted]                 9864    1360   10180    1360
G[redacted]9.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR[redacted]52.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73      10    9864   10180
X1 30.82    12.0    9924   10201     500     370     500
X3                9901.06    1360   10280    1360
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
```

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HD 30.82       10 9901.06   10280
X1 31.39     17.0     9792   10080     2900     3165     2970
X3                              9550     1370   10320     1370
GR[illegible]7.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR[illegible]4.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39       10     9550   10320
X1 31.86     10.0     9894   10261     2550     2485     2505
X3                              9680     1375   10262     1375
GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86       10     9680   10262
NC 0.045    0.050    0.045
X1 32.43     14.0     9852   10112     2885     2970     2980
X3                              9600     138510102.34     1385
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43       10     960010102.34
X1 32.72     28.0     9879   10150     1725     1145     1535
X3                              9617     1385   10453     1385
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72       10     9617   10453
X1 32.86     12.0     9928   10155      680      990      760
X3                              9807     1390   10332     1390
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86       10     9807   10200
X1 32.92      9.0     9891   10143      290      370      310
X3                           9876.07     1390   10180     1390
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR[illegible]0.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
H[illegible].92       10     9890   10180
      ------------STATE ROUTE 74---------
X132.984      33     9962   10011      338      358      343
X3                              9824     1395   10082     1395
GR1427.7  9750.0  1425.2  9750.1  1391.6     9820  1391.6     9823  1391.6  9823.1
GR1389.7     9833  1389.7  9833.1  1389.7     9837  1385.5     9851    1384     9900
GR1385.8     9904  1385.8     9909  1385.8  9909.1  1386.6     9919  1386.6  9919.1
GR1386.6     9962  1380.0     9985  1380.0  9985.1  1380.0     9995    1380  9995.1
GR1378.4     9997  1380.2    10011  1382.2    10018  1384.2    10050  1386.8   10053
GR1387.9    10065  1387.9 10065.1  1390.7    10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984        0        0        0
X132.998      9.0     9962   10108       72       72       72
      ------------************************-------------
X3                           9842.69     139510108.06     1395
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998       10     9851   10108
NC 0.045    0.045    0.050
       ------------DOWNSTREAM OF MORGAN CITY WASH---------
X1 33.41     12.0     9944   10366     1880     2270     2170
X3                           9966.91     140510280.32     1405
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41       10 9966.9110280.32
X1 33.82     20.0     9861   10068     2165     2220     2175
X3                              9708     140510061.27     1405
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD 33.82       10     970810061.27
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T5    NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
T6    BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1             1        0
I4             4        1       10
LQ          5000     7000    17000    55000
LT          6457    10880    33475   146960
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
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LF     MS 0.21035 0.22940 0.21429 0.21542
LF     CS 0.23112 0.22521 0.22541 0.25124
LF    VCS 0.36207 0.32486 0.38978 0.39271
LF    VFG 0.00367 0.00255 0.00203 0.00119
LF     FG 0.00683 0.00452 0.00379 0.00284
LF     MG 0.01083 0.00681 0.00677 0.00652
LF     CG 0.00587 0.00134 0.00686 0.01048
LF    VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75     96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425     44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2     97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15     15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36     93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3     15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6     68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3     98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6     79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5     94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18     78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075     13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5     89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18     69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075      3
PF         5.380       1      19    4.75      99    2.36      98       2      98
PFC 1.18     93     0.6      64   0.425      36     0.3      14    0.15       2
PFC0.075      2
PF         5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2     86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15      2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18     82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075      1
PF         8.000       1      19    12.5      99     9.5      98     6.3      96
PFC 4.75     95    2.36      91       2      90    1.18      79     0.6      54
PFC0.425     37     0.3      22    0.15       5   0.075       3
PF         8.992       1      50    37.5      98      25      97      19      95
PFC 12.5     94     9.5      91     6.3      88    4.75      85    2.36      80
PFC    2     78    1.18      67     0.6      44   0.425      29     0.3      18
PFC 0.15      8   0.075       5
PF         9.885       1      50    37.5      99      25      94      19      92
PFC 12.5     90     9.5      89     6.3      87    4.75      86    2.36      82
PFC    2     79    1.18      65     0.6      30   0.425      16     0.3      11
PFC 0.15      7   0.075       5
PF        11.029       1      50    37.5      99      25      96      19      93
PFC 12.5     88     9.5      83     6.3      77    4.75      73    2.36      66
PFC    2     62    1.18      46     0.6      18   0.425       9     0.3       6
PFC 0.15      2   0.075       0
PF        11.428       1    37.5      25      98      19      93    12.5      86
PFC  9.5     81     6.3      73    4.75      67    2.36      61       2      59
PFC 1.18     48     0.6      33   0.425      27     0.3      24    0.15      20
PFC0.075     18
PF        12.470       1      50    37.5      95      25      88      19      82
PFC 12.5     75     9.5      70     6.3      64    4.75      61    2.36      48
PFC    2     46    1.18      35     0.6      18   0.425       9     0.3       4
PFC 0.15      1   0.075       0
PF        13.467       1    37.5      25      99      19    98.5    12.5      98
PFC  9.5     97     6.3    96.5    4.75    96.2    2.36    96.1       2      96
PFC 1.18     93     0.6      79   0.425      58     0.3      33    0.15       7
PFC0.075      1
PF        14.430       1    37.5      25      99      19      99    12.5      99
PFC  9.5     99     6.3      99    4.75      98    2.36      95       2      93
PFC 1.18     80     0.6      46   0.425      25     0.3      13    0.15       4
PFC0.075      2
PF        15.719       1    62.5    37.5      88      25      85      19      80
PFC 12.5     76     9.5      73     6.3      69    4.75      66    2.36      62
PFC    2     59    1.18      45     0.6      28   0.425      23     0.3      21
PFC 0.15     13   0.075       5
PF        16.482       1      25      19      99    12.5      97     9.5      96
PFC  6.3     92    4.75      90    2.36      85       2      81    1.18      62
PFC  0.6     24   0.425       9     0.3       4    0.15       1   0.075       0
PF        16.612       1      75    37.5      92      25      85      19      80
PFC 12.5     73     9.5      70     6.3      65    4.75      62    2.36      49
PFC    2     44    1.18      29     0.6      16   0.425      11     0.3       6
PFC 0.15      2   0.075       1
PF        16.990       1      50    37.5      98      25      95      19      93
PFC 12.5     91     9.5      90     6.3      88    4.75      87    2.36      84
PFC    2     82    1.18      75     0.6      58   0.425      41     0.3      22
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PFC 0.15       5   0.075       2
PF        17.821       1      50    37.5      92      25      85      19      73
PFC 12.5      60     9.5      53     6.3      47    4.75      44    2.36      36
PFC  2        34    1.18      25     0.6      12   0.425       6     0.3       3
PFC 0.15       1   0.075       0
PF        18.275       1      50    37.5      94      25      83      19      76
PFC 12.5      66     9.5      59     6.3      50    4.75      45    2.36      39
PFC  2        36    1.18      27     0.6      19   0.425      15     0.3      13
PFC 0.15      11   0.075       9
PF        18.962       1    62.5    37.5      87      25      75      19      70
PFC 12.5      63     9.5      59     6.3      54    4.75      50    2.36      45
PFC  2        43    1.18      34     0.6      19   0.425      11     0.3       5
PFC 0.15       1   0.075       0
PF        19.920       1      50    37.5      96      25      87      19      82
PFC 12.5      75     9.5      70     6.3      65    4.75      61    2.36      53
PFC  2        50    1.18      35     0.6      14   0.425       7     0.3       5
PFC 0.15       2   0.075       1
PF        21.061       1    62.5    37.5      85      25      76      19      69
PFC 12.5      59     9.5      53     6.3      45    4.75      40    2.36      34
PFC  2        32    1.18      25     0.6      15   0.425      11     0.3       9
PFC 0.15       6   0.075       5
PF        21.893       1      50    37.5      98      25      98      19      92
PFC 12.5      83     9.5      77     6.3      68    4.75      63    2.36      51
PFC  2        46    1.18      27     0.6      10   0.425       5     0.3       3
PFC 0.15       1   0.075       1
PF        22.462       1    62.5    37.5      91      25      83      19      78
PFC 12.5      73     9.5      68     6.3      62    4.75      58    2.36      48
PFC  2        45    1.18      32     0.6      15   0.425       7     0.3       3
PFC 0.15       0   0.075       0
PF        23.409       1    62.5    37.5      91      25      83      19      75
PFC 12.5      66     9.5      61     6.3      54    4.75      51    2.36      44
PFC  2        42    1.18      32     1.6      18   0.425      11     0.3       6
PFC 0.15       2   0.075       2
PF        24.543       1    62.5    37.5      84      25      76      19      70
PFC 12.5      64     9.5      60     6.3      54    4.75      52    2.36      47
PFC  2        45    1.18      36     0.6      21   0.425      13     0.3       9
PFC 0.15       4   0.075       2
PF        25.666       1      50    37.5      97      25      88      19      81
PFC 12.5      74     9.5      69     6.3      64    4.75      61    2.36      54
PFC  2        52    1.18      43     0.6      21   0.425       8     0.3       3
PFC 0.15       2   0.075       1
PF        25.860       1    37.5      25      98      19      96    12.5      91
PFC  9.5      87     6.3      80    4.75      74    2.36      56       2      46
PFC 1.18      27     0.6       7   0.425       3     0.3       2    0.15       2
PFC0.075       1
PF        26.290       1      19     9.5      98     6.3      97    4.75      92
PFC 2.36      84       2      80    1.18      22     0.6      18   0.425       6
PFC  0.3       3    0.15       2   0.075       2
PF        26.730       1      50    37.5      96      25      93      19      92
PFC 12.5      88     9.5      84     6.3      80    4.75      77    2.36      67
PFC  2        62    1.18      39     0.6      14   0.425       9     0.3       7
PFC 0.15       6   0.075       6
PF        27.680       1      50    37.5      99      25      97      19      92
PFC 12.5      88     9.5      85     6.3      78    4.75      73    2.36      61
PFC  2        56    1.18      34     0.6      10   0.425       5     0.3       3
PFC 0.15       3   0.075       3
PF        30.070       1      50    37.5      97      25      88      19      84
PFC 12.5      73     9.5      67     6.3      55    4.75      53    2.36      43
PFC  2        40    1.18      31     0.6      21   0.425      17     0.3      14
PFC 0.15      11   0.075       9
PF        30.820       1    37.5      25      99      19      97    12.5      95
PFC  9.5      94     6.3      90    4.75      89    2.36      86       2      85
PFC 1.18      76     0.6      61   0.425      50     0.3      35    0.15      11
PFC0.075       4
PF        31.860       1    37.5      25      94      19      92    12.5      91
PFC  8.5      90     6.3      89    4.75      88    2.36      88       2      88
PFC 1.18      86     0.6      74   0.425      60     0.3      43    0.15      17
PFC0.075       8
PF        32.430       1   32.64    2.36      99       2      98    1.18      95
PFC  0.6      84   0.425      69     0.3      52    0.15      25   0.075      12
PF        32.998       1    62.5    37.5      97      25      91      19      84
PFC 12.5      74     9.5      67     6.3      57    4.75      51    2.36      40
PFC  2        37    1.18      27     0.6      18   0.425      14     0.3      12
PFC 0.15      10   0.075       7
$LOCAL
L             0.1    1000    5000   10000   25000
LTL           0.1    1094    6855   16015   51300
LF    VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL    FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL    MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL    CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL   VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL   VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL    FG 0.00076 0.00076 0.00197 0.00380 0.00293
```

```
LFL   MG 0.00056 0.00056 0.00028 0.00067 0.00050
LFL   CG 0.00000 0.00000 0.00022 0.00012 0.00011
LFL  VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$
$RUNNING
RC             12    5000    5000          912.55  913.39   913.9  914.53   914.9
RC         915.38   915.8  916.05   916.3  916.70   917.0  917.24
          ***********RUN 30 DAYS OF 9,000 CFS ************************
*     B  TIME STEP NO 1
Q    9000
T      60
X           0.005       1
*     B  TIME STEP NO 2
Q    9000
T      60
X           0.01        1
*     B  TIME STEP NO 3
Q    9000
T      60
X           0.005       1
*        TIME STEP NO 4
Q    9000
T      60
X           0.01        1
*     B  TIME STEP NO 5
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 6
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 7
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 8
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 9
Q    9000
T      60
X           0.01        1
*     B  TIME STEP NO 10
Q    9000
T      60
X           0.005       1
*        TIME STEP NO 11
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 12
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 13
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 14
Q    9000
T      60
X           0.01        1
*     B  TIME STEP NO 15
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 16
Q    9000
T      60
X           0.01        1
*        TIME STEP NO  17
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 18
Q    9000
T      60
X           0.01        1
*        TIME STEP NO 19
Q    9000
T      60
X           0.01        1
```

```
*    B  TIME STEP NO 20
Q   9000
T     60
X           0.01       1
*      TIME STEP NO 21
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 22
Q   9000
T     60
X           0.01       1
*      TIME STEP NO 23
Q   9000
T     60
X           0.01       1
*       TIM STEP NO  24
Q   9000
T     60
X           0.01       1
*    B  TIME STEP NO 25
Q   9000
T     60
X          0.005       1
*       TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 27
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 28
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 29
Q   9000
T     60
X           0.01       1
*    B  TIME STEP NO 30
Q   9000
T     60
X          0.005       1
    $DREDGEB
    $NODREDGE
       -----100-YEAR HYDROGRAPH------
*    B  TIME STEP NO 31
Q   9000      100
T     60       60
X          0.005    0.06
*       TIME STEP NO 32
Q   9000      100
W   0.01
*    B  TIME STEP NO 33
Q   9000      800
X         0.0005    0.08
*       TIME STEP NO 34
Q   9000      800
W   0.01
*    B  TIME STEP NO 35
Q  18000     7000
X          0.005    0.04
*       TIME STEP NO 36
Q  18000     7000
W   0.01
*    B  TIME STEP NO 37
Q  36000    17000
X          0.005    0.06
*       TIME STEP NO 38
Q  36000    17000
W   0.01
*    B  TIME STEP NO 39
Q  44000    20000
X          0.005    0.04
*       TIME STEP NO 40
Q  44000    20000
W   0.01
*    B  TIME STEP NO 41
Q  54000    24000
X          0.005    0.04
*       TIME STEP NO 42
Q  54000    24000
W   0.01
```

```
*    B  TIME STEP NO 43
Q  52000   22000
X          0.005    0.04
*       TIME STEP NO 44
Q  52000   22000
W   0.01
*    B  TIME STEP NO 45
Q  44000   18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000   18000
W   0.01
*    B  TIME STEP NO 47
Q  30000   12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000   12000
W   0.01
*    B  TIME STEP NO 49
Q  20000    8000
X          0.001    0.06
*       TIME STEP NO 50
Q  20000    8000
W   0.01
*    B  TIME STEP NO 51
Q   9000    4000
X          0.001    0.13
*       TIME STEP NO 52
Q   9000    4000
W   0.01
*    B  TIME STEP NO 53
Q   5500     500
X          0.01    0.33
*       TIME STEP NO 54
Q   5500     500
W   0.01
$$END
```

APPENDIX G
RESPONSE TO REVIEW COMMENTS

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

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Hydraulics
Hydrology
Sedimentation
Water Quality
Erosion Control
Environmental Services

18 March 2002

Doug Williams, AICP
Flood Control District of Maricopa County
2801 West Durango St.
Phoenix, AZ 85009-6399

RE: Kimley-Horn Response to WEST Comments on FCD 99-24 Agua Fria Watercourse Master Plan

Doug:

We were pleased to receive a copy of Kimley-Horn and Associates' (KHA) response to our review of their sediment modeling of the Agua Fria River for the Watercourse Master Plan. We hope that the comments in our review were taken more as questions to be clarified and suggestions rather than criticism of the KHA work. We found the KHA work to be competently done and many of our comments could be attributed to the difficulty in the use of the current set of sediment models.

In reviewing the KHA's response to our comments we find their response to the questions raised in our review to be adequate in four of the five areas. We still have some concerns in regards to the fifth but have not reviewed the data supporting their analysis as discussed under item 5 below. We will address the responses in the order KHA presented their responses.

1) Sediment Samples – Use of ASU Data

We agree overall with KHA's assessment of the sensitivity of the model to differing bed sediment samples. Even with the differing gradations in the two sample sets (KHA and ASU) the model was stable and showed, for the most part, only minor changes over the 34 mile river length. The two cross sections we indicated as having ±4.3 ft of change from the KHA sediment samples to the ASU samples are located between Olive Rd and the Cactus Rd alignment (14.43 with 4.5' of deposition) and north of Happy Valley Rd. near what KHA shows as the proposed Estrella Rd Crossing (24.54 with 4.3' of scour). The former cross section (14.43) is not near any current infrastructure and should not present a problem even if the ASU sediment samples are more accurate. Development in the area could be impacted by increased water surface elevations due to sedimentation however. The upper reach will

very likely be impacted by the gravel mining between Happy Valley Rd and Pinnacle Peak Rd and very possibly by channel lowering due to the cutoff of sediment inflow by the New Waddell Dam. The potential for scour due to New Waddell Dam is discussed in Section 5 in regards to the impacts of inflowing sediment loads on this upper reach of the model.

2) Placement of Ineffective and Moveable Bed Limits.

The explanation of the differing goals of the two modeling efforts goes a long ways to explain the differences in the limits selected in the two models. Based on our more detailed modeling efforts for a portion of this study reach we anticipated that the changes would not seriously impact the results during our review, but felt that it was important to evaluate the model with the changes we suggested to view the sensitivity of the model to the changes. Now that the model has been modified to include the suggested changes more confidence can be placed in the results and model sensitivity can be better judged. Given the decisions that will be based on the model results it was wise to shift the emphasis of the sediment model to providing the best sediment results rather than best matching the flood delineation results.

3) Cross Section Locations and the HEC-6 Model Version

The explanation by KHA in regards to the limitations of the version of HEC-6 they used for the modeling effort certainly accounts for the limited number of cross sections used in the modeling effort. The limitations of the HEC-6 model can be significant on a project of this magnitude. The excessive energy loss warnings are also hard to remove in a model where the number of cross sections is limited. Given the warnings in the regulatory model it appears that KHA did a good job of selecting cross sections to model the 34 miles of river with only 150 cross sections. A better alternative may have been to use the HEC-6T model which allows significantly more cross sections. This option may not have been available to KHA at the time the study was undertaken however.

4) Hydrology and Use of 30 Days of 9000 cfs Release Prior to 100 Year Flood.

The explanation of why the hydrograph with the 30 day flow of 9000 cfs would have been helpful in the original report to insure later modelers could understand why the hydrograph was used and the results of the sensitivity analysis regarding the placement of the 100 year flood in the hydrograph. We found the explanation to be adequate justification for the use of the inflow hydrograph.

5) Assumptions on Sediment Inflow to the Model.

While we understand the explanation and the justification for the inflowing sediment load, we still have concerns about basing long term decisions on a model that uses a significant inflowing sediment load below a large reservoir. We would expect the river below the dam to experience down cutting and a coarsening of the bed as well as

possible armoring due to the entrapment of the sediment load by the reservoir. This channel lowering and bed coarsening should be expected to move down the river from the dam as time progresses. Since large flows from the dam are rare historically and will be even rarer given the enlargement of the dam, it will be imperative that bridge piers and infrastructure in the upper reaches of the river be planned to account for the serious amounts of degradation that could occur. Since the New Waddell Dam can contain nearly all flows up to the 100 year flood, it will make mid-sized events even rarer while not greatly impacting the larger flood events (i.e. > 100 year floods). This can lead to very destructive floods downstream if adequate channel capacity and infrastructure protection are not insured.

Given that we have not had the opportunity to review the data that KHA used in their analysis of the upstream reach, we still have concerns in regards to this aspect of the modeling effort. It is possible however that given the opportunity to review this aspect of the modeling that we may agree with KHA in the use of the inflowing sediment load although the use of an inflowing sediment load should be closely scrutinized.

In conclusion it is apparent that the concerns cited in our report were primarily due to model restrictions and a slightly differing approach to the modeling of sediment transport in the Agua Fria River. These differences could be found in any two modeling efforts due to differences in the approach and goals of the models. The only concern raised by WEST that has not been fully evaluated is the inflowing sediment load below New Waddell Dam. The construction of infrastructure in this reach should be carefully analyzed to insure adequate measures are taken to insure structure stability in the reaches of the Agua Fria River below the dam.

Sincerely;

Gary E. Freeman, PhD, PE
Director, Water Resources Engineering

CC: Kimley-Horn and Associates

Kimley-Horn
and Associates, Inc.

Suite 250
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85020

March 5, 2002

Doug Williams, AICP
Flood Control District of Maricopa County
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RE: FCD 99-24 Agua Fria Watercourse Master Plan
West Review of Sediment Trend Analysis
KHA# 091131004

Dear Doug,

We have had the opportunity to evaluate the comments of West Consultants associated with their peer review of the Agua Fria Sediment Trend Analysis. In general, our overall understanding of their comments is that the KHA sediment trend results are reasonable and that with the incorporation of their recommendations, they would not anticipate significant variation in results.

Based on our meeting with you and Russ Miracle on March 1, 2002; we have finalized our evaluation. For purposes of this letter, we have grouped the West comments into five response areas. After review of comments and additional analysis, we conclude that the sediment trend analysis as submitted provides a reasonable depiction of aggradation and degradation in the Agua Fria River for the estimated 1% flow event.

Per our meeting of March 1, we will incorporate this letter and our review of comments into an appendix of a revised final Sediment Trend Analysis report. We will also provide to the District a revised final existing condition model that incorporates the changes in geometry and effective flow limits suggested by West.

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Kimley-Horn
and Associates, Inc.

The following are more specific responses to several of the issues raised by West:

1. Sediment Samples- Use of ASU Data

Based on our conversations, I know that you are most concerned about the issue associated with West's substitution of the 1992 ASU sediment samples with the samples obtained as part of this study, and their findings. In general, what they find is that regardless if they use the ASU or KHA samples, with some minor variation the results are quite similar. As discussed by West and as we have observed in the field, there can be significant variability in the sediment gradations within a given area. For the samples that were obtained by KHA, a hydraulic engineer staked the sample sites, with specific emphasis on locating these sites in areas of active transport.

We can place no judgement on which set of sediment data is better, however; we do have a higher degree of confidence in our own data, simply because we know where and how these data samples were obtained. On the other hand, the ASU data does allow the opportunity for a sensitivity evaluation of modeling results. Within West's findings they point to two cross sections where they found significant changes in aggradation or degradation. We examined those sections to determine if they were in a location where they might threaten existing or proposed infrastructure. Both sections are within relatively isolated sections away from infrastructure, and while this combination of input is providing a different result, the input is not necessarily any more correct than the input of the existing model, and the ramifications on infrastructure is negligible.

Perhaps somewhat more significant would be the reach upstream of Coyote Lakes where West had indicated that on average, the ASU results would indicate roughly an additional 2 feet of degradation. In general, this reach is braided with several well-defined low flow channels. Again, using the method of staking sample locations in the field based on examination of aerial photographs, siting locations in active transport areas, and by avoiding vegetated areas which could contain somewhat finer sediment, we have a high degree of confidence that our data is representative. Using the ASU data as a sensitivity check, again the net degradation is not alarming, nor would it necessarily modify any of the plan recommendations. On a cumulative transport basis, the true significance of this finding is whether the volume of sediment moved, somehow influences downstream results. Based on the West report, nothing significantly varies until approximately 7 miles downstream when a significant

aggradation (previously discussed) occurs. It would seem that a rather isolated aggradation 7 miles downstream would be too far removed to be directly impacted, and the net impact on sediment balance in the system, while important within those set of assumptions, does not lead to significant differences in results between the KHA and ASU sediment assumptions.

In conclusion, the sensitivity run performed by West indicates that the results of the model are not significantly impacted by utilizing the 1992 ASU data.

2. Placement of ineffective and moveable bed limits; development of the fixed bed model.

In several sections of their review, West makes comments associated with data visualization in particular associated with modifying the limits of encroachment, ineffective flow areas, and conveyance limits. This is an area of fine tuning the model where judgement is applied to develop appropriate limits. As we worked with District reviewers, it was made clear that the District's preference was to establish a fixed bed model that reasonably matched the flood insurance study; whereas many of the recommendations provided by West differed in emphasis. We believe that the recommendations provided by West, while not dramatically changing the results, support an approach which is more in keeping with sediment transport modeling and will better withstand scrutiny from future users.

We have modified channel bank locations, effective flow, and conveyance limits at a number of cross sections (including those proposed by West) and have updated the HEC-6 Existing Condition Sediment Transport Model.

On changes within individual sections, the upper one-mile of the river continues to be the most sensitive to changes in input and assumptions. In general, the magnitude of impacts in this reach were roughly the same, but maximum degradations within this upper reach were moved about 0.1 miles farther south.

The reach from Jomax to the CAP indicated that, in general, the reach was somewhat more stable as compared to the existing bed elevation. One exception was two sections in the vicinity of the Bard Ranch Orchards where the results indicated a 3-foot degradation. Our conclusion is that two isolated sections would not necessarily indicate a trend change for the reach, but that any in-reach design should consider these results when providing local estimates of toe down depth for bank protection or other in-channel features.

The results indicate that the remaining channel reaches show no significant variation in result or trend.

3. Cross Section Locations and HEC-6 Model Version

West noted that on several occasions additional cross sections might be warranted in the fixed bed and existing condition models. As a side note, we found that when we converted the existing HEC-2 to a HECRAS model that 64% of the 444 cross sections indicated that excessive energy loss occurred indicating the need to significantly increase the number of sections in the regulatory model. The final HEC-6 model used for this analysis was Version 4.1.07, which is limited to a total of 150 cross sections. We started with Version 4.1.00 (a version that allows up to 500 cross sections), but found an error in the manner in which this version dealt with developing sediment inflow curves. Based on consultation with Tony Thomas, the developer of HEC-6, we suggested and he concurred, that this evaluation was better handled with Version 4.1.07, even with the limited number of cross sections. In order to have a continuous model it was necessary to be judicious about which sections were included. Our conclusion again, is that while the incorporation of cross sections certainly could "smooth out" hydraulic variability between sections, it should not significantly alter the result.

We also checked into West's comments on section 4.094 and 17.638. 4.094 is a grade control structure and was modeled as such, section 17.638 is associated with overbank sand and gravel mining, but was not modeled as a grade control or fixed bed point.

4. Hydrology and Use of 30 days of 9000 CFS release prior to 100-year flood.

In their comments, West calls into question the use of 30 days of 9000 CFS as a "warm up" for the 100-year event. They further suggest that placement of the 100-year hydrograph should happen prior to the 30-day release from the New Waddell Dam. In general their assumption is incorrect, and we did in fact perform a sensitivity analysis on the placement of the 100-year downstream hydrograph within the 30-day flow. The Agua Fria River in a 100-year event is dominated by a long term release of 9000 CFS from the New Waddell Dam in conjunction with an event that occurs on the lower watershed. The project called for modeling the 100-year event, and lacking gage data, the design work of the Corps of Engineers was used for the hydrology. Based on discussions with District staff, it was determined that a 30-day release would appropriately model the dam releases. The

Kimley-Horn
and Associates, Inc.

downstream 100-year flood event was introduced at the beginning, in the middle, and at the end of the 30-day release and in all cases, the 100-year downstream hydrograph dominated the river response. Removing or reducing the duration of the 30-day release would not appear to provide any advantage in modeling.

5. Assumptions on sediment inflow to the model.

Our initial assumptions were that the sediment inflow to the river reach from the dam would be a clear water release. As outlined by West, we performed a sensitivity test and found unrealistic degradation occurring in the upper reach. In order to develop results that are more consistent with what is being observed in the field, it was necessary to back somewhat away from the clear water assumption, although logic would dictate that very little sediment is being released from the dam. We subsequently reviewed the ASU sediment inflow rating curve and found that in their investigation they indicated no reduction in sediment inflow. The inflow curve that was mentioned in the West review was for the future mining model that used 50% of the full inflow curve. This relationship appeared to work best with the downstream sections, and provided a result that seemed more consistent with the field evidence in the upper reach while not unduly impacting downstream reaches.

Conclusion

Based on the peer review performed by West Consultants and after incorporating several of their recommendations, we conclude that the sediment trend analysis performed as part of the Watercourse Master Plan provides results that are consistent with their intended use.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Doug Plasencia, P.E.
Project Manager

Robert A. Eichinger, P.E.
Senior Engineer

Copy to: Dennis Richards, P.E. West Consultants

EVALUATION OF REVIEW COMMENTS WEST CONSULTANTS, INC. REVIEW OF KIMLEY-HORN SEDIMENT TREND ANALYSIS OF THE AGUA FRIA RIVER

AGUA FRIA WATERCOURSE MASTER PLAN FCD 99-24

FLOOD CONTROL DISTRICT OF MARICIOPA COUNTY

KIMLEY-HORN AND ASSOCIATES, INC.

Revisions to HEC-6 Fixed Bed Model and Existing Conditions Model

Kimley-Horn and Associates, Inc. (KHA) received review comments from West Consultants regarding the KHA sediment trend analysis for the Agua Fria River. The KHA sediment trend analysis for the Agua Fria River was conducted as part of the Agua Fria Watercourse Master Plan. The purpose of this memorandum is to document the analysis conducted by KHA to evaluate suggested West revisions to the KHA HEC-6 sediment trend models. West's review of the HEC-6 models was limited to the KHA fixed bed and existing condition models. West's review comments were provided in their review report titled "Review of Kimley-Horn Sediment Transport Model of the Agua Fria River" (January 2002). West prepared their review comments in response to a request from the Flood Control District of Maricopa County.

The basic steps in the KHA evaluation of West suggested revisions were as follows:

1. Plot on aerial orthophotographs of the Agua Fria River, the fixed bed channel bank stations and ineffective flow limits by cross sections given in the HEC-6 fixed bed model. Check bank station location trend from cross section to cross section to look for unnecessary potential expansions or contractions in flow. Import HEC-6 into HEC-RAS, plot cross sections from HEC-RAS and examine cross section bank stationing versus 1996 FIS HEC-2 bank stations for same cross sections.
2. Import the HEC-6 (original) fixed bed model into HEC-RAS (Version 2.2). Run HEC-RAS using the HEC-6 model data input. Check HEC-RAS hydraulic results against HEC-6 fixed bed model and 1996 HEC-2 FIS model.
3. Modify HEC-RAS fixed bed model by changing bank stations, coding out high ground within mentioned cross sections, and adjusting ineffective flow areas. Check modified HEC-RAS model versus HEC-RAS fixed bed model, 1996 HEC-2 FIS model, and HEC-6 fixed bed model.
4. Use modifications in HEC-RAS model by carrying adjustments and modifications into a modified HEC-6 fixed bed model. Run HEC-6 modified fixed bed model and check results against original HEC-6 fixed bed model.

5. Incorporate revised channel bank stations, ineffective flow areas, adjusted cross section GR stations, conveyance limits from modified fixed bed model into a modified HEC-6 existing conditions model. Moveable bed limits were adjusted at several cross sections after examination of revised ineffective flow areas and depths of flow in the overbanks. Check model results of the modified HEC-6 existing condition model against the original HEC-6 existing condition model.

Results

The HEC-6 fixed bed model (AFFBrev.dat) was imported into HEC-RAS. HEC-RAS hydraulic results were reviewed and are summarized with two basic parameters for illustrative purposes – channel velocity and topwidth. Figure 1 provides a comparison plot of the channel velocity for the original HEC-6 fixed bed model, the 1996 HEC-2 FIS model, and the converted HEC-6 to HEC-RAS model. Figure 2 provides a comparison plot of the flow topwidth for the same three hydraulic models. As demonstrated in Figure 1, the HEC-RAS model provides a good trend comparison of channel flow velocity when compared to the other two model results. In some cross sections, the 1996 FIS channel velocity is greater than the other two models and at some cross sections the HEC-6 and HEC-RAS channel velocities are greater. However, on a reach basis, there is a comparable trend in channel velocities. Figure 2 demonstrates a high degree of topwidth trend on a reach by reach basis. The interpretation of these comparisons is that the converted HEC-RAS model is simulating the original HEC-6 fixed bed model.

The fixed bed HEC-RAS model was then adjusted and modified to incorporate West suggested revisions and approach regarding channel bank stations and ineffective flow areas. The cross sections were plotted and examined on a cross section by cross section basis for each parameter including coding out unnecessary high ground GR points and examining ineffective flow areas. The modified HEC-RAS model results were then compared to the original HEC-RAS and HEC-6 fixed bed results. Figures 3 and 4 provide a comparison plot of the channel velocity and topwidth for the HEC-RAS fixed bed, 1996 FIS HEC-2, and modified HEC-RAS models. Figure 3 indicates that for the upper reach of the Agua Fria that the FIS channel velocity is greater between river stations 27.0 and 28.0. The modified HEC-RAS channel velocity is greater between river stations 23.0 and 24.0 which is reflective of modified ineffective flow limits. The general channel velocity trend from model to model is basically the same. Figure 4 demonstrates a strong comparison in flow topwidths between the four models depicted. The change in topwidth in the upper reach for the modified HEC-RAS model is reflective of the change in bank stations and ineffective flow limits.

The adjustments and modifications completed in the modified HEC-RAS model were then input into the original HEC-6 fixed bed model to develop a modified HEC-6 fixed bed model. The modified HEC-6 fixed bed model was run with the revisions and the results compared with the original HEC-6 fixed bed results. The revised fixed bed parameters for bank stations, ineffective flow areas, and conveyance limits are provided in Table 1. Figures 5 and 6 provide a comparison plot of channel velocity and topwidths,

respectively. The changes in bank stations, ineffective flow areas, and conveyance limits are evident in both plots. However, again the trends on a reach by reach basis are similar.

The revisions in the modified HEC-6 fixed bed model were carried into the original HEC-6 existing condition movable bed model. The changes to the existing moveable bed model are summarized in Table 2. Changes or modifications are color-coded as noted in Table 2. The changes included incorporation of revised channel bank stations, ineffective flow areas, removing high ground as needed from main river channel, adjusted cross section GR stations, and conveyance limits from modified fixed bed model into a modified HEC-6 existing conditions model. Moveable bed limits were adjusted at several cross sections after examination of revised ineffective flow areas and depths of flow in the overbanks from the revised HEC-RAS model. No modifications or revisions were made for sediment or hydrology data. River station 32.984 in the modified existing condition model was modeled with zero sediment reservoir depth due to the presence of high bedrock. A comparison of model results of the modified HEC-6 movable bed existing condition model against the original HEC-6 existing condition model were then conducted. The results of the change in river bed elevations during the flood hydrology are provided in Tables 3, 4, and 5 for the original existing conditions HEC-6 model, the revised existing conditions model, and a comparison of end of hydrology bed elevation changes, respectively. Figures 7, 8, and 9 provide the channel thalweg profile comparison between the original existing condition HEC-6 model versus the modified existing condition HEC-6 model. The tabular results are provided in Table 6. A review of Table 5 indicates very minor changes in bed elevation from river station 0.16 (Gila River confluence) to river station 9.435 (Camelback Road). The increase in bed deposition at river station 9.696 is due to an increase in the limits of the movable bed and the addition of conveyance limits allowing deposition in the adjacent sand and gravel pit. Upstream of river station 9.696 to 25.666 the Agua Fria River response is essentially the same between the original and modified existing conditions HEC-6 models. Upstream of 25.666 to the New Waddell Dam the river response in the modified model differs slightly in several reaches. At the SR 74 bridge, the modified model includes a zero depth for the sediment reservoir due to the presence of high bedrock. This has increased the depth of scour at the next two cross sections downstream of the bridge which in not an unexpected result. Between river stations 26.290 and 27.940 the modified model indicates that the river's response to the revisions and modifications has shifted the degree of scour or deposition slightly greater or lessor than the original existing condition model. This is particularly evident at river stations 27.940 and 27.680 where changes in bank stations, conveyance limits, and ineffective areas increased the degradation depth to three feet. Our conclusion is that these two isolated sections would not necessarily indicate a trend change for the reach, but that any in-reach design should consider these results when providing local estimates of toe down depth for bank protection or other in channel features.

Conclusions

The results of the revisions and modifications to the HEC-6 fixed bed model and existing condition movable bed model did not change the interpretation of the original analysis.

The changes to the HEC-6 models served to secure appropriate delineation of channel bank stations, removal of high ground in channel areas, setting appropriate ineffective flow limits, conveyance limits, contraction and expansion of flow, and moveable bed limits.

Attachments

The following table summarizes the deliverables includes with this report.

Model, Table, Or Figure	Description
Affbmod.dat	Modified HEC-6 fixed bed model Input file.
Ecmod.dat	Modified HEC-6 existing conditions model Input file.
Table 1.	Fixed bed modified limits.
Table 2.	HEC-6 Existing Conditions Model Changes/Modifications
Table 3.	Summary of Results of Original HEC-6 Existing Conditions
Table 4.	Modified Existing Conditions HEC-6 Model Bed Change.
Table 5.	Comparison of Bed Change Conditions at End of Hydrology
Table 6.	Comparison of Channel Thalweg Elevations.
Figure 1.	Channel Velocity Comparison Plot.
Figure 2.	Topwidth Comparison Plot.
Figure 3.	Channel Velocity Comparison Plot. (HECRAS)
Figure 4.	Topwidth Comparison Plot. (HECRAS).
Figure 5.	Channel Velocity Comparison Plot.
Figure 6.	Topwidth Comparison Plot. (Original vs Modified fixed bed HEC-6).
Figure 7.	Comparisons of Channel Thalweg Elevation. (River station 0 to 7.49)
Figure 8.	Comparisons of Channel Thalweg Elevation. (River station 7.899 to 19.92)
Figure 9.	Comparisons of Channel Thalweg Elevation. (River station 20.5 to 35.0)

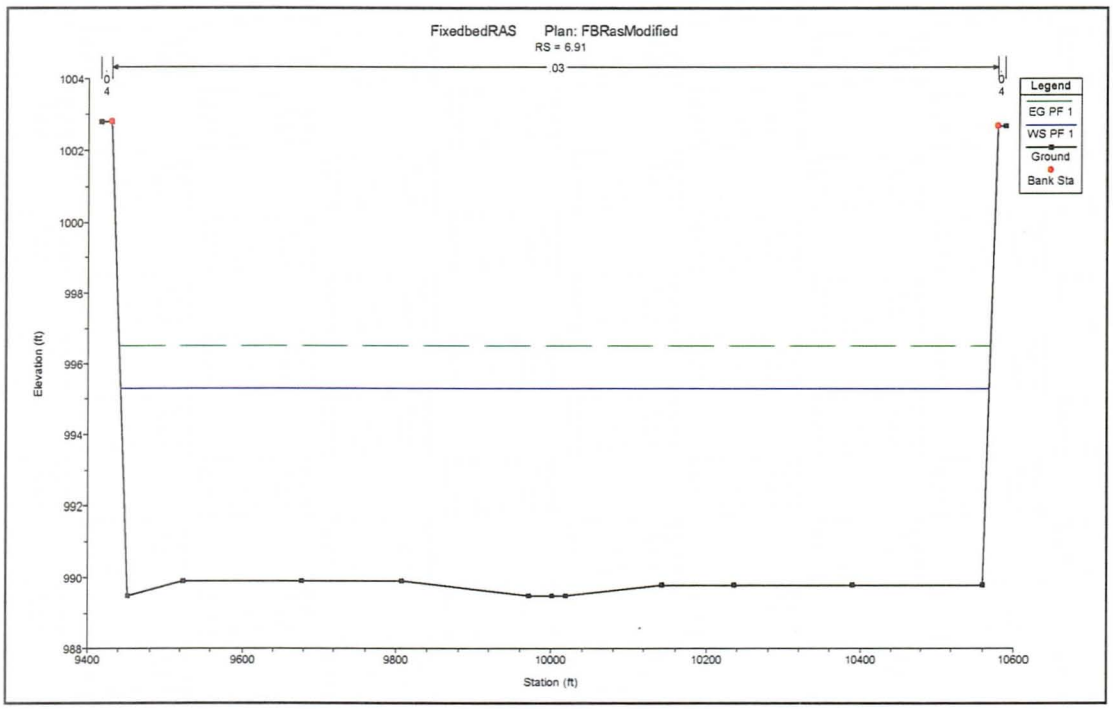


Figure 10. Removed high ground in cross section 6.91.

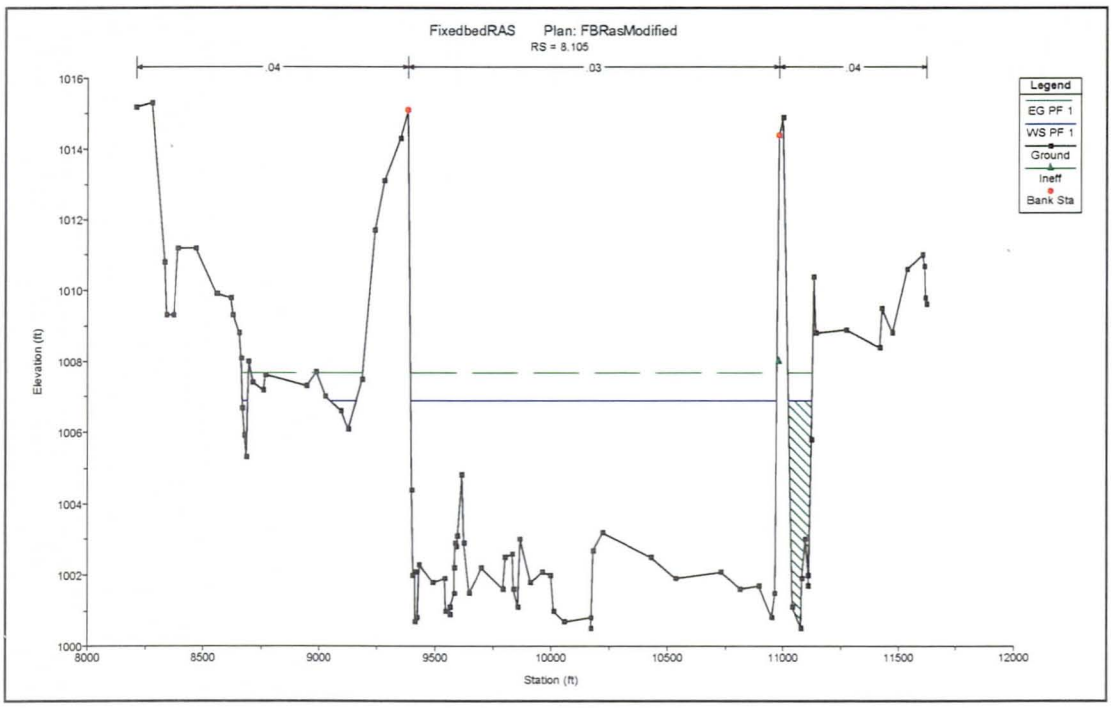


Figure 11. Added ineffective flow limits to right levee.

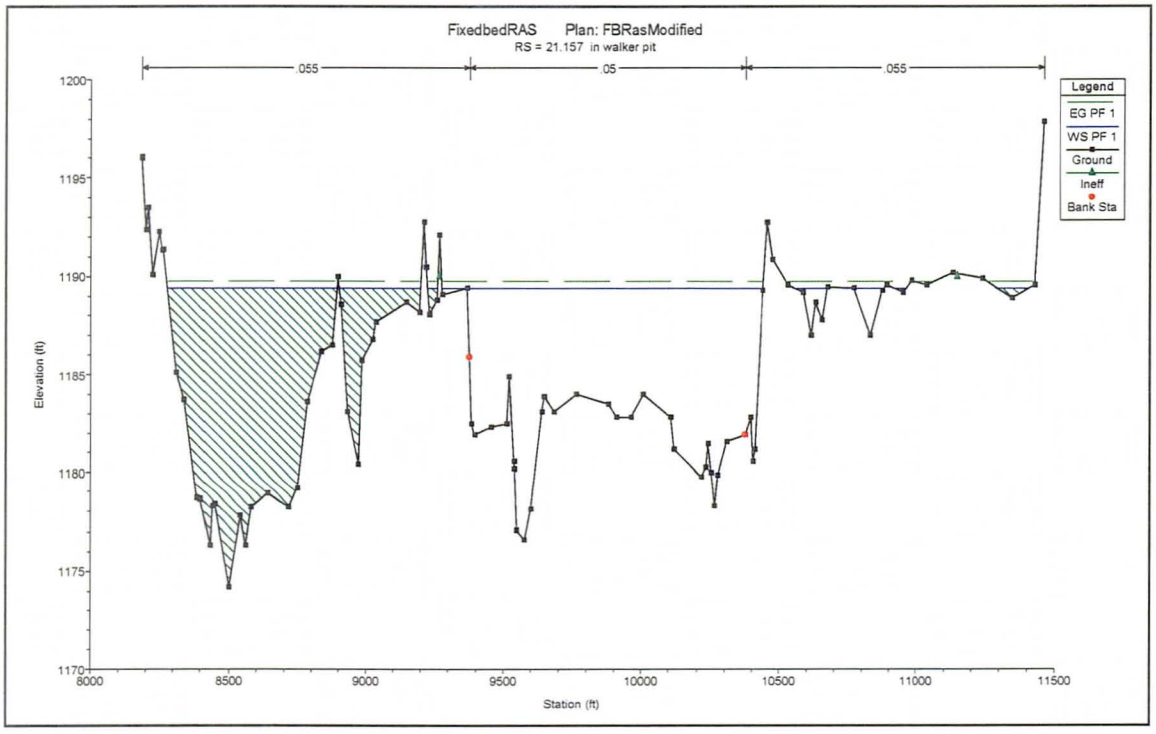


Figure 12. Added ineffective flow limits to left overbank (S&G pit) and right end of cross section.

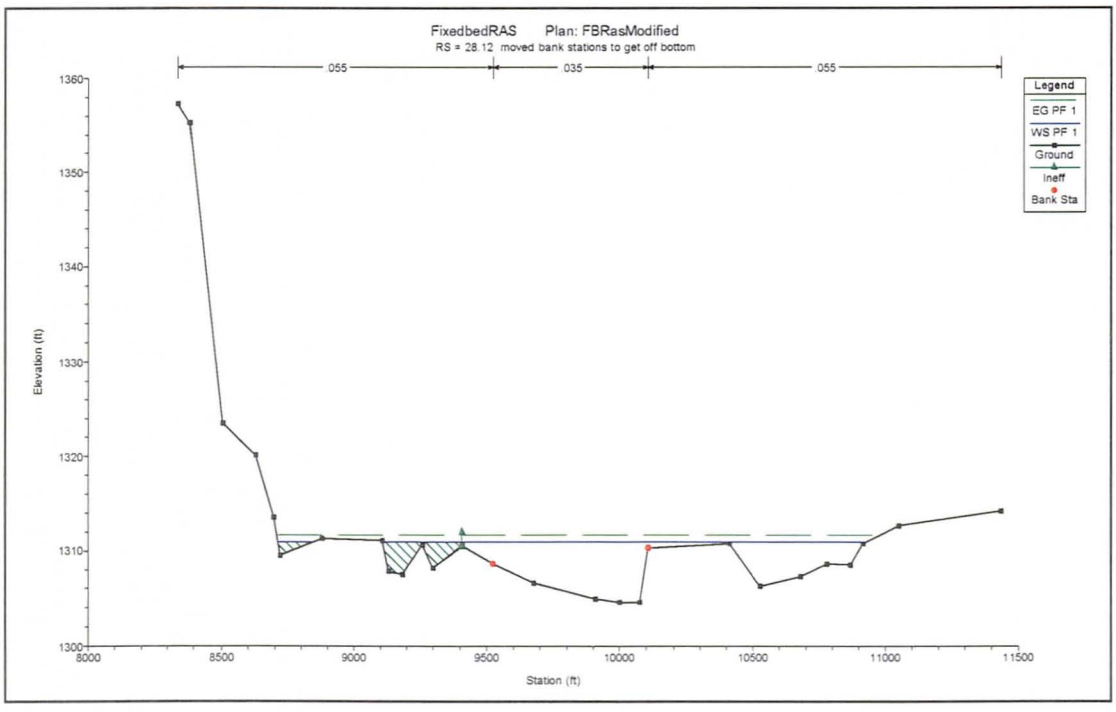


Figure 13. Moved left and right bank stations.

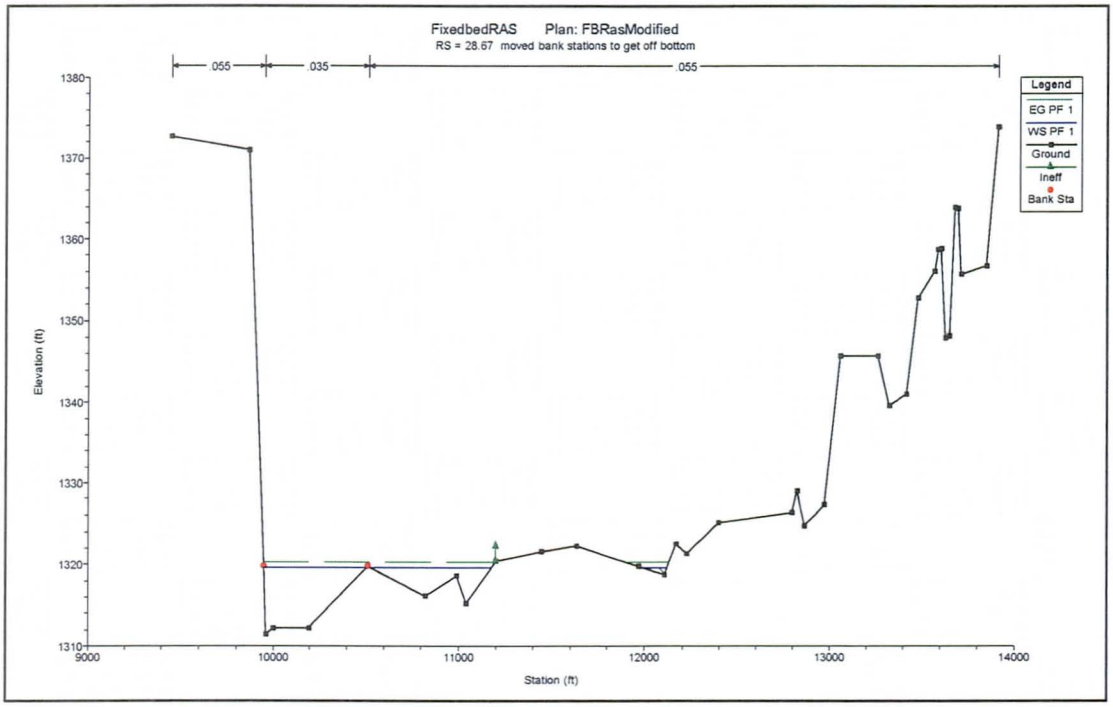


Figure 14. Moved left and right bank stations.

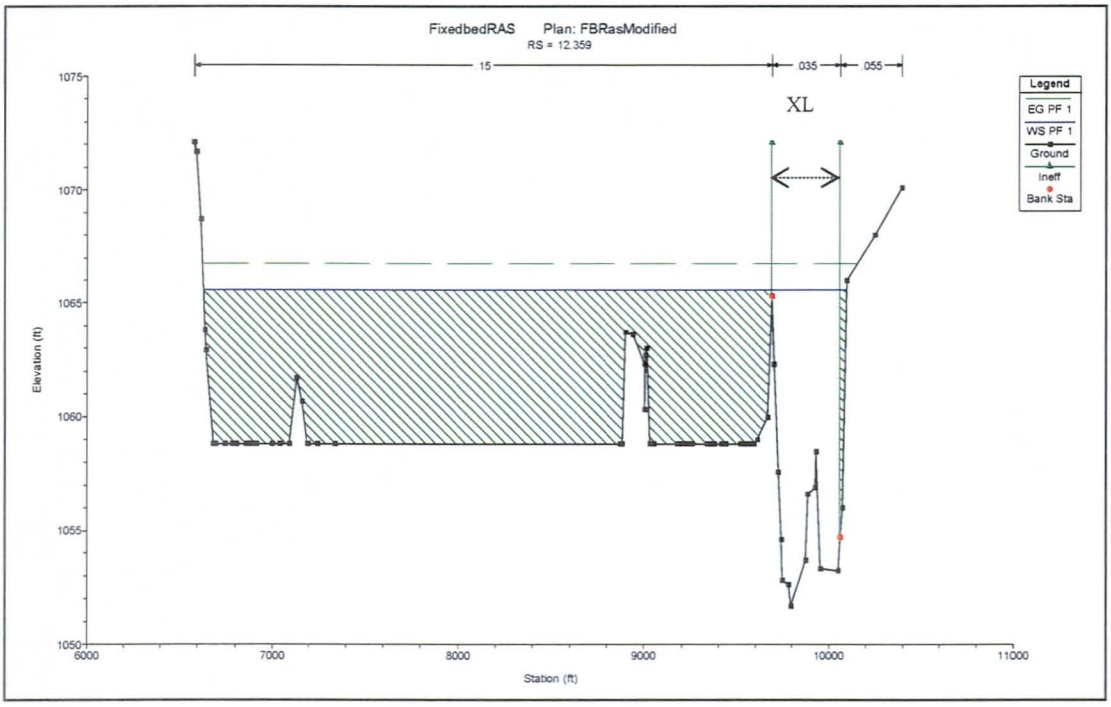


Figure 15. Revised conveyance limits.

Table 1. Fixed Bed Modified Limits

Cross Section xxx	Bank Stations Left	Bank Stations Right	Ineffective Limits X3.1 MEID	X3.4 STENCL	X3.5 ELENCL	X3.6 STENCR	X3.7 ELENCR	Conveyance Limits Left CLL	Conveyance Limits Right CLR	Movable Bed Limits Left XSM	Movable Bed Limits Right XFM
0.160	9720	10184									
0.440	9798	10420									
0.630	9888	10209		6600	930						
0.730	9917	10162									
1.330	9911	10456									
1.710	9091	10284.4									
2.020	8839.4	10077.3									
2.600	9437	10850									
2.800	9200	11222									
3.270	9692.6	11130.5									
3.370	9716.5	10970.3									
3.430	9758.5	10873.4									
3.729	9420	10603									
3.734	9400.9	10599.3									
3.757	9425	10555									
3.767	9428.1	10572									
4.092	9440	10578									
4.094	9440	10578									
4.270	9449	10588									
4.700	9451	10579									
4.754	9402.5	10572.3	10								
4.790	9440	10590									
5.150	9291	10713									
5.290	9250.8	10672.4									
5.380	9266	10656									
5.689	9371.3	10552.8									
5.750	9426	10579									
5.900	9429	10561									
6.430	9452	10537									
6.820	9444	10573									
6.888	9439	10577									
6.890	9439	10577									
6.910	9430	10579									
6.930	9413	10573									
6.990	9400	10559									
7.490	9509	10525									
8.000	9235.5	10725									
8.105	9381.7	10978.6									
8.198	9458.7	10971						9458.7	10971		
8.992	9819.1	11458.9		9300	1022	11545	1022				
9.435	9548.8	11146.3						9548	12000		
9.696	9818.1	10996.2						9015	11702		
9.885	9327.8	10706.6						8500	12000		
10.538	9573.5	10478.1						9514	11058		
10.752	9651.8	10329.8						9335	10329.9		
11.029	9513.1	10404.2						9513	10500		
11.428	9814.2	10227.2									
11.557	9881.6	10100.9						8970	10100		
11.847	9914.3	10113.4						9400	10173		
12.359	9691.6	10061	10					9691.6	10300		
12.420	9014.1	10111.3						9014.1	10111.3		
12.470	9382.2	10296.2	10					9382.2	10296.2		
13.467	8693.6	10286.7									
13.952	9432.8	10076.3						9000	10500		
14.430	9171.4	10301.1						8200	10847.9		
15.000	9346.3	10081.6						9175.6	10550		
15.094	9336	10125.1		9293.4	1102	12565	1102	9293.4	11000		
15.374	9832.4	10085.5		9822	1106	11930	1106	9825	10770		
15.658	9920.1	10083.7		9447	1111	11553.9	1111	9446.5	10150		
16.099	9804	10081.1		9192	1178	10300	1178	9235	10081		
16.482	9781.9	10219.8		9750	1127.5	10290	1127.5	9780	10220		

Table 1. Fixed Bed Modified Limits

Cross	Bank Stations		Ineffective Limits					Conveyance Limits		Movable Bed Limits	
Section xxx	Left	Right	X3.1 MEID	X3.4 STENCL	X3.5 ELENCL	X3.6 STENCR	X3.7 ELENCR	Left CLL	Right CLR	Left XSM	Right XFM
16.506	9768	10245.4				11206.5	1122				
16.612	9808.2	10161.2						9794	10200		
16.990	9810	10135.4						9748	12400		
17.458	9370.6	10225.3		8808	1132	11640.7	1134	9100	11640.7		
17.638	9197.8	10288.4						9197.8	10288.4		
17.821	9764.8	10227.7		8350	1140	10814.3	1140	8550	10227.7		
18.275	9752.1	10210.5				10715	1144	8800	10700		
18.962	9840	10223.7		9391	1156	10535	1156				
19.446	9592.8	10078.6						8890	10100		
19.920	9744.6	10129.1						9700	11200		
20.579	9825.6	10324.2						9100	10340		
20.958	9787.3	10383.8				10760	1188	8797	10760		
21.061	9850	10325.4				11069	1188	9800	11045		
21.157	9377.3	10376.3				11150	1190	9300	10500		
21.431	9467.9	10343.5				10343	1193	9667.9	10343		
21.893	9558.8	10146.5		9546	1200	12117	1210				
22.462	9887.4	10318.9				10789.3	1208	9041	10318.9		
22.935	9530.2	10351.6									
23.409	9675.2	10060.2				12265.5	1226	9550	11600		
23.974	9716.2	10115.2				11205	1238	9716	11185		
24.449	9496.2	10169.3						9300	11340		
24.543	9646.7	10243.6						9200	11435		
24.996	9774	10632.3						8560	11750		
25.478	9750.7	10127.1						9600	10700		
25.666	9842.4	10115.1						9732	10610		
25.860	9940	10200						9052	10250		
26.290	9696	10120									
26.730	9898	10125						9355	11252		
27.030	9922	10079						9679	10755		
27.680	9853	10125									
27.940	9944	10187						8670	10212		
28.120	9524	10107						9409	11000		
28.670	9950	10514						9409	11203		
28.950	9946	10353						9784	10699		
29.040	9808	10239						9808	10626		
29.540	9846	10150	10					9782	10150		
29.611	9791	10094									
29.800	9882	10205						9882	10600		
30.070	9925	10098									
30.260	9711	10338						9700	10330		
30.730	9839	10148				10951	1356.4				
30.820	9865	10398									
31.390	9792	10242									
31.860	9490	10321									
32.430	9438	10112									
32.720	9879	10150									
32.860	9928	10079									
32.920	9891	10143						9800	10250		
32.984	9962	10053									
32.998	9851	10108									
33.410	9944	10366									
33.820	9861	10068									

Table 2. HEC-6 Existing Conditions Model
Changes/Modifications

Cross	Bank Stations		Ineffective Limits					Conveyance Limits		Movable Bed Limits	
Section	Left	Right	X3.1	X3.4	X3.5	X3.6	X3.7	Left	Right	Left	Right
xxx			MEID	STENCL	ELENCL	STENCR	ELENCR	CLL	CLR	XSM	XFM
0.160	9720	10184	10							8200	12250
0.440	9798	10420	10							8100	12750
0.630	9888	10209		6600	930					8270	12400
0.730	9917	10162	10							8200	12400
1.330	9911	10456	10							8000	10456
1.710	9091	10284.4	10							9091	10284.4
2.020	8839.4	10077.3	10							7400	10070
2.600	9437	10850	10							9437	10850
2.800	9200	11222	10							9150	10850
3.270	9692.6	11130.5	10							9300	11130.5
3.370	9716.5	10970.3	10							9500	10970.3
3.430	9758.5	10873.4	10							9650	10873.4
3.729	9420	10603	10							9420	10603
3.734	9400.9	10599.3	10							9400.9	10599.3
3.757	9425	10555	10							9425	10555
3.767	9428.1	10572	10							9428.1	10572
4.092	9440	10578	10							9440	10578
4.094	9440	10578	10							9440	10578
4.300	9458	10594	10							9480	10570
4.700	9451	10579	10							9451	10579
4.754	9402.5	10572.3	10					9402.5	10572.3	9402.5	10572.3
4.790	9440	10590								9440	10590
5.150	9291	10713								9291	10590
5.201	9291	10713								9291	10713
5.203	9291	10713								9291	10713
5.290	9250.8	10672.4								9250.8	10672.4
5.380	9266	10656								9266	10656
5.689	9371.3	10552.8								9371.3	10552.8
5.750	9426	10579								9426	10579
5.900	9429	10561								9429	10561
6.068	9416	10545								9416	10545
6.070	9416	10545								9416	10545
6.430	9452	10537								9452	10537
6.820	9444	10573								9444	10573
6.888	9439	10577								9439	10577
6.890	9439	10577								9439	10577
6.910	9430	10579								9430	10579
6.930	9413	10573								9413	10573
6.990	9400	10559								9400	10559
7.490	9509	10525								9509	10525
7.988	9293	10732	10							9293	10732
7.990	9293	10732	10							9293	10732
8.000	9235.5	10725	10					9235.5	10725	9235.5	10725
8.105	9381.7	10978.6	10					9400	10978.6	9400	10978.6
8.198	9458.7	10971		9458.6	1010	10971.1	1010	9458.7	10971	8600	10971
8.433	9583.1	10597.5		9009.5	1012	11000	1012	9000	10597.5	6300	10597.5
8.768	9584.7	10102.8		8182.6	1018	11500	1018	9000	11000	7000	11000
8.992	9819.1	11458.9		9300	1022	11545	1022	9700	11458.9	9700	11458.9
9.435	9548.8	11146.3		8158	1026	11839	1026	9548	12000	9548.8	15000
9.696	9818.1	10996.2		9015	1030	11702	1030	9015	11702	9600	15500
9.885	9327.8	10706.6		9327.8	1032	12100	1032	8500	12000	9327.8	14500
10.343	9782.1	10288.8		9750	1040	11416	1040	9750	11416	8882.3	13500
10.538	9573.5	10478.1		9514.6	1044	11058	1040	9514	11058	6000	13000
10.752	9651.8	10329.8		9335	1042	10329.9	1042	9335	10329.9	5000	12000
11.029	9513.1	10404.2		9240	1046	10467	1046	9513	10500	8700	11000
11.428	9814.2	10227.2	10					9500	10227.2	9500	10227.2
11.557	9881.6	10100.9		8970	1058	10122	1058	8970	10100	6200	10100.9
11.847	9914.3	10113.4		7310	1062	10173	1062	9400	10173	6000	10113.4
12.359	9691.6	10061	10					9691.6	10300	6700	10200
12.420	9014.1	10111.3		7000	1066	10782.8	1066	9014.1	10111.3	7200	10150
12.470	9382.2	10296.2		7298.5	1066	11052.3	1066	9382.2	10296.2	7500	10296.2
12.816	9781.2	10376.3		8483.3	1068	10488	1068	9781.2	10376.3	7500	10375
13.007	9767.1	10186.1		8750	1072	10239	1072	9150	10186.1	8800	10186
13.467	8693.6	10286.7	10							8693.6	10286.7
13.952	9432.8	10076.3	10					9000	10500	7200	10600
14.430	9171.4	10301.1		7800	1093	10984.1	1093	8200	10847.9	8200	10900
15.000	9346.3	10081.6	10					9175.6	10550	9175.6	12000
15.094	9336	10125.1		9234.4	1102	11152	1102	9293.4	11000	9336	13000
15.374	9832.4	10085.5		9822	1106	10770	1106	9825	10770	9832.4	11650
15.719	9885.3	10059.7		9385.2	1111	10150	1111			9390	10055

Red Deleted
Blue Added
Green Revised

Table 2. HEC-6 Existing Conditions Model
Changes/Modifications

Cross	Bank Stations		Ineffective Limits					Conveyance Limits		Movable Bed Limits	
Section	Left	Right	X3.1	X3.4	X3.5	X3.6	X3.7	Left	Right	Left	Right
xxx			MEID	STENCL	ELENCL	STENCR	ELENCR	CLL	CLR	XSM	XFM
16.099	9804	10081.1		9192	1178	10300	1178	9235	10081	9200	10200
16.482	9781.9	10219.8		9750	1127.5	10290	1127.5	9780	10220	9781.9	10220
16.506	9768	10245.4	10			11206.5	1122	9500	10300	9700	10300
16.612	9808.2	10161.2		9793	1124	10286	1124	9794	10200	9808.2	11400
16.990	9810	10135.4		9725	1130	10150	1130	9748	1100	9800	13500
17.458	9370.6	10225.3		8808	1132	10400	1134	9100	11640.7	9000	11640
17.638	9197.8	10288.4		8744	1136	10386	1136	9197.8	10288.4	9000	11100
17.821	9764.8	10227.7		8350	1140	10814.3	1140	8550	10227.7	8600	10800
18.275	9752.1	10210.5		8750	1144	10715	1144	8800	10700	8800	10700
18.962	9840	10223.7		9391	1156	10535	1156			9440	10480
19.066	9885.7	10349.1	10							9302.8	10398
19.446	9592.8	10078.6	10					8890	10100	8890	11300
19.920	9744.6	10129.1	10					9700	11200	9000	11130.2
20.579	9825.6	10324.2	10					9100	10340	8200	10324.2
20.958	9787.3	10383.8		8780	1188	10760	1188	8797	10760	8800	10750
21.061	9850	10325.4		9200	1188	11069	1188	9200	11000	9850	11000
21.157	9377.3	10376.3		9266.8	1190	11150	1190	9300	10500	9266.8	10398
21.431	9467.9	10343.5		9350	1193	10343	1193	9667.9	10343	9190.7	10769.6
21.893	9558.8	10146.5		9546	1200	12117	1200	9604	12000	9558.8	10758.1
22.462	9887.4	10318.9	10					9050	10800	9050.4	11800
22.935	9530.2	10351.6	10					8400	10750	8492.7	11750
23.409	9675.2	10060.2		9550	1226	12265.5	1226	9550	11600	8000	11600
23.692	9869.5	10339.2		9650	1230	11533.8	1230	9670	11450	8048	11450
23.974	9716.2	10115.2		9716	1238	11205	1238	9716	11185	7700	11000
24.449	9496.2	10169.3	10					9300	11340	7898.5	11143.3
24.543	9646.7	10243.6	10					9200	11435	8000	11413.5
24.996	9774	10632.3	10					8560	11750	7900	13000
25.478	9750.7	10127.1	10					9600	10700	9750.7	11700
25.666	9842.4	10115.1	10					9732	10610	9854.2	11500
25.860	9940	10200	10					9052	10250	8300	10200
26.290	9696	10120	10							8200	12800
26.730	9898	10125	10					9355	11252	9400	13500
27.030	9922	10079	10					9679	10755	9700	12500
27.680	9853	10120	10					7200	10200	7400	10200
27.940	9944	10187	10					8670	10212	7850	10200
28.120	9524	10107	10					9409	11000	8750	11300
28.670	9950	10514		9450	1322.3	11202	1322.3	9409	11203	9900	12000
28.950	9946	10353	10					9784	10699	9946	12000
29.040	9808	10239	10					9808	10626	9800	11700
29.540	9846	10150	10					9782	10150	9210	10200
29.611	9791	10094	10							9000	10200
29.800	9882	10205	10					9882	10600	9882	10600
30.070	9925	10098	10							9600	10300
30.260	9711	10338	10					9700	10330	9700	10600
30.730	9839	10148	10			10951	1356.4	9850	10250	9850	10250
30.820	9865	10398	10							9900	10400
31.390	9792	10242								9550	10400
31.860	9490	10321	10							9500	10300
32.430	9438	10112	10							9450	10200
32.720	9879	10150		9435	1408.2	10524	1408.2	9600	10500	9600	10800
32.860	9928	10079	10							9800	10200
32.920	9891	10143		9680	1390	10180	1390	9800	10250	9890	10180
32.984	9962	10053	10							9962	10011
32.998	9851	10108	10							9851	10108
33.410	9944	10366	10							9900	10400
33.820	9861	10068	10							9600	10200

Red	Deleted
Blue	Added
Green	Revised

Table 3. Summary of Results of Original HEC-6 Existing Condtions.
(As appears in Sediment Trend Report dated November 2001)

Cross Section Station	30 day run @ 9,000 cfs Time 1 day Elevation (ft)	Time 2 day Elevation (ft)	Time 30 day Elevation (ft)	Begin 100-year hydrograph Time 30.06 day Elevation (ft)	Time 30.15 day Elevation (ft)	Time 30.20 day Elevation (ft)	Time 30.27 day Elevation (ft)	Time 30.32 day Elevation (ft)	Time 30.37 day Elevation (ft)	Time 30.42 day Elevation (ft)	Time 30.47 day Elevation (ft)	Time 30.54 day Elevation (ft)	Time 30.61 day Elevation (ft)	Time 30.75 day Elevation (ft)	End 100-yr hydrograph Time 30.09 day Elevation (ft)	Time 31.10 day Elevation (ft)	Condition at end of 31.10 days	Max	Min	Maxchange during event	Cross Section Station	Reference Location
33.82	0.12	0.12	0.53	0.55	0.58	0.55	0.48	0.42	0.4	0.39	0.39	0.42	0.47	0.54	0.64	0.64	Deposition	0.64	0.12	0.64 deposition	33.82	
33.41	0.07	0.08	0.02	0.01	0.01	0.02	0.03	0.04	0.03	0.04	0.03	0.02	0.01	0.01	0.02	0.02	Deposition	0.08	0.01	0.08 deposition	33.41	
32.998	-0.95	-1.16	-4.37	-4.41	-4.46	-4.45	-4.44	-4.44	-4.45	-4.45	-4.47	-4.47	-4.48	-4.51	-4.65	-4.65	Scour	-0.95	-4.65	-4.65 scour	32.998	Morgan City Wash
32.984	-1.14	-2.3	-9.19	-9.15	-9.1	-9.08	-9.01	-8.85	-8.73	-8.84	-8.85	-8.86	-9.06	-9.03	-8.93	-8.93	Scour	-1.14	-9.19	-9.19 scour	32.984	State Rte 74
32.92	-0.88	-1.03	-3.37	-3.34	-3.32	-3.33	-3.28	-3.31	-3.26	-3.36	-3.26	-3.34	-3.29	-3.29	-3.21	-3.21	Scour	-0.88	-3.37	-3.37 scour	32.92	
32.86	-1.05	-0.96	-0.98	-1.02	-1.04	-1.05	-1.02	-0.97	-0.94	-0.89	-0.88	-0.85	-0.89	-1.01	-1.12	-1.12	Scour	-0.85	-1.12	-1.12 scour	32.86	
32.72	-0.12	0.05	2.49	2.52	2.55	2.53	2.47	2.42	2.35	2.31	2.3	2.31	2.33	2.4	2.52	2.52	Deposition	2.55	-0.12	2.55 deposition	32.72	
32.43	-0.01	-0.15	-0.1	-0.1	-0.1	-0.1	-0.08	-0.07	-0.05	-0.05	-0.05	-0.06	-0.06	-0.07	-0.07	-0.07	Scour	-0.01	-0.15	-0.15 scour	32.43	
31.86	-0.01	0.03	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.01	-0.01	0	-0.01	-0.01	-0.01	-0.01	Scour	0.03	-0.04	-0.04 scour	31.86	
31.39	-0.47	-0.51	-0.58	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.59	-0.58	-0.59	-0.59	-0.59	Scour	-0.47	-0.59	-0.59 scour	31.39	
30.82	-0.74	-1.2	-3.75	-3.75	-3.74	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.75	-3.73	-3.72	-3.72	Scour	-0.74	-3.75	-3.75 scour	30.82	
30.73	-1.31	-1.59	-2.77	-2.77	-2.76	-2.76	-2.8	-2.84	-2.88	-2.92	-2.94	-2.94	-2.94	-2.91	-2.83	-2.83	Scour	-1.31	-2.94	-2.94 scour	30.73	
30.26	2.83	2.87	1.16	1.12	1.06	1.08	1.16	1.23	1.21	1.17	1.15	1.19	1.19	1.1	0.92	0.92	Deposition	2.87	0.92	2.87 deposition	30.26	
30.07	-0.91	-1.25	-3.8	-3.78	-3.77	-3.79	-3.81	-3.82	-3.82	-3.83	-3.83	-3.84	-3.85	-3.81	-3.78	-3.78	Scour	-0.91	-3.85	-3.85 scour	30.07	
29.8	3.79	2.11	3.48	3.5	3.52	3.5	3.4	3.4	3.43	3.46	3.45	3.41	3.41	3.51	3.53	3.53	Deposition	3.79	2.11	3.79 deposition	29.8	
29.611	-0.5	-1.42	-2.28	-2.28	-2.29	-2.29	-2.29	-2.31	-2.33	-2.37	-2.4	-2.43	-2.48	-2.5	-2.48	-2.48	Scour	-0.5	-2.5	-2.5 scour	29.611	
29.54	0.1	0.23	-0.26	-0.26	-0.24	-0.25	-0.28	-0.29	-0.3	-0.31	-0.31	-0.32	-0.32	-0.3	-0.27	-0.27	Scour	0.23	-0.32	-0.32 scour	29.54	
29.04	0.17	0	-0.23	-0.23	-0.24	-0.24	-0.21	-0.19	-0.17	-0.16	-0.15	-0.13	-0.14	-0.21	-0.23	-0.23	Scour	0.17	-0.24	-0.24 scour	29.04	
28.95	-0.33	-0.29	-0.58	-0.57	-0.57	-0.58	-0.58	-0.59	-0.59	-0.6	-0.6	-0.61	-0.62	-0.6	-0.59	-0.59	Scour	-0.29	-0.62	-0.62 scour	28.95	
28.67	0.1	-0.04	-0.84	-0.84	-0.84	-0.84	-0.84	-0.84	-0.85	-0.85	-0.85	-0.85	-0.84	-0.83	-0.83	-0.83	Scour	0.1	-0.85	-0.85 scour	28.67	
28.12	0.08	0	-0.77	-0.77	-0.77	-0.77	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.78	-0.79	-0.79	Scour	0.08	-0.79	-0.79 scour	28.12	
27.94	-0.09	-0.34	-0.94	-0.93	-0.92	-0.92	-0.93	-0.93	-0.94	-0.94	-0.94	-0.93	-0.93	-0.91	-0.87	-0.87	Scour	-0.09	-0.94	-0.94 scour	27.94	
27.68	0.1	0.14	0.19	0.15	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.12	0.11	0.1	0.1	Deposition	0.19	0.1	0.19 deposition	27.68	
27.03	-0.04	0.11	-0.37	-0.35	-0.35	-0.36	-0.37	-0.39	-0.4	-0.41	-0.41	-0.4	-0.4	1.77	1.75	1.75	Deposition	1.77	-0.41	1.77 deposition	27.03	
26.73	0.04	0.09	-1.76	-1.76	-1.76	-1.76	-1.75	-1.76	-1.76	-1.77	-1.78	-1.78	-1.78	-1.77	-1.75	-1.75	Scour	0.09	-1.78	-1.78 scour	26.73	
26.29	-0.11	-0.25	-4.5	-4.5	-4.51	-4.51	-4.52	-4.51	-4.51	-4.52	-4.52	-4.53	-4.54	-4.55	-4.57	-4.57	Scour	-0.11	-4.57	-4.57 scour	26.29	
25.86	-0.19	-0.05	-0.94	-0.94	-0.94	-0.94	-0.96	-0.97	-0.99	-1.01	-1.03	-1.06	-1.08	-1.08	-1.14	-1.14	Scour	-0.05	-1.14	-1.14 scour	25.86	
25.666	0.73	0.73	0.17	0.18	0.19	0.18	0.19	0.2	0.22	0.23	0.23	0.23	0.21	0.2	0.17	0.17	Deposition	0.73	0.17	0.73 deposition	25.666	
25.478	-0.43	-0.44	-0.89	-0.9	-0.91	-0.9	-0.91	-0.91	-0.96	-1	-0.99	-0.98	-0.97	-0.96	-0.93	-0.93	Scour	-0.43	-1	-1 scour	25.478	Jomax Road
24.996	0.46	0.82	-0.29	-0.28	-0.28	-0.27	-0.23	-0.2	-0.14	-0.09	-0.07	-0.03	-0.06	-0.1	-0.17	-0.17	Scour	0.82	-0.29	0.82 deposition	24.996	
24.543	1.76	1.7	1.72	3.28	3.25	1.7	1.54	1.5	1.44	1.37	1.34	1.25	1.26	1.3	1.38	1.38	Deposition	3.28	1.25	3.28 deposition	24.543	
24.449	-0.11	-0.13	1.18	1.19	1.2	1.2	1.27	1.24	1.23	1.23	1.19	1.23	1.21	1.18	1.1	1.1	Deposition	1.27	-0.13	1.27 deposition	24.449	Happy Valley Road
23.974	0.16	0.1	1.03	1.03	1.04	1.04	1.02	1.05	1.05	1.05	1.08	1.05	1.04	1.05	1.07	1.07	Deposition	1.08	0.1	1.08 deposition	23.974	
23.692	-0.16	-0.2	-0.29	-0.29	-0.29	-0.29	-0.3	-0.31	-0.31	-0.3	-0.31	-0.32	-0.33	-0.33	-0.34	-0.34	Scour	-0.16	-0.34	-0.34 scour	23.692	
23.409	0.11	0.13	0.33	0.34	0.35	0.34	0.33	0.33	0.3	0.28	0.27	0.26	0.27	0.29	0.32	0.32	Deposition	0.35	0.11	0.35 deposition	23.409	Pinnacle Peak Road
22.935	0.45	0.45	0.51	0.5	0.49	0.41	0.42	0.43	0.45	0.47	0.47	0.48	0.55	0.53	0.5	0.5	Deposition	0.55	0.41	0.55 deposition	22.935	
22.462	0.02	0.03	-0.2	-0.19	-0.19	-0.2	-0.2	-0.21	-0.22	-0.23	-0.23	-0.23	-0.22	-0.21	-0.2	-0.2	Scour	0.03	-0.23	-0.23 scour	22.462	
21.893	-0.33	-0.54	-0.14	-0.15	-0.16	-0.16	-0.16	-0.15	-0.14	-0.12	-0.12	-0.11	-0.1	-0.12	-0.15	-0.15	Scour	-0.1	-0.54	-0.54 scour	21.893	
21.431	0.65	0.87	2.46	2.48	2.51	2.51	2.52	2.52	2.53	2.53	2.54	2.55	2.56	2.6	2.69	2.7	Deposition	2.7	0.65	2.7 deposition	21.431	
21.157	0.48	0.7	0.59	0.59	0.59	0.6	0.63	0.66	0.68	0.71	0.73	0.74	0.75	0.73	0.71	0.71	Deposition	0.75	0.48	0.75 deposition	21.157	
21.061	0.15	0.17	0.14	0.15	0.15	0.15	0.1	0.08	0.07	0.07	0.06	0.05	0.06	0.11	0.18	0.18	Deposition	0.18	0.05	0.18 deposition	21.061	Beardsley Road
20.958	0.02	0.13	0.08	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.07	Deposition	0.13	0.02	0.13 deposition	20.958	
20.579	-0.05	-0.03	-0.1	-0.09	-0.08	-0.08	-0.08	-0.1	-0.11	-0.12	-0.12	-0.11	-0.11	-0.09	-0.06	-0.06	Scour	-0.03	-0.12	-0.12 scour	20.579	
19.92	-0.02	-0.02	0.37	1.71	1.65	0.37	0.36	0.37	0.36	0.36	0.35	0.33	0.33	1.54	1.42	1.42	Deposition	1.71	-0.02	1.71 deposition	19.92	Union Hills Road
19.446	-0.06	-0.07	-0.21	-0.18	-0.15	-0.16	-0.15	-0.17	-0.17	-0.17	-0.17	-0.15	-0.16	-0.13	-0.1	-0.1	Scour	-0.06	-0.21	-0.21 scour	19.446	
19.066	-0.32	-0.39	-0.86	-0.84	-0.82	-0.84	-0.86	-0.84	-0.84	-0.84	-0.84	-0.84	-0.85	-0.82	-0.78	-0.78	Scour	-0.32	-0.86	-0.86 scour	19.066	
18.962	0.05	0.03	0.48	0.48	0.49	0.5	0.48	0.48	0.46	0.45	0.45	0.44	0.45	0.46	0.51	0.51	Deposition	0.51	0.03	0.51 deposition	18.962	Bell Road
18.275	0.08	0.07	0.05	0.05	0.04	0.04	0.06	0.07	0.09	0.11	0.12	0.12	0.12	0.1	0.07	0.07	Deposition	0.12	0.04	0.12 deposition	18.275	
17.821	0	0.01	-0.71	-0.7	-0.69	-0.7	-0.72	-0.74	-0.85	-0.95	-1	-1.01	-1	-0.96	-0.91	-0.9	Scour	0.01	-1.01	-1.01 scour	17.821	
17.638	-1.84	-2.09	-2.71	-2.71	-2.71	-2.71	-2.72	-2.72	-2.71	-2.7	-2.7	-2.71	-2.71	-2.72	-2.72	-2.72	Scour	-1.84	-2.72	-2.72 scour	17.638	
17.458	0.61	0.71	1.63	1.62	1.62	1.62	1.65	1.68	1.76	1.85	1.9	1.92	1.91	1.89	1.83	1.83	Deposition	1.92	0.61	1.92 deposition	17.458	
16.99	0.23	0.03	0.15	0.16	0.16	0.16	0.14	0.14	0.13	0.12	0.11	0.11	0.12	0.13	0.15	0.15	Deposition	0.23	0.03	0.23 deposition	16.99	
16.612	-0.03	-0.15	-1.14	-1.13	-1.13	-1.14	-1.18	-1.34	-1.46	-1.5	-1.49	-1.46	-1.43	-1.39	-1.3	-1.3	Scour	-0.03	-1.5	-1.5 scour	16.612	
16.506	-0.67	-0.51	-0.96	-0.96	-0.96	-0.96	-0.95	-0.94	-0.91	-0.89	-0.86	-0.84	-0.84	-0.84	-0.83	-0.83	Scour	-0.51	-0.96	-0.96 scour	16.506	Grand Avenue
16.482	-0.04	-0.15	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.74	-0.74	-0.75	-0.75	-0.75	Scour	-0.04	-0.75	-0.75 scour	16.482	
16.099	0.14	0.15	-0.13	-0.13	-0.14	-0.13	-0.11	-0.06	-0.05	-0.05	-0.06	-0.06	-0.06	-0.08	-0.12	-0.13	Scour	0.15	-0.14	0.15 deposition	16.099	
15.719	0.32	0.34	0.22	0.22	0.21	0.21	0.2	0.18	0.17	0.15	0.15	0.15	0.16	0.17	0.18	0.18	Deposition	0.34	0.15	0.34 deposition	15.719	Cactus Road - El Mirage Landfill
15.374	-0.61	-0.49	-0.89	-0.89	-0.88	-0.89	-0.9	-0.91	-0.92	-0.92	-0.93	-0.93	-0.93	-0.91	-0.9	-0.9	Scour	-0.49	-0.93	-0.93 scour	15.374	
15.094	0.33	0.48	0.11	0.11	0.1	0.1	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.11	0.1	0.1	Deposition	0.48	0.1	0.48 deposition	15.094	
15	-0.06	-0.02	-1.9	-1.91	-1.91	-1.92	-1.93	-1.95	-1.98	-2.02	-2.07	-2.12	-2.15	-2.18	-2.21	-2.21	Scour	-0.02	-2.21	-2.21 scour	15	
14.43	-0.07	-0.28	-4.03	-4.03	-4.03	-4.03	-4.02	-4.01	-4	-3.99	-3.98	-3.97	-3.97	-3.97	-3.97	-3.97	Scour	-0.07	-4.03	-4.03 scour	14.43	
13.952	-1.13	-1.43	-2.16	-2.16	-2.16	-2.16	-2.17	-2.17	-2.17	-2.18	-2.18	-2.18	-2.18	-2.18	-2.17	-2.17	Scour	-1.13	-2.18	-2.18 scour	13.952	
13.467	0.65	0.9	0.28	0.27	0.26	0.26	0.26	0.27	0.28	0.29	0.3	0.3	0.3	0.29	0.25	0.25	Deposition	0.9	0.25	0.9 deposition	13.467	Olive Ave
13.007	-0.14	-0.17	-0.28	-0.26	-0.24	-0.26	-0.28	-0.3	-0.33	-0.34	-0.35	-0.36	-0.35	-0.33	-0.28	-0.27	Scour	-0.14	-0.36	-0.36 scour	13.007	
12.816	0.44	0.43	1.06	1.06	1.05	1.05	1	0.94	0.88	0.8	0.73	0.71	0.7	0.72	0.75	0.75	Deposition	1.06	0.43	1.06 deposition	12.816	
12.47	0.14	0.14	0.31	0.3	0.28	0.29	0.35	0.41	0.47	0.54	0.59	0.57	0.53	0.46	0.32	0.32	Deposition	0.59	0.14	0.59 deposition	12.47	
12.42	1.23	1.57	1.87	1.68	1.53	1.55	1.63	1.7	1.76	1.84	1.92	2.03	2.06	1.59	1.31	1.3	Deposition	2.06	1.23	2.06 deposition	12.42	
12.359	0.03	0.09	0.26	0.32	0.36	0.36	0.35	0.34	0.33	0.32	0.31	0.31	0.31	0.42	0.48	0.48	Deposition	0.48	0.03	0.48 deposition	12.359	
11.847	-0.25	-0.23	-0.6	-0.58	-0.55	-0.56	-0.62	-0.65	-0.71	-0.78	-0.84	-0.88	-0.88	-0.8	-0.72	-0.72	Scour	-0.23	-0.88	-0.88 scour	11.847	
11.557	-0.35	-0.38	-0.37	-0.32	-0.25	-0.26	-0.34	-0.42	-0.52	-0.57	-0.59	-0.59	-0.58	-0.43	-0.17	-0.17	Scour	-0.17	-0.59	-0.59 scour	11.557	
11.428	-0.14	-0.08	1.07	1.07	1.07	1.08	1.08	1.03	0.97	0.89	0.82	0.76	0.74	0.74	0.8	0.8	Deposition	1.08	-0.14	1.08 deposition	11.428	Glendale Ave
11.029	0.26	0.26	2.19	2.18	2.17	2.18	2.23	2.27	2.31	2.33	2.35	2.35	2.35	2.31	2.24	2.23	Deposition	2.35	0.26	2.35 deposition	11.029	
10.752	0.15	0.18	1	1.01	1.02	1.02	1	0.99	0.99	0.98	0.97	0.95	0.95	0.98	1.04	1.04	Deposition	1.04	0.15	1.04 deposition	10.752	
10.538	0.09	0.16	0.75	0.74	0.72	0.73	0.76	0.77	0.79	0.8	0.83	0.84	0.84	0.81	0.75	0.75	Deposition	0.84	0.09	0.84 deposition	10.538	
10.343	-0.16	-0.2	-0.19	-0.18	-0.17	-0.18	-0.19	-0.21	-0.23	-0.25	-0.26	-0.25	-0.25	-0.23	-0.19	-0.19	Scour	-0.16	-0.26	-0.26 scour	10.343	
9.885	-0.19	-0.27	-0.11	-0.12	-0.12	-0.12	-0.1	-0.08	-0.05	-0.01	0.01	0.01	0	-0.02	-0.05	-0.05	Scour	0.01	-0.27	-0.27 scour	9.885	
9.696	0.03	-0.07	0.32	0.32	0.32	0.32	0.32	0.33	0.34	0.35	0.35	0.34	0.33	0.31	0.31	0.31	Deposition	0.35	-0.07	0.35 deposition	9.696	D/S Glendale Airport
9.435	0.17	0.31	0.77	0.77	0.77	0.75	0.72	0.69	0.64	0.61	0.58	0.57	0.56	0.56	0.55	0.55	Deposition	0.77	0.17	0.77 deposition	9.435	U/S Camelback Road
8.992	-0.07	-0.09	-0.59	-0.59	-0.59	-0.58	-0.56	-0.56	-0.55	-0.54	-0.53	-0.52	-0.51	-0.54	-0.58	-0.58	Scour	-0.07	-0.59	-0.59 scour	8.992	
8.768	-0.8	-1.03	-1.41	-1.4	-1.39	-1.4	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.4	-1.35	-1.35	Scour	-0.8	-1.42	-1.42 scour	8.768	
8.433	0.08	-0.01	-0.14	-0.14	-0.13	-0.15	-0.18	-0.21	-0.23	-0.23	-0.23	-0.23	-0.23	-0.22	-0.19	-0.19	Scour	0.08	-0.23	-0.23 scour	8.433	
8.198	0.05	0.04	0.29	0.29	0.29	0.3	0.29	0.28	0.26	0.22	0.19	0.18	0.17	0.18	0.2	0.2	Deposition	0.3	0.04	0.3 deposition	8.198	
8.105	-0.27	-0.18	0.33	0.33	0.32	0.34	0.41	0.44	0.46	0.47	0.45	0.41	0.4	0.38	0.36	0.36	Deposition	0.47	-0.27	0.47 deposition	8.105	
8	0.97	1.05	1.75	1.75	1.75	1.76	1.8	1.84	1.86	1.89	1.9	1.87	1.84	1.8	1.77	1.77	Deposition	1.9	0.97	1.9 deposition	8	
7.99	0.93	0.96	1.61	1.61	1.61	1.6	1.55	1.56	1.54	1.55	1.6	1.61	1.63	1.64	1.64	1.64	Deposition	1.64	0.93	1.64 deposition	7.99	Indian School Road
7.988	0.26	0.48	1.37	1.37	1.37	1.37	1.38	1.38	1.38	1.37	1.36	1.36	1.36	1.36	1.36	1.36	Deposition	1.38	0.26	1.38 deposition	7.988	Grade control structure
7.49	-0.07	-0.09	-0.58	-0.58	-0.58	-0.58	-0.58	-0.62	-0.67	-0.7	-0.72	-0.73	-0.73	-0.72	-0.72	-0.72	Scour	-0.07	-0.73	-0.73 scour	7.49	
6.99	-0.08	-0.47	-0.91	-0.9	-0.9	-0.91	-0.94	-0.94	-0.96	-0.98	-1.02	-1.02	-1.02	-1.01	-0.99	-0.99	Scour	-0.08	-1.02	-1.02 scour	6.99	
6.93	0.19	0	-0.16	-0.16	-0.16	-0.14	-0.14	-0.1	-0.16	-0.06	-0.11	-0.07	-0.11	-0.14	-0.17	-0.17	Scour	0.19	-0.17	0.19 deposition	6.93	
6.91	-0.68	-0.59	-0.75	-0.7	-0.67	-0.85	-0.94	-0.94	-0.94	-0.94	-0.94	-0.94	-0.93	-0.81	-0.65	-0.65	Scour	-0.59	-0.94	-0.94 scour	6.91	
6.89	0	0	0	0	0.05	0	0.82	0	1.6	0	1.22	0	0.41	0.11	0.05	0	No change	1.6	0	1.6 deposition	6.89	
6.888	-1.49	-1.49	-1.5	-1.5	-1.5	-1.5	-1.5	-1.49	-1.49	-1.49	-1.48	-1.48	-1.48	-1.48	-1.49	-1.49	Scour	-1.48	-1.5	-1.5 scour	6.888	
6.82	0.21	0.44	-0.16	-0.16	-0.17	-0.15	-0.2	-0.16	-0.23	-0.19	-0.22	-0.18	-0.19	-0.18	-0.2	-0.2	Scour	0.44	-0.23	0.44 deposition	6.82	
6.43	-0.06	-0.12	-0.2	-0.2	-0.2	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	Scour	-0.06	-0.2	-0.2 scour	6.43	
6.07	0.26	0.42	0.86	0.86	0.86	0.86	0.86	0.84	0.86	0.84	0.82	0.81	0.79	0.79	0.79	0.79	Deposition	0.86	0.26	0.86 deposition	6.07	
6.068	0.34	0.46	0.85	0.85	0.85	0.85	0.86	0.84	0.84	0.84	0.82	0.8	0.79	0.79	0.78	0.78	Deposition	0.86	0.34	0.86 deposition	6.068	
5.9	-0.04	0.03	0.49	0.49	0.49	0.49	0.48	0.48	0.47	0.48	0.46	0.46	0.45	0.44	0.43	0.43	Deposition	0.49	-0.04	0.49 deposition	5.9	Grade control structure
5.75	0.09	0.1	0.61	0.61	0.61	0.6	0.57	0.55	0.51	0.49	0.48	0.47	0.48	0.49	0.48	0.48	Deposition	0.61	0.09	0.61 deposition	5.75	
5.689	0.28	0.5	1.19	1.19	1.18	1.18	1.17	1.15	1.12	1.09	1.08	1.07	1.07	1.07	1.06	1.06	Deposition	1.19	0.28	1.19 deposition	5.689	McDowlell Road
5.38	-0.35	-0.49	-0.58	-0.58	-0.58	-0.58	-0.57	-0.59	-0.61	-0.62	-0.62	-0.62	-0.62	-0.63	-0.62	-0.62	Scour	-0.35	-0.63	-0.63 scour	5.38	
5.29	-0.16	-0.34	-0.3	-0.29	-0.28	-0.3	-0.39	-0.41	-0.4	-0.39	-0.39	-0.41	-0.41	-0.39	-0.35	-0.35	Scour	-0.16	-0.41	-0.41 scour	5.29	
5.203	0	0	0	0	0.01	0	0.19	0	0.3	0	0.22	0	0.07	0.02	0.01	0	No change	0.3	0	0.3 deposition	5.203	
5.201	0.95	0.1	0.09	0.03	0	0.26	0	0.95	0	1.12	0	0.5	0	0	0	0.03	Deposition	1.12	0	1.12 deposition	5.201	
5.15	-0.35	-0.35	-2.64	-2.64	-2.64	-2.64	-2.61	-2.62	-2.62	-2.61	-2.58	-2.55	-2.57	-2.59	-2.6	-2.6	Scour	-0.35	-2.64	-2.64 scour	5.15	Grade control structure
4.79	-0.22	-0.16	1.8	1.8	1.8	1.79	1.88	1.92	2.09	2.1	2.22	2.19	2.25	2.23	2.16	2.16	Deposition	2.25	-0.22	2.25 deposition	4.79	
4.754	1.65	1.85	3.49	3.48	3.48	3.48	3.49	3.52	3.56	3.62	3.67	3.71	3.72	3.71	3.67	3.67	Deposition	3.72	1.65	3.72 deposition	4.754	
4.7	0.53	0.92	2.95	2.95	2.95	2.95	2.94	2.94	2.95	2.97	3	3.04	3.07	3.08	3.08	3.08	Deposition	3.08	0.53	3.08 deposition	4.7	
4.3	0.05	0.18	1.82	1.82	1.83	1.82	1.73	1.66	1.56	1.49	1.44	1.43	1.44	1.47	1.54	1.54	Deposition	1.83	0.05	1.83 deposition	4.3	
4.094	0	0	0	0	0.01	0	0.13	0	0.21	0	0.15	0	0.05	0.01	0	0	No change	0.21	0	0.21 deposition	4.094	
4.092	0.08	0.01	0.02	0.01	0	0.05	0	0.19	0	0.23	0	0.1	0	0	0	0.01	Deposition	0.23	0	0.23 deposition	4.092	Grade control structure
3.767	-0.41	-1	-1.74	-1.73	-1.74	-1.75	-1.63	-1.66	-1.51	-1.57	-1.41	-1.42	-1.34	-1.33	-1.41	-1.41	Scour	-0.41	-1.75	-1.75 scour	3.767	
3.757	-0.04	-0.14	-0.98	-1	-1.02	-0.97	-0.96	-0.93	-0.92	-0.84	-0.78	-0.7	-0.62	-0.58	-0.77	-0.77	Scour	-0.04	-1.02	-1.02 scour	3.757	
3.734	-0.39	-0.38	-1.2	-1.28	-1.31	-1.18	-0.94	-0.86	-0.83	-0.79	-0.79	-0.78	-0.77	-0.8	-1.1	-1.1	Scour	-0.38	-1.31	-1.31 scour	3.734	
3.729	-0.28	-0.29	-1.09	-1.1	-1.11	-1.11	-1.09	-1.07	-1.05	-1.02	-0.99	-0.96	-0.95	-0.93	-0.94	-0.94	Scour	-0.28	-1.11	-1.11 scour	3.729	
3.43	-0.26	-0.24	0.47	0.49	0.51	0.49	0.42	0.38	0.33	0.31	0.3	0.32	0.32	0.33	0.47	0.47	Deposition	0.51	-0.26	0.51 deposition	3.43	
3.37	0.76	1.06	1.82	1.82	1.81	1.79	1.71	1.65	1.61	1.57	1.53	1.51	1.51	1.52	1.57	1.57	Deposition	1.82	0.76	1.82 deposition	3.37	
3.27	0.09	0.23	1.03	1.03	1.03	1.03	1.05	1.05	1.05	1.05	1.05	1.04	1.04	1.03	1.02	1.02	Deposition	1.05	0.09	1.05 deposition	3.27	
2.8	0.01	0.02	-0.62	-0.62	-0.62	-0.62	-0.59	-0.56	-0.52	-0.49	-0.47	-0.47	-0.48	-0.5	-0.53	-0.53	Scour	0.02	-0.62	-0.62 scour	2.8	
2.6	-0.08	-0.16	-1.61	-1.61	-1.61	-1.61	-1.62	-1.67	-1.71	-1.74	-1.75	-1.75	-1.75	-1.74	-1.74	-1.74	Scour	-0.08	-1.75	-1.75 scour	2.6	
2.02	-0.26	-0.38	-1.41	-1.41	-1.41	-1.41	-1.4	-1.38	-1.37	-1.35	-1.35	-1.35	-1.35	-1.35	-1.35	-1.34	Scour	-0.26	-1.41	-1.41 scour	2.02	
1.71	0.35	0.53	-0.23	-0.24	-0.24	-0.25	-0.24	-0.21	-0.18	-0.16	-0.15	-0.16	-0.16	-0.18	-0.22	-0.22	Scour	0.53	-0.25	0.53 deposition	1.71	
1.33	-0.22	-0.43	-3.43	-3.43	-3.43	-3.44	-3.47	-3.5	-3.53	-3.54	-3.58	-3.61	-3.62	-3.61	-3.6	-3.6	Scour	-0.22	-3.62	-3.62 scour	1.33	
0.73	0	-0.04	-0.62	-0.62	-0.63	-0.64	-0.64	-0.65	-0.7	-0.74	-0.74	-0.74	-0.74	-0.74	-0.75	-0.75	Scour	0	-0.75	-0.75 scour	0.73	
0.63	-0.49	-0.62	-1.16	-1.16	-1.16	-1.16	-1.18	-1.2	-1.15	-1.11	-1.11	-1.14	-1.15	-1.16	-1.17	-1.17	Scour	-0.49	-1.2	-1.2 scour	0.63	
0.44	0.08	0.04	-0.08	-0.18	-0.22	-0.24	-0.23	-0.22	-0.2	-0.17	-0.16	-0.16	-0.16	-0.19	-0.25	-0.26	Scour	0.08	-0.26	-0.26 scour	0.44	
0.16	0.36	0.4	0.14	0.31	0.38	0.04	0.08	0.07	-0.03	-0.11	-0.09	-0.02	0.03	0.37	0.44	0.44	Deposition	0.44	-0.11	0.44 deposition	0.16	Gila River confluence

Table 4. Modified Existing Conditions HEC-6 Model Bedchange.

SECTION NUMBER	Day 1.00 Bed Change (ft)	Day 2.00 Bed Change (ft)	Day 3.00 Bed Change (ft)	Day 10.00 Bed Change (ft)	Day 15.00 Bed Change (ft)	Day 29.00 Bed Change (ft)	Day 30.00 Bed Change (ft)	Day 30.06 Bed Change (ft)	Day 30.15 Bed Change (ft)	Day 30.20 Bed Change (ft)	Day 30.27 Bed Change (ft)	Day 30.32 Bed Change (ft)	Day 30.37 Bed Change (ft)	Day 30.42 Bed Change (ft)	Day 30.47 Bed Change (ft)	Day 30.54 Bed Change (ft)	Day 30.61 Bed Change (ft)	Day 30.75 Bed Change (ft)	Day 31.09 Bed Change (ft)	Day 31.10 Bed Change (ft)	Condition at end of 31.10 days	Max	Min	Maxchange during event		Section Number	Reference Location
33.820	0.07	0.10	0.11	0.23	0.32	0.56	0.58	0.59	0.61	0.59	0.54	0.52	0.50	0.49	0.48	0.50	0.53	0.58	0.65	0.65	Deposition	0.65	0.07	0.65	Deposition	33.820	
33.410	0.09	0.10	0.11	0.19	0.24	0.33	0.34	0.34	0.33	0.34	0.35	0.35	0.35	0.35	0.34	0.34	0.33	0.32	0.32	0.32	Deposition	0.35	0.09	0.35	Deposition	33.410	
32.998	-0.70	-0.83	-0.91	-1.36	-1.56	-1.88	-1.90	-1.89	-1.89	-1.90	-1.93	-1.94	-1.95	-1.95	-1.96	-1.95	-1.94	-1.93	-1.92	-1.92	Scour	-0.70	-1.96	-1.96	Scour	32.998	Morgan City Wash
32.984	0.09	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.09	0.01	0.48	0.02	0.70	0.02	0.58	0.01	0.24	0.08	0.09	0.00	No change	0.70	0.00	0.7	Deposition	32.984	State Rte 74
32.920	-1.38	-4.27	-4.35	-5.32	-5.69	-6.52	-6.56	-6.61	-6.65	-6.53	-6.65	-6.32	-6.63	-6.35	-6.63	-6.41	-6.63	-6.63	-6.65	-6.60	Scour	-1.38	-6.65	-6.65	Scour	32.920	
32.860	-1.32	-1.66	-1.91	-2.41	-2.60	-2.96	-2.99	-2.99	-3.00	-3.01	-2.96	-2.99	-2.94	-2.96	-2.89	-2.92	-2.91	-2.97	-3.02	-3.02	Scour	-1.32	-3.02	-3.02	Scour	32.860	
32.720	-0.24	0.02	0.14	0.76	0.94	1.18	1.18	1.20	1.22	1.19	1.14	1.08	1.06	1.06	1.05	1.05	1.06	1.11	1.18	1.18	Deposition	1.22	-0.24	1.22	Deposition	32.720	
32.430	-0.02	-0.09	-0.19	-0.13	-0.04	0.22	0.23	0.23	0.23	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	0.22	0.22	Deposition	0.24	-0.19	0.24	Deposition	32.430	
31.860	-0.01	0.03	0.01	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.01	0.00	-0.01	-0.01	Scour	0.03	-0.04	-0.04	Scour	31.860	
31.390	-0.28	-0.25	-0.26	-0.31	-0.31	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.32	-0.32	-0.32	-0.32	-0.32	Scour	-0.25	-0.33	-0.33	Scour	31.390	
30.820	-0.48	-0.67	-0.68	-0.77	-0.78	-0.83	-0.83	-0.83	-0.83	-0.84	-0.84	-0.84	-0.84	-0.85	-0.85	-0.84	-0.84	-0.83	-0.82	-0.82	Scour	-0.48	-0.85	-0.85	Scour	30.820	
30.730	-0.87	-1.09	-1.13	-1.33	-1.37	-1.46	-1.46	-1.46	-1.46	-1.46	-1.47	-1.48	-1.48	-1.48	-1.48	-1.49	-1.49	-1.48	-1.47	-1.47	Scour	-0.87	-1.49	-1.49	Scour	30.730	
30.260	0.61	0.40	0.25	0.20	0.13	0.02	0.02	0.01	0.01	0.01	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.00	0.00	No change	0.61	0.00	0.61	Deposition	30.260	
30.070	0.28	-0.06	-0.21	-0.72	-1.48	-1.57	-1.59	-1.59	-1.59	-1.59	-1.59	-1.60	-1.62	-1.65	-1.66	-1.68	-1.69	-1.68	-1.68	-1.68	Scour	0.28	-1.69	-1.69	Scour	30.070	
29.800	0.80	1.09	1.03	0.94	1.05	0.93	0.91	0.92	0.93	0.92	0.91	0.90	0.90	0.89	0.87	0.86	0.85	0.87	0.90	0.90	Deposition	1.09	0.80	1.09	Deposition	29.800	
29.611	-0.81	-0.91	-1.05	-1.77	-2.02	-2.89	-2.99	-3.01	-3.01	-3.00	-2.97	-2.96	-2.94	-2.94	-2.93	-2.94	-2.95	-2.99	-3.03	-3.04	Scour	-0.81	-3.04	-3.04	Scour	29.611	
29.540	-0.10	0.07	0.10	-0.29	-0.48	-1.68	-1.71	-1.70	-1.70	-1.70	-1.71	-1.74	-1.79	-1.85	-1.87	-1.87	-1.86	-1.86	-1.85	-1.84	Scour	0.10	-1.87	-1.87	Scour	29.540	
29.040	0.01	-0.05	-0.07	-0.17	-0.22	-0.25	-0.27	-0.28	-0.29	-0.29	-0.27	-0.25	-0.24	-0.24	-0.23	-0.22	-0.22	-0.25	-0.29	-0.29	Scour	0.01	-0.29	-0.29	Scour	29.040	
28.950	-0.46	-0.49	-0.53	-0.62	-0.66	-0.55	-0.59	-0.57	-0.55	-0.58	-0.61	-0.62	-0.63	-0.64	-0.65	-0.65	-0.65	-0.57	-0.51	-0.51	Scour	-0.46	-0.66	-0.66	Scour	28.950	
28.670	0.18	0.08	0.07	0.18	0.29	0.48	0.46	0.46	0.46	0.46	0.44	0.43	0.43	0.43	0.43	0.41	0.40	0.40	0.41	0.41	Deposition	0.48	0.07	0.48	Deposition	28.670	
28.120	0.10	0.10	0.06	-0.01	-0.26	-0.73	-0.73	-0.73	-0.73	-0.73	-0.73	-0.74	-0.74	-0.75	-0.76	-0.76	-0.77	-0.77	-0.77	-0.77	Scour	0.10	-0.77	-0.77	Scour	28.120	
27.940	-0.03	-0.03	-0.10	-1.58	-1.97	-2.87	-2.90	-2.91	-2.91	-2.91	-2.92	-2.92	-2.92	-2.91	-2.91	-2.92	-2.93	-2.94	-2.96	-2.96	Scour	-0.03	-2.96	-2.96	Scour	27.940	
27.680	-0.09	-0.23	-0.44	-1.30	-1.94	-2.95	-2.98	-2.99	-2.99	-2.99	-2.98	-2.97	-2.97	-2.97	-2.97	-2.96	-2.97	-2.98	-3.00	-3.00	Scour	-0.09	-3.00	-3	Scour	27.680	
27.030	0.05	0.19	0.40	0.60	0.55	0.44	0.43	0.44	0.44	0.44	0.42	0.40	0.38	0.36	0.35	0.34	0.35	0.36	0.38	0.39	Deposition	0.60	0.05	0.6	Deposition	27.030	
26.730	-0.01	0.00	0.04	0.03	-0.03	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	Scour	0.04	-0.14	-0.14	Scour	26.730	
26.290	-0.09	-0.15	-0.19	-0.43	-0.63	-1.06	-1.07	-1.07	-1.07	-1.07	-1.07	-1.07	-1.07	-1.07	-1.06	-1.07	-1.07	-1.08	-1.09	-1.09	Scour	-0.09	-1.09	-1.09	Scour	26.290	
25.860	-0.09	-0.10	-0.14	-0.13	-0.25	-0.94	-0.99	-0.99	-0.99	-1.00	-1.00	-0.99	-0.99	-0.99	-0.99	-1.00	-1.01	-1.01	-1.04	-1.04	Scour	-0.09	-1.04	-1.04	Scour	25.860	
25.666	0.43	0.51	0.53	0.81	0.88	0.55	0.52	0.52	0.53	0.53	0.49	0.47	0.44	0.42	0.41	0.41	0.41	0.43	0.47	0.47	Deposition	0.88	0.41	0.88	Deposition	25.666	
25.478	0.01	0.11	0.14	0.23	0.26	0.09	0.07	0.07	0.06	0.06	0.05	0.03	0.01	-0.01	-0.02	-0.03	-0.03	-0.03	-0.03	-0.04	Scour	0.26	-0.04	0.26	Deposition	25.478	Jomax Road
24.996	0.02	0.08	0.13	0.40	0.54	0.65	0.63	0.63	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.58	0.58	Deposition	0.65	0.02	0.65	Deposition	24.996	
24.543	0.06	0.07	0.10	0.26	0.35	0.44	0.44	0.45	0.45	0.45	0.45	0.44	0.44	0.45	0.45	0.44	0.44	0.45	0.48	0.48	Deposition	0.48	0.06	0.48	Deposition	24.543	
24.449	-0.02	0.01	0.02	0.12	0.19	0.32	0.33	0.32	0.31	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.36	0.35	0.31	0.31	Deposition	0.37	-0.02	0.37	Deposition	24.449	Happy Valley Road
23.974	0.03	0.05	0.09	0.27	0.37	0.57	0.58	0.59	0.59	0.59	0.58	0.58	0.57	0.55	0.54	0.54	0.54	0.55	0.56	0.56	Deposition	0.59	0.03	0.59	Deposition	23.974	
23.692	-0.08	-0.08	-0.08	-0.11	-0.12	-0.16	-0.16	-0.16	-0.16	-0.17	-0.16	-0.16	-0.16	-0.16	-0.15	-0.15	-0.16	-0.16	-0.18	-0.18	Scour	-0.08	-0.18	-0.18	Scour	23.692	
23.409	-0.02	-0.02	-0.01	0.02	0.04	0.10	0.11	0.11	0.12	0.12	0.10	0.09	0.08	0.07	0.06	0.06	0.06	0.07	0.09	0.09	Deposition	0.12	-0.02	0.12	Deposition	23.409	Pinnacle Peak Road
22.935	0.02	0.01	0.02	0.16	0.26	0.49	0.50	0.50	0.49	0.49	0.50	0.50	0.49	0.49	0.49	0.49	0.48	0.47	0.46	0.46	Deposition	0.50	0.01	0.5	Deposition	22.935	
22.462	0.00	0.01	0.02	0.04	0.07	0.18	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.22	0.23	0.23	0.23	0.24	0.25	0.25	Deposition	0.25	0.00	0.25	Deposition	22.462	
21.893	-0.02	-0.04	-0.04	0.09	0.23	0.61	0.63	0.62	0.60	0.59	0.61	0.62	0.63	0.64	0.65	0.66	0.66	0.63	0.55	0.55	Deposition	0.66	-0.04	0.66	Deposition	21.893	
21.431	-0.40	-0.51	-0.55	-0.33	-0.08	0.37	0.40	0.42	0.44	0.40	0.39	0.38	0.37	0.36	0.35	0.35	0.36	0.41	0.51	0.51	Deposition	0.51	-0.55	-0.55	Scour	21.431	
21.157	0.53	0.64	0.72	0.68	0.83	1.10	1.11	1.13	1.15	1.21	1.24	1.26	1.28	1.31	1.32	1.33	1.33	1.33	1.36	1.36	Deposition	1.36	0.53	1.36	Deposition	21.157	
21.061	0.21	0.19	0.19	0.03	0.09	0.21	0.22	0.24	0.26	0.25	0.21	0.19	0.18	0.17	0.16	0.16	0.17	0.23	0.34	0.34	Deposition	0.34	0.03	0.34	Deposition	21.061	Beardsley Road
20.958	0.08	0.15	0.17	0.06	0.10	0.22	0.23	0.23	0.23	0.23	0.25	0.25	0.26	0.26	0.27	0.28	0.28	0.28	0.29	0.29	Deposition	0.29	0.06	0.29	Deposition	20.958	
20.579	-0.04	-0.01	0.01	-0.02	-0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	Scour	0.01	-0.04	-0.04	Scour	20.579	
19.920	-0.01	-0.01	0.01	0.06	0.08	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	Deposition	0.27	-0.01	0.27	Deposition	19.920	Union Hills Road
19.446	-0.05	-0.06	-0.06	-0.09	-0.21	-0.30	-0.31	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	Scour	-0.05	-0.31	-0.31	Scour	19.446	
19.066	-0.31	-0.36	-0.40	-0.76	-1.02	-1.02	-1.02	-1.01	-1.01	-1.02	-1.04	-1.04	-1.03	-1.03	-1.03	-1.04	-1.04	-1.03	-1.01	-1.01	Scour	-0.31	-1.04	-1.04	Scour	19.066	
18.962	0.02	-0.03	-0.05	0.05	0.07	0.26	0.27	0.27	0.28	0.28	0.26	0.24	0.20	0.18	0.17	0.16	0.16	0.17	0.20	0.20	Deposition	0.28	-0.05	0.28	Deposition	18.962	Bell Road
18.275	0.09	0.08	0.07	0.11	0.12	0.14	0.14	0.14	0.13	0.13	0.15	0.17	0.20	0.23	0.25	0.25	0.25	0.23	0.19	0.19	Deposition	0.25	0.07	0.25	Deposition	18.275	
17.821	0.00	-0.02	-0.16	-0.84	-1.08	-1.50	-1.52	-1.52	-1.52	-1.52	-1.57	-1.61	-1.65	-1.67	-1.69	-1.71	-1.71	-1.69	-1.69	-1.69	Scour	0.00	-1.71	-1.71	Scour	17.821	
17.638	-1.43	-2.29	-2.72	-3.39	-3.43	-3.43	-3.43	-3.43	-3.42	-3.42	-3.39	-3.38	-3.38	-3.37	-3.36	-3.33	-3.33	-3.32	-3.29	-3.29	Scour	-1.43	-3.43	-3.43	Scour	17.638	
17.458	0.17	0.40	0.51	0.78	0.86	1.15	1.17	1.16	1.16	1.16	1.18	1.20	1.23	1.25	1.26	1.27	1.28	1.26	1.24	1.24	Deposition	1.28	0.17	1.28	Deposition	17.458	
16.990	-0.05	-0.12	-0.12	-0.13	-0.13	-0.09	-0.08	-0.08	-0.08	-0.08	-0.09	-0.09	-0.10	-0.11	-0.11	-0.11	-0.11	-0.10	-0.09	-0.09	Scour	-0.05	-0.13	-0.13	Scour	16.990	
16.612	-0.08	-0.19	-0.37	-1.07	-1.13	-1.37	-1.38	-1.38	-1.37	-1.38	-1.45	-1.50	-1.53	-1.54	-1.55	-1.54	-1.51	-1.50	-1.47	-1.47	Scour	-0.08	-1.55	-1.55	Scour	16.612	
16.506	-0.65	-0.58	-0.62	-0.75	-0.84	-1.08	-1.09	-1.10	-1.10	-1.10	-1.08	-1.07	-1.05	-1.02	-1.00	-0.99	-0.99	-0.99	-1.00	-1.00	Scour	-0.58	-1.10	-1.1	Scour	16.506	Grand Avenue
16.482	-0.15	-0.18	-0.30	-0.43	-0.44	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42	-1.41	-1.41	-1.41	-1.41	Scour	-0.15	-1.42	-1.42	Scour	16.482	
16.099	0.10	-0.05	-0.12	-0.38	-0.35	-0.25	-0.26	-0.27	-0.27	-0.27	-0.24	-0.23	-0.24	-0.25	-0.26	-0.26	-0.27	-0.28	-0.29	-0.29	Scour	0.10	-0.38	-0.38	Scour	16.099	
15.719	0.31	0.28	0.20	0.00	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	Scour	0.31	-0.01	0.31	Deposition	15.719	Cactus Road - El Mirage Landfill
15.374	-0.55	-0.49	-0.51	-0.77	-0.82	-1.56	-1.56	-1.54	-1.52	-1.53	-1.56	-1.56	-1.57	-1.57	-1.57	-1.57	-1.57	-1.55	-1.51	-1.51	Scour	-0.49	-1.57	-1.57	Scour	15.374	
15.094	0.18	0.26	0.31	0.25	0.17	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	Deposition	0.31	0.11	0.31	Deposition	15.094	
15.000	0.00	0.03	0.05	-0.07	-0.52	-1.59	-1.67	-1.68	-1.68	-1.68	-1.69	-1.70	-1.71	-1.72	-1.73	-1.74	-1.74	-1.74	-1.74	-1.74	Scour	0.05	-1.74	-1.74	Scour	15.000	
14.430	-0.07	-0.22	-0.38	-1.95	-2.75	-3.91	-3.90	-3.90	-3.91	-3.90	-3.89	-3.89	-3.89	-3.89	-3.89	-3.89	-3.89	-3.90	-3.90	-3.90	Scour	-0.07	-3.91	-3.91	Scour	14.430	
13.952	-1.04	-1.39	-1.58	-1.70	-1.79	-2.00	-2.01	-2.01	-2.02	-2.02	-2.04	-2.04	-2.05	-2.06	-2.06	-2.06	-2.06	-2.06	-2.06	-2.06	Scour	-1.04	-2.06	-2.06	Scour	13.952	
13.467	0.65	0.89	1.06	1.45	1.36	0.53	0.45	0.44	0.42	0.42	0.43	0.43	0.43	0.43	0.43	0.43	0.42	0.39	0.32	0.32	Deposition	1.45	0.32	1.45	Deposition	13.467	Olive Ave
13.007	-0.14	-0.17	-0.17	-0.07	-0.01	-0.22	-0.24	-0.22	-0.20	-0.21	-0.24	-0.26	-0.29	-0.31	-0.32	-0.33	-0.32	-0.30	-0.23	-0.23	Scour	-0.01	-0.33	-0.33	Scour	13.007	
12.816	0.45	0.44	0.51	1.16	1.35	1.11	1.05	1.05	1.04	1.04	1.01	0.96	0.92	0.89	0.85	0.82	0.81	0.82	0.84	0.84	Deposition	1.35	0.44	1.35	Deposition	12.816	
12.470	0.20	0.19	0.21	0.35	0.39	0.23	0.23	0.21	0.19	0.20	0.27	0.34	0.40	0.45	0.51	0.52	0.47	0.37	0.16	0.16	Deposition	0.52	0.16	0.52	Deposition	12.470	
12.420	1.32	1.70	1.75	2.01	1.97	1.63	1.63	1.46	1.32	1.34	1.40	1.44	1.47	1.49	1.53	1.63	1.68	1.15	0.84	0.84	Deposition	2.01	0.84	2.01	Deposition	12.420	
12.359	0.07	0.18	0.22	0.35	0.37	0.19	0.18	0.20	0.21	0.18	0.08	-0.01	-0.10	-0.16	-0.21	-0.22	-0.18	-0.09	-0.02	-0.02	Scour	0.37	-0.22	0.37	Deposition	12.359	
11.847	-0.31	-0.29	-0.34	-0.64	-0.82	-1.10	-1.11	-1.11	-1.10	-1.11	-1.22	-1.32	-1.43	-1.52	-1.58	-1.62	-1.63	-1.60	-1.54	-1.54	Scour	-0.29	-1.63	-1.63	Scour	11.847	
11.557	-0.36	-0.41	-0.45	-0.66	-0.67	-0.58	-0.59	-0.58	-0.56	-0.57	-0.61	-0.62	-0.64	-0.66	-0.68	-0.70	-0.71	-0.70	-0.70	-0.70	Scour	-0.36	-0.71	-0.71	Scour	11.557	
11.428	-0.15	-0.11	-0.08	0.20	0.45	0.91	0.89	0.88	0.88	0.88	0.85	0.84	0.82	0.76	0.71	0.66	0.61	0.59	0.55	0.55	Deposition	0.91	-0.15	0.91	Deposition	11.428	Glendale Ave
11.029	0.08	0.16	0.28	1.05	1.46	2.15	2.16	2.15	2.13	2.14	2.17	2.19	2.19	2.20	2.20	2.20	2.19	2.16	2.08	2.08	Deposition	2.20	0.08	2.2	Deposition	11.029	
10.752	0.07	0.05	0.05	0.31	0.51	0.91	0.93	0.94	0.95	0.95	0.93	0.90	0.88	0.86	0.85	0.83	0.82	0.85	0.89	0.89	Deposition	0.95	0.05	0.95	Deposition	10.752	
10.538	0.04	0.08	0.07	0.28	0.41	0.62	0.62	0.62	0.61	0.61	0.62	0.63	0.64	0.65	0.66	0.66	0.66	0.64	0.58	0.58	Deposition	0.66	0.04	0.66	Deposition	10.538	
10.343	-0.19	-0.21	-0.22	-0.20	-0.20	-0.21	-0.21	-0.21	-0.20	-0.20	-0.22	-0.24	-0.26	-0.28	-0.29	-0.30	-0.29	-0.27	-0.24	-0.24	Scour	-0.19	-0.30	-0.3	Scour	10.343	
9.885	-0.38	-0.38	-0.38	-0.41	-0.41	-0.11	-0.08	-0.08	-0.09	-0.08	-0.07	-0.06	-0.05	-0.04	-0.04	-0.03	-0.03	-0.05	-0.08	-0.08	Scour	-0.03	-0.41	-0.41	Scour	9.885	
9.696	0.28	0.25	0.20	0.42	0.90	2.84	3.08	3.09	3.11	3.11	3.12	3.13	3.14	3.14	3.14	3.15	3.16	3.15	3.21	3.21	Deposition	3.21	0.20	3.21	Deposition	9.696	D/S Glendale Airport
9.435	0.05	0.11	0.15	0.19	0.16	-0.11	-0.10	-0.12	-0.12	-0.12	-0.14	-0.15	-0.16	-0.18	-0.19	-0.21	-0.22	-0.21	-0.22	-0.22	Scour	0.19	-0.22	-0.22	Scour	9.435	U/S Camelback Road
8.992	-0.11	-0.12	-0.12	-0.20	-0.32	-1.33	-1.37	-1.36	-1.37	-1.37	-1.37	-1.36	-1.36	-1.36	-1.35	-1.35	-1.36	-1.37	-1.40	-1.40	Scour	-0.11	-1.40	-1.4	Scour	8.992	
8.768	-0.63	-0.77	-0.78	-0.87	-0.91	-2.40	-2.43	-2.41	-2.40	-2.43	-2.45	-2.46	-2.47	-2.49	-2.50	-2.51	-2.53	-2.55	-2.53	-2.53	Scour	-0.63	-2.55	-2.55	Scour	8.768	
8.433	0.04	-0.05	-0.25	-0.50	-0.50	-0.49	-0.49	-0.49	-0.49	-0.49	-0.53	-0.58	-0.65	-0.72	-0.77	-0.82	-0.83	-0.83	-0.82	-0.82	Scour	0.04	-0.83	-0.83	Scour	8.433	
8.198	-0.01	-0.04	-0.14	-0.26	-0.23	0.05	0.01	0.01	0.01	0.00	-0.06	-0.11	-0.14	-0.15	-0.15	-0.14	-0.12	-0.11	-0.09	-0.08	Scour	0.05	-0.26	-0.26	Scour	8.198	
8.105	-0.25	-0.24	-0.08	-0.16	-0.12	0.33	0.31	0.31	0.31	0.33	0.45	0.56	0.68	0.74	0.75	0.67	0.59	0.51	0.43	0.43	Deposition	0.75	-0.25	0.75	Deposition	8.105	
8.000	0.92	0.96	1.10	1.28	1.26	1.52	1.51	1.51	1.51	1.52	1.55	1.58	1.60	1.63	1.64	1.64	1.61	1.57	1.54	1.54	Deposition	1.64	0.92	1.64	Deposition	8.000	
7.990	0.86	0.87	1.02	1.16	1.14	1.41	1.40	1.39	1.40	1.38	1.33	1.35	1.36	1.39	1.42	1.46	1.47	1.46	1.42	1.42	Deposition	1.47	0.86	1.47	Deposition	7.990	Indian School Road
7.988	0.23	0.41	0.59	0.97	0.96	1.19	1.19	1.19	1.19	1.19	1.18	1.18	1.18	1.18	1.19	1.21	1.22	1.22	1.21	1.21	Deposition	1.22	0.23	1.22	Deposition	7.988	Grade control structure
7.490	-0.09	-0.11	-0.16	-0.45	-0.57	-0.61	-0.61	-0.61	-0.61	-0.61	-0.65	-0.69	-0.73	-0.76	-0.78	-0.79	-0.78	-0.77	-0.76	-0.76	Scour	-0.09	-0.79	-0.79	Scour	7.490	
6.990	0.00	-0.31	-0.40	-0.58	-0.61	-0.65	-0.66	-0.66	-0.66	-0.66	-0.67	-0.66	-0.67	-0.65	-0.67	-0.66	-0.67	-0.67	-0.67	-0.67	Scour	0.00	-0.67	-0.67	Scour	6.990	
6.930	0.10	-0.04	-0.18	-0.17	-0.19	-0.20	-0.20	-0.19	-0.19	-0.20	-0.22	-0.20	-0.30	-0.23	-0.27	-0.26	-0.27	-0.25	-0.22	-0.22	Scour	0.10	-0.30	-0.3	Scour	6.930	
6.910	-0.43	-0.40	-0.49	-0.44	-0.42	-0.49	-0.49	-0.46	-0.43	-0.59	-0.67	-0.67	-0.67	-0.67	-0.67	-0.65	-0.57	-0.48	-0.40	-0.40	Scour	-0.40	-0.67	-0.67	Scour	6.910	
6.890	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.86	0.00	1.46	0.00	1.12	0.00	0.36	0.10	0.05	0.00	No change	1.46	0.00	1.46	Deposition	6.890	
6.888	-1.49	-1.49	-1.48	-1.46	-1.47	-1.53	-1.53	-1.53	-1.53	-1.53	-1.53	-1.53	-1.53	-1.52	-1.52	-1.51	-1.51	-1.51	-1.51	-1.51	Scour	-1.46	-1.53	-1.53	Scour	6.888	
6.820	0.13	0.29	0.26	-0.26	-0.31	-0.29	-0.29	-0.30	-0.31	-0.29	-0.32	-0.31	-0.34	-0.32	-0.34	-0.30	-0.32	-0.32	-0.34	-0.34	Scour	0.29	-0.34	-0.34	Scour	6.820	
6.430	-0.06	-0.13	-0.17	-0.23	-0.33	-0.36	-0.36	-0.35	-0.35	-0.35	-0.35	-0.34	-0.35	-0.35	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	Scour	-0.06	-0.36	-0.36	Scour	6.430	
6.070	0.25	0.40	0.50	0.77	0.80	0.77	0.77	0.77	0.77	0.77	0.76	0.75	0.72	0.70	0.68	0.67	0.67	0.68	0.68	0.68	Deposition	0.80	0.25	0.8	Deposition	6.070	
6.068	0.32	0.45	0.54	0.78	0.81	0.74	0.74	0.74	0.74	0.74	0.73	0.72	0.69	0.67	0.65	0.64	0.64	0.64	0.65	0.65	Deposition	0.81	0.32	0.81	Deposition	6.068	
5.900	-0.03	0.02	0.07	0.36	0.43	0.43	0.42	0.42	0.42	0.42	0.42	0.42	0.41	0.38	0.37	0.37	0.37	0.36	0.35	0.35	Deposition	0.43	-0.03	0.43	Deposition	5.900	Grade control structure
5.750	0.08	0.09	0.16	0.43	0.53	0.57	0.56	0.56	0.55	0.54	0.51	0.48	0.45	0.42	0.40	0.40	0.40	0.41	0.41	0.41	Deposition	0.57	0.08	0.57	Deposition	5.750	
5.689	0.28	0.48	0.62	0.99	1.09	1.15	1.14	1.14	1.14	1.13	1.11	1.09	1.06	1.03	1.00	0.99	0.99	0.99	0.99	0.99	Deposition	1.15	0.28	1.15	Deposition	5.689	McDowlell Road
5.380	-0.35	-0.49	-0.59	-0.67	-0.63	-0.61	-0.61	-0.60	-0.60	-0.60	-0.59	-0.60	-0.63	-0.64	-0.65	-0.65	-0.65	-0.66	-0.65	-0.65	Scour	-0.35	-0.67	-0.67	Scour	5.380	
5.290	-0.16	-0.34	-0.40	-0.36	-0.31	-0.30	-0.31	-0.30	-0.30	-0.31	-0.38	-0.42	-0.39	-0.42	-0.44	-0.46	-0.46	-0.44	-0.40	-0.40	Scour	-0.16	-0.46	-0.46	Scour	5.290	
5.203	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.19	0.00	0.29	0.00	0.25	0.00	0.07	0.02	0.01	0.00	No change	0.29	0.00	0.29	Deposition	5.203	
5.201	0.96	0.09	0.05	0.04	0.09	0.09	0.09	0.03	0.00	0.26	0.00	0.95	0.01	1.16	0.01	0.50	0.00	0.00	0.00	0.04	Deposition	1.16	0.00	1.16	Deposition	5.201	
5.150	-0.37	-0.38	-0.58	-1.87	-1.93	-2.06	-2.08	-2.07	-2.08	-2.09	-2.09	-2.09	-2.09	-2.08	-2.05	-2.01	-2.04	-2.04	-2.06	-2.06	Scour	-0.37	-2.09	-2.09	Scour	5.150	Grade control structure
4.790	-0.19	-0.16	0.00	0.83	1.05	1.69	1.72	1.72	1.72	1.72	1.84	1.86	2.04	2.05	2.17	2.13	2.18	2.15	2.08	2.08	Deposition	2.18	-0.19	2.18	Deposition	4.790	
4.754	1.65	1.83	2.01	2.73	2.94	3.47	3.49	3.49	3.48	3.49	3.51	3.55	3.60	3.67	3.73	3.74	3.74	3.72	3.67	3.67	Deposition	3.74	1.65	3.74	Deposition	4.754	
4.700	0.53	0.90	1.16	2.13	2.36	2.90	2.93	2.93	2.93	2.93	2.93	2.94	2.95	2.98	3.01	3.06	3.08	3.10	3.09	3.09	Deposition	3.10	0.53	3.1	Deposition	4.700	
4.300	0.05	0.17	0.28	1.09	1.37	1.80	1.82	1.82	1.83	1.82	1.73	1.65	1.56	1.48	1.44	1.44	1.45	1.49	1.57	1.57	Deposition	1.83	0.05	1.83	Deposition	4.300	
4.094	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.13	0.00	0.22	0.00	0.16	0.00	0.05	0.01	0.01	0.00	No change	0.22	0.00	0.22	Deposition	4.094	
4.092	0.07	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.00	0.05	0.00	0.20	0.00	0.24	0.00	0.11	0.00	0.00	0.00	0.01	Deposition	0.24	0.00	0.24	Deposition	4.092	Grade control structure
3.767	-0.38	-0.95	-1.07	-1.75	-1.77	-1.68	-1.66	-1.66	-1.66	-1.67	-1.51	-1.51	-1.32	-1.36	-1.18	-1.19	-1.13	-1.14	-1.25	-1.26	Scour	-0.38	-1.77	-1.77	Scour	3.767	
3.757	-0.08	-0.17	-0.26	-1.20	-1.24	-1.07	-1.05	-1.07	-1.08	-1.05	-1.05	-1.01	-0.99	-0.91	-0.83	-0.72	-0.64	-0.59	-0.76	-0.77	Scour	-0.08	-1.24	-1.24	Scour	3.757	
3.734	-0.53	-0.48	-0.57	-1.43	-1.43	-1.27	-1.25	-1.32	-1.35	-1.26	-1.07	-1.02	-0.99	-0.92	-0.87	-0.84	-0.81	-0.79	-1.09	-1.08	Scour	-0.48	-1.43	-1.43	Scour	3.734	
3.729	-0.28	-0.40	-0.65	-1.32	-1.32	-1.17	-1.15	-1.16	-1.17	-1.17	-1.16	-1.14	-1.12	-1.09	-1.06	-1.03	-1.01	-0.99	-0.97	-0.97	Scour	-0.28	-1.32	-1.32	Scour	3.729	
3.430	-0.27	-0.20	-0.23	0.03	0.12	0.40	0.42	0.44	0.46	0.44	0.36	0.30	0.25	0.21	0.21	0.23	0.24	0.25	0.42	0.43	Deposition	0.46	-0.27	0.46	Deposition	3.430	
3.370	0.77	1.09	1.07	1.38	1.48	1.76	1.79	1.79	1.78	1.76	1.67	1.61	1.57	1.53	1.49	1.47	1.47	1.48	1.54	1.54	Deposition	1.79	0.77	1.79	Deposition	3.370	
3.270	0.09	0.23	0.31	0.68	0.79	0.98	0.99	0.99	1.00	1.00	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.00	1.00	1.00	Deposition	1.02	0.09	1.02	Deposition	3.270	
2.800	0.01	0.02	0.02	-0.13	-0.46	-0.57	-0.57	-0.57	-0.57	-0.56	-0.54	-0.51	-0.47	-0.44	-0.43	-0.43	-0.44	-0.46	-0.49	-0.49	Scour	0.02	-0.57	-0.57	Scour	2.800	
2.600	-0.08	-0.15	-0.23	-0.89	-1.19	-1.58	-1.59	-1.59	-1.59	-1.60	-1.61	-1.64	-1.68	-1.71	-1.73	-1.73	-1.73	-1.73	-1.72	-1.72	Scour	-0.08	-1.73	-1.73	Scour	2.600	
2.020	-0.26	-0.37	-0.47	-0.74	-0.89	-1.43	-1.44	-1.44	-1.44	-1.45	-1.44	-1.43	-1.41	-1.40	-1.39	-1.39	-1.39	-1.39	-1.39	-1.39	Scour	-0.26	-1.45	-1.45	Scour	2.020	
1.710	0.36	0.53	0.64	0.59	0.32	-0.18	-0.24	-0.24	-0.25	-0.25	-0.22	-0.20	-0.18	-0.16	-0.15	-0.15	-0.15	-0.17	-0.21	-0.21	Scour	0.64	-0.25	0.64	Deposition	1.710	
1.330	-0.22	-0.43	-0.63	-1.70	-2.22	-3.39	-3.44	-3.44	-3.44	-3.45	-3.48	-3.51	-3.53	-3.55	-3.58	-3.61	-3.63	-3.62	-3.61	-3.61	Scour	-0.22	-3.63	-3.63	Scour	1.330	
0.730	-0.01	-0.04	-0.07	-0.21	-0.30	-0.65	-0.67	-0.67	-0.67	-0.68	-0.68	-0.68	-0.73	-0.77	-0.77	-0.76	-0.76	-0.75	-0.75	-0.75	Scour	-0.01	-0.77	-0.77	Scour	0.730	
0.630	-0.46	-0.54	-0.61	-0.75	-0.81	-1.05	-1.07	-1.07	-1.07	-1.07	-1.10	-1.10	-1.04	-0.98	-0.99	-1.02	-1.03	-1.04	-1.04	-1.04	Scour	-0.46	-1.10	-1.1	Scour	0.630	
0.440	0.12	0.18	0.22	0.21	0.17	0.02	0.02	0.01	0.01	0.01	0.03	0.04	0.07	0.10	0.11	0.11	0.11	0.09	0.05	0.05	Deposition	0.22	0.01	0.22	Deposition	0.440	
0.160	-0.04	-0.01	-0.02	-0.03	-0.05	-0.08	-0.08	-0.07	-0.07	-0.08	-0.13	-0.18	-0.27	-0.36	-0.38	-0.36	-0.36	-0.31	-0.20	-0.19	Scour	-0.01	-0.38	-0.38	Scour	0.160	Gila River confluence

Table 5. Comparison of Bed Change Conditions at End of Hydrology
Original vs Modified Existing Condtions HEC-6 Models.

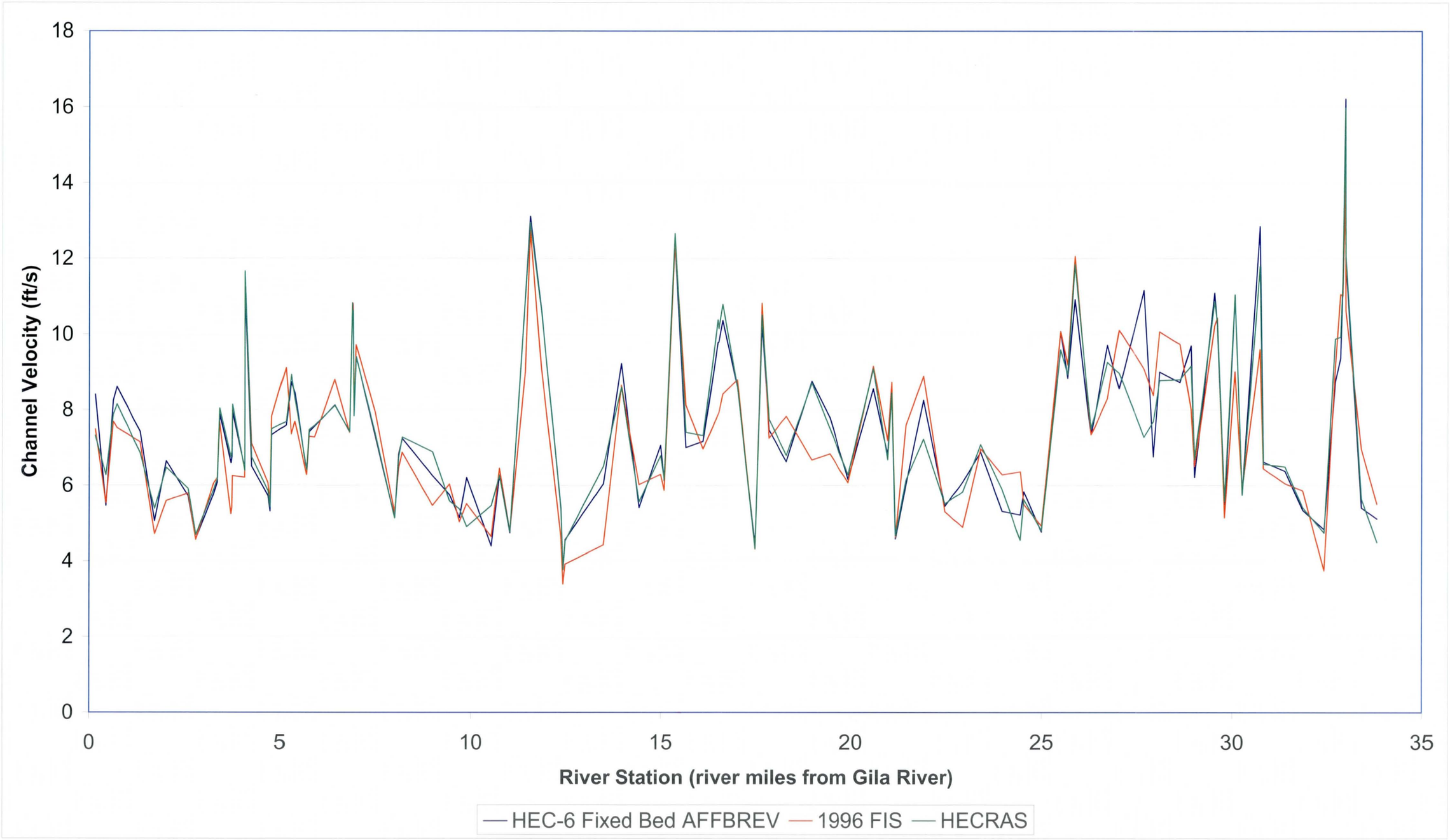
Section Number	Orginial Ex Cond HEC-6		Modified Ex Con HEC-6		Reference Location
	31.10 Bed Change (ft)	Condition at end of 31.10 days	31.10 Bed Change (ft)	Condition at end of 31.10 days	
33.820	0.64	**Deposition**	0.65	Deposition	
33.410	0.02	**Deposition**	0.32	Deposition	
32.998	-4.65	**Scour**	-1.92	Scour	Morgan City Wash
32.984	-8.93	**Scour**	**0.00**	No change	State Rte 74 **
32.920	-3.21	**Scour**	-6.60	Scour	
32.860	-1.12	**Scour**	-3.02	Scour	
32.720	2.52	**Deposition**	1.18	Deposition	
32.430	-0.07	**Scour**	0.22	Deposition	
31.860	-0.01	**Scour**	-0.01	Scour	
31.390	-0.59	**Scour**	-0.32	Scour	
30.820	-3.72	**Scour**	-0.82	Scour	
30.730	-2.83	**Scour**	-1.47	Scour	
30.260	0.92	**Deposition**	**0.00**	No change	
30.070	-3.78	**Scour**	-1.68	Scour	
29.800	3.53	**Deposition**	0.90	Deposition	
29.611	-2.48	**Scour**	-3.04	Scour	
29.540	-0.27	**Scour**	-1.84	Scour	
29.040	-0.23	**Scour**	-0.29	Scour	
28.950	-0.59	**Scour**	-0.51	Scour	
28.670	-0.83	**Scour**	0.41	Deposition	
28.120	-0.79	**Scour**	-0.77	Scour	
27.940	-0.87	**Scour**	-2.96	Scour	
27.680	0.1	**Deposition**	-3.00	Scour	
27.030	1.75	**Deposition**	0.39	Deposition	
26.730	-1.75	**Scour**	-0.14	Scour	
26.290	-4.57	**Scour**	-1.09	Scour	
25.860	-1.14	**Scour**	-1.04	Scour	
25.666	0.17	**Deposition**	0.47	Deposition	
25.478	-0.93	**Scour**	-0.04	Scour	Jomax Road
24.996	-0.17	**Scour**	0.58	Deposition	
24.543	1.38	**Deposition**	0.48	Deposition	
24.449	1.1	**Deposition**	0.31	Deposition	Happy Valley Road
23.974	1.07	**Deposition**	0.56	Deposition	
23.692	-0.34	**Scour**	-0.18	Scour	
23.409	0.32	**Deposition**	0.09	Deposition	Pinnacle Peak Road
22.935	0.5	**Deposition**	0.46	Deposition	
22.462	-0.2	**Scour**	0.25	Deposition	
21.893	-0.15	**Scour**	0.55	Deposition	
21.431	2.7	**Deposition**	0.51	Deposition	
21.157	0.71	**Deposition**	1.36	Deposition	
21.061	0.18	**Deposition**	0.34	Deposition	Beardsley Road
20.958	0.07	**Deposition**	0.29	Deposition	
20.579	-0.06	**Scour**	-0.01	Scour	
19.920	1.42	**Deposition**	0.26	Deposition	Union Hills Road
19.446	-0.1	**Scour**	-0.31	Scour	
19.066	-0.78	**Scour**	-1.01	Scour	
18.962	0.51	**Deposition**	0.20	Deposition	Bell Road
18.275	0.07	**Deposition**	0.19	Deposition	
17.821	-0.9	**Scour**	-1.69	Scour	
17.638	-2.72	**Scour**	-3.29	Scour	
17.458	1.83	**Deposition**	1.24	Deposition	
16.990	0.15	**Deposition**	-0.09	Scour	
16.612	-1.3	**Scour**	-1.47	Scour	
16.506	-0.83	**Scour**	-1.00	Scour	Grand Avenue
16.482	-0.75	**Scour**	-1.41	Scour	
16.099	-0.13	**Scour**	-0.29	Scour	
15.719	0.18	**Deposition**	-0.01	Scour	Cactus Road - El Mirage Landfill
15.374	-0.9	**Scour**	-1.51	Scour	
15.094	0.1	**Deposition**	0.11	Deposition	
15.000	-2.21	**Scour**	-1.74	Scour	
14.430	-3.97	**Scour**	-3.90	Scour	
13.952	-2.17	**Scour**	-2.06	Scour	
13.467	0.25	**Deposition**	0.32	Deposition	Olive Ave
13.007	-0.27	**Scour**	-0.23	Scour	
12.816	0.75	**Deposition**	0.84	Deposition	
12.470	0.32	**Deposition**	0.16	Deposition	
12.420	1.3	**Deposition**	0.84	Deposition	
12.359	0.48	**Deposition**	-0.02	Scour	
11.847	-0.72	**Scour**	-1.54	Scour	
11.557	-0.17	**Scour**	-0.70	Scour	
11.428	0.8	**Deposition**	0.55	Deposition	Glendale Ave
11.029	2.23	**Deposition**	2.08	Deposition	
10.752	1.04	**Deposition**	0.89	Deposition	
10.538	0.75	**Deposition**	0.58	Deposition	
10.343	-0.19	**Scour**	-0.24	Scour	
9.885	-0.05	**Scour**	-0.08	Scour	
9.696	0.31	**Deposition**	3.21	Deposition	D/S Glendale Airport
9.435	0.55	**Deposition**	-0.22	Scour	U/S Camelback Road
8.992	-0.58	**Scour**	-1.40	Scour	
8.768	-1.35	**Scour**	-2.53	Scour	
8.433	-0.19	**Scour**	-0.82	Scour	
8.198	0.2	**Deposition**	-0.08	Scour	
8.105	0.36	**Deposition**	0.43	Deposition	
8.000	1.77	**Deposition**	1.54	Deposition	
7.990	1.64	**Deposition**	1.42	Deposition	Indian School Road
7.988	1.36	**Deposition**	1.21	Deposition	Grade control structure
7.490	-0.72	**Scour**	-0.76	Scour	
6.990	-0.99	**Scour**	-0.67	Scour	
6.930	-0.17	**Scour**	-0.22	Scour	
6.910	-0.65	**Scour**	-0.40	Scour	
6.890	**0**	**No change**	**0.00**	No change	
6.888	-1.49	**Scour**	-1.51	Scour	
6.820	-0.2	**Scour**	-0.34	Scour	
6.430	-0.19	**Scour**	-0.36	Scour	
6.070	0.79	**Deposition**	0.68	Deposition	
6.068	0.78	**Deposition**	0.65	Deposition	
5.900	0.43	**Deposition**	0.35	Deposition	Grade control structure
5.750	0.48	**Deposition**	0.41	Deposition	
5.689	1.06	**Deposition**	0.99	Deposition	McDowlell Road
5.380	-0.62	**Scour**	-0.65	Scour	
5.290	-0.35	**Scour**	-0.40	Scour	
5.203	**0**	**No change**	**0.00**	No change	
5.201	0.03	**Deposition**	0.04	Deposition	
5.150	-2.6	**Scour**	-2.06	Scour	Grade control structure
4.790	2.16	**Deposition**	2.08	Deposition	
4.754	3.67	**Deposition**	3.67	Deposition	
4.700	3.08	**Deposition**	3.09	Deposition	
4.300	1.54	**Deposition**	1.57	Deposition	
4.094	**0**	**No change**	**0.00**	No change	
4.092	0.01	**Deposition**	0.01	Deposition	Grade control structure
3.767	-1.41	**Scour**	-1.26	Scour	
3.757	-0.77	**Scour**	-0.77	Scour	
3.734	-1.1	**Scour**	-1.08	Scour	
3.729	-0.94	**Scour**	-0.97	Scour	
3.430	0.47	**Deposition**	0.43	Deposition	
3.370	1.57	**Deposition**	1.54	Deposition	
3.270	1.02	**Deposition**	1.00	Deposition	
2.800	-0.53	**Scour**	-0.49	Scour	
2.600	-1.74	**Scour**	-1.72	Scour	
2.020	-1.34	**Scour**	-1.39	Scour	
1.710	-0.22	**Scour**	-0.21	Scour	
1.330	-3.6	**Scour**	-3.61	Scour	
0.730	-0.75	**Scour**	-0.75	Scour	
0.630	-1.17	**Scour**	-1.04	Scour	
0.440	-0.26	**Scour**	0.05	Deposition	
0.160	0.44	**Deposition**	-0.19	Scour	Gila River confluence

** changed sediment reservoir depth at bridge to zero due to high bedrock.

Table 6. Comparison of Channel Thalweg Elevations.
Original Existing Condtions HEC-6 vs Modified Existing Conditions HEC-6

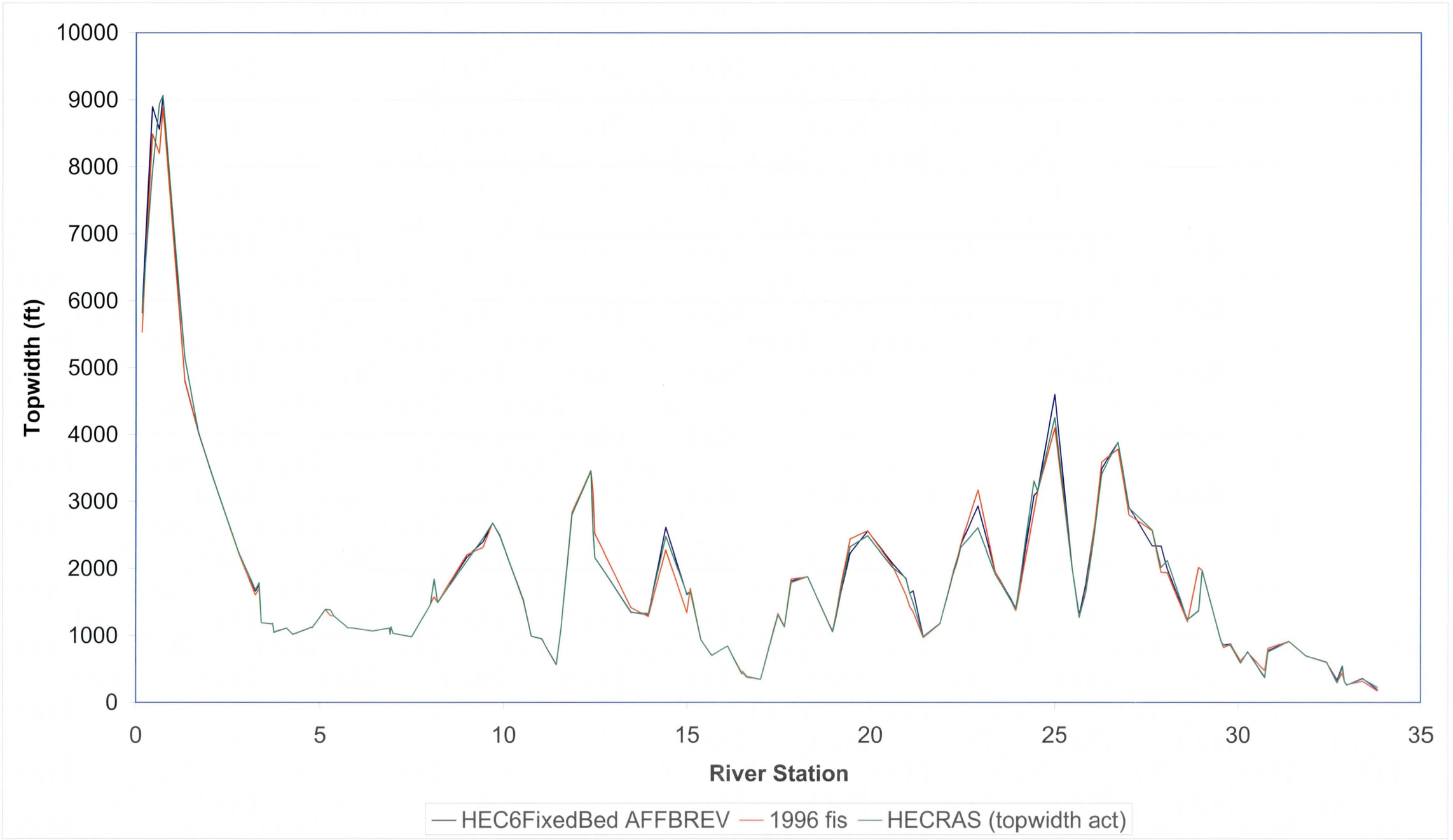
Cross Section	Initial Thalweg	Original HEC-6 Time 1 day Elevation	Modified HEC-6 1.00 THALWEG (ft)	Original HEC-6 Time 2 day Elevation	Modified HEC-6 2.00 THALWEG (ft)	Original HEC-6 Time 30 day Elevation	Modified HEC-6 30.00 THALWEG (ft)	Original HEC-6 Time 30.37 day Elevation	Modified HEC-6 30.37 THALWEG (ft)	Original HEC-6 Time 31.10 day Elevation	Modified HEC-6 31.10 THALWEG (ft)
33.820	1387.40	1387.52	1387.47	1387.52	1387.50	1387.93	1387.98	1387.80	1387.90	1388.04	1388.05
33.410	1386.90	1386.97	1386.99	1386.98	1387.00	1386.92	1387.24	1386.93	1387.25	1386.92	1387.22
32.998	1381.40	1380.45	1380.70	1380.24	1380.57	1377.03	1379.50	1376.95	1379.45	1376.75	1379.48
32.984	1378.40	1377.26	1378.49	1376.10	1378.43	1369.21	1378.41	1369.67	1379.10	1369.47	1378.40
32.920	1381.00	1380.12	1379.62	1379.97	1376.73	1377.63	1374.44	1377.74	1374.37	1377.79	1374.40
32.860	1374.90	1373.85	1373.58	1373.94	1373.24	1373.92	1371.91	1373.96	1371.96	1373.78	1371.88
32.720	1363.80	1363.68	1363.56	1363.85	1363.82	1366.29	1364.98	1366.15	1364.86	1366.32	1364.98
32.430	1363.80	1363.79	1363.78	1363.65	1363.71	1363.70	1364.03	1363.75	1364.03	1363.73	1364.02
31.860	1362.00	1361.99	1361.99	1362.03	1362.03	1361.96	1361.97	1361.98	1361.99	1361.99	1361.99
31.390	1354.70	1354.23	1354.42	1354.19	1354.45	1354.12	1354.37	1354.11	1354.37	1354.11	1354.38
30.820	1345.20	1344.46	1344.72	1344.00	1344.53	1341.45	1344.37	1341.45	1344.36	1341.48	1344.38
30.730	1345.20	1343.89	1344.33	1343.61	1344.11	1342.43	1343.74	1342.32	1343.72	1342.37	1343.73
30.260	1338.90	1341.73	1339.51	1341.77	1339.30	1340.06	1338.92	1340.11	1338.93	1339.82	1338.90
30.070	1334.00	1333.09	1334.28	1332.75	1333.94	1330.20	1332.41	1330.18	1332.38	1330.22	1332.32
29.800	1327.70	1331.49	1328.50	1329.81	1328.79	1331.18	1328.61	1331.13	1328.60	1331.23	1328.60
29.611	1328.90	1328.40	1328.09	1327.48	1327.99	1326.62	1325.91	1326.57	1325.96	1326.42	1325.86
29.540	1326.70	1326.80	1326.60	1326.93	1326.77	1326.44	1324.99	1326.40	1324.91	1326.43	1324.86
29.040	1317.20	1317.37	1317.21	1317.20	1317.15	1316.97	1316.93	1317.03	1316.96	1316.97	1316.91
28.950	1312.30	1311.97	1311.84	1312.01	1311.81	1311.72	1311.71	1311.71	1311.67	1311.71	1311.79
28.670	1311.50	1311.60	1311.68	1311.46	1311.58	1310.66	1311.96	1310.65	1311.93	1310.67	1311.91
28.120	1304.60	1304.68	1304.70	1304.60	1304.70	1303.83	1303.87	1303.82	1303.86	1303.81	1303.83
27.940	1299.10	1299.01	1299.07	1298.76	1299.07	1298.16	1296.20	1298.16	1296.18	1298.23	1296.14
27.680	1294.70	1294.80	1294.61	1294.84	1294.47	1294.89	1291.72	1294.83	1291.73	1294.80	1291.70
27.030	1281.20	1281.16	1281.25	1281.31	1281.39	1280.83	1281.63	1280.80	1281.58	1282.95	1281.59
26.730	1279.80	1279.84	1279.79	1279.89	1279.80	1278.04	1279.67	1278.04	1279.66	1278.05	1279.66
26.290	1271.60	1271.49	1271.51	1271.35	1271.45	1267.10	1270.53	1267.09	1270.53	1267.03	1270.51
25.860	1260.00	1259.81	1259.91	1259.95	1259.90	1259.06	1259.01	1259.01	1259.01	1258.86	1258.96
25.666	1255.40	1256.13	1255.83	1256.13	1255.91	1255.57	1255.92	1255.62	1255.84	1255.57	1255.87
25.478	1253.90	1253.47	1253.91	1253.46	1254.01	1253.01	1253.97	1252.94	1253.91	1252.97	1253.86
24.996	1246.30	1246.76	1246.32	1247.12	1246.38	1246.01	1246.93	1246.16	1246.93	1246.13	1246.88
24.543	1235.60	1237.36	1235.66	1237.30	1235.67	1237.32	1236.04	1237.04	1236.04	1236.98	1236.08
24.449	1235.00	1234.89	1234.98	1234.87	1235.01	1236.18	1235.33	1236.23	1235.34	1236.10	1235.31
23.974	1227.50	1227.66	1227.53	1227.60	1227.55	1228.53	1228.08	1228.55	1228.07	1228.57	1228.06
23.692	1223.80	1223.64	1223.72	1223.60	1223.72	1223.51	1223.64	1223.49	1223.64	1223.46	1223.62
23.409	1216.70	1216.81	1216.68	1216.83	1216.68	1217.03	1216.81	1217.00	1216.78	1217.02	1216.79
22.935	1209.00	1209.45	1209.02	1209.45	1209.01	1209.51	1209.50	1209.45	1209.49	1209.50	1209.46
22.462	1200.30	1200.32	1200.30	1200.33	1200.31	1200.10	1200.49	1200.08	1200.51	1200.10	1200.55
21.893	1187.40	1187.07	1187.38	1186.86	1187.36	1187.26	1188.03	1187.26	1188.03	1187.25	1187.95
21.431	1181.00	1181.65	1180.60	1181.87	1180.49	1183.46	1181.40	1183.53	1181.37	1183.70	1181.51
21.157	1176.60	1177.08	1177.13	1177.30	1177.24	1177.19	1177.71	1177.28	1177.88	1177.31	1177.96
21.061	1176.50	1176.65	1176.71	1176.67	1176.69	1176.64	1176.72	1176.57	1176.68	1176.68	1176.84
20.958	1176.60	1176.62	1176.68	1176.73	1176.75	1176.68	1176.83	1176.67	1176.86	1176.67	1176.89
20.579	1171.90	1171.85	1171.86	1171.87	1171.89	1171.80	1171.91	1171.79	1171.90	1171.84	1171.89
19.920	1162.60	1162.58	1162.59	1162.58	1162.59	1162.97	1162.87	1162.96	1162.87	1164.02	1162.86
19.446	1155.90	1155.84	1155.85	1155.83	1155.84	1155.69	1155.59	1155.73	1155.60	1155.80	1155.59
19.066	1149.40	1149.08	1149.09	1149.01	1149.04	1148.54	1148.38	1148.56	1148.37	1148.62	1148.39
18.962	1146.20	1146.25	1146.22	1146.23	1146.17	1146.68	1146.47	1146.66	1146.40	1146.71	1146.40
18.275	1130.10	1130.18	1130.19	1130.17	1130.18	1130.15	1130.24	1130.19	1130.30	1130.17	1130.29
17.821	1130.00	1130.00	1130.00	1130.01	1129.98	1129.29	1128.48	1129.15	1128.35	1129.10	1128.31
17.638	1130.00	1128.16	1128.57	1127.91	1127.71	1127.29	1126.57	1127.29	1126.62	1127.28	1126.71
17.458	1116.50	1117.11	1116.67	1117.21	1116.90	1118.13	1117.67	1118.26	1117.73	1118.33	1117.74
16.990	1110.90	1111.13	1110.85	1110.93	1110.78	1111.05	1110.82	1111.03	1110.80	1111.05	1110.81
16.612	1108.30	1108.27	1108.22	1108.15	1108.11	1107.16	1106.92	1106.84	1106.77	1107.00	1106.83
16.506	1105.40	1104.73	1104.75	1104.89	1104.82	1104.44	1104.31	1104.49	1104.35	1104.57	1104.40
16.482	1105.60	1105.56	1105.45	1105.45	1105.42	1104.85	1104.18	1104.85	1104.18	1104.85	1104.19
16.099	1100.80	1100.94	1100.90	1100.95	1100.75	1100.67	1100.54	1100.75	1100.56	1100.67	1100.51
15.719	1093.70	1094.02	1094.01	1094.04	1093.98	1093.92	1093.75	1093.87	1093.71	1093.88	1093.69
15.374	1093.80	1093.19	1093.25	1093.31	1093.31	1092.91	1092.24	1092.88	1092.23	1092.90	1092.29
15.094	1089.90	1090.23	1090.08	1090.38	1090.16	1090.01	1090.02	1090.01	1090.02	1090.00	1090.01
15.000	1088.80	1088.74	1088.80	1088.78	1088.83	1086.90	1087.13	1086.82	1087.09	1086.59	1087.06
14.430	1083.20	1083.13	1083.13	1082.92	1082.98	1079.17	1079.30	1079.20	1079.31	1079.23	1079.30
13.952	1073.30	1072.17	1072.26	1071.87	1071.91	1071.14	1071.29	1071.13	1071.25	1071.13	1071.24
13.467	1064.10	1064.75	1064.75	1065.00	1064.99	1064.38	1064.55	1064.38	1064.53	1064.35	1064.42
13.007	1062.00	1061.86	1061.86	1061.83	1061.83	1061.72	1061.76	1061.67	1061.71	1061.73	1061.77
12.816	1057.40	1057.84	1057.85	1057.83	1057.84	1058.46	1058.45	1058.28	1058.32	1058.15	1058.24
12.470	1054.90	1055.04	1055.10	1055.04	1055.09	1055.21	1055.13	1055.37	1055.30	1055.22	1055.06
12.420	1054.00	1055.23	1055.32	1055.57	1055.70	1055.87	1055.63	1055.76	1055.47	1055.30	1054.84
12.359	1051.70	1051.73	1051.77	1051.79	1051.88	1051.96	1051.88	1052.03	1051.60	1052.18	1051.68
11.847	1044.60	1044.35	1044.29	1044.37	1044.31	1044.00	1043.49	1043.89	1043.17	1043.88	1043.06
11.557	1041.70	1041.35	1041.34	1041.32	1041.29	1041.33	1041.11	1041.18	1041.06	1041.53	1041.00
11.428	1041.80	1041.66	1041.65	1041.72	1041.69	1042.87	1042.69	1042.77	1042.62	1042.60	1042.35
11.029	1034.70	1034.96	1034.78	1034.96	1034.86	1036.89	1036.86	1037.01	1036.89	1036.93	1036.78
10.752	1031.30	1031.45	1031.37	1031.48	1031.35	1032.30	1032.23	1032.29	1032.18	1032.34	1032.19
10.538	1031.20	1031.29	1031.24	1031.36	1031.28	1031.95	1031.82	1031.99	1031.84	1031.95	1031.78
10.343	1026.70	1026.54	1026.51	1026.50	1026.49	1026.51	1026.49	1026.47	1026.44	1026.51	1026.46
9.885	1021.10	1020.91	1020.72	1020.83	1020.72	1020.99	1021.02	1021.05	1021.05	1021.05	1021.02
9.696	1018.70	1018.73	1018.98	1018.63	1018.95	1019.02	1021.78	1019.04	1021.84	1019.01	1021.91
9.435	1015.20	1015.37	1015.25	1015.51	1015.31	1015.97	1015.10	1015.84	1015.04	1015.75	1014.98
8.992	1008.10	1008.03	1007.99	1008.01	1007.98	1007.51	1006.73	1007.55	1006.74	1007.52	1006.70
8.768	1008.40	1007.60	1007.77	1007.37	1007.63	1006.99	1005.97	1006.98	1005.93	1007.05	1005.87
8.433	1005.00	1005.08	1005.04	1004.99	1004.95	1004.86	1004.51	1004.77	1004.35	1004.81	1004.18
8.198	1001.50	1001.55	1001.49	1001.54	1001.46	1001.79	1001.51	1001.76	1001.36	1001.70	1001.42
8.105	1000.50	1000.23	1000.25	1000.32	1000.26	1000.83	1000.81	1000.96	1001.18	1000.86	1000.93
8.000	999.20	1000.17	1000.12	1000.25	1000.16	1000.95	1000.71	1001.06	1000.80	1000.97	1000.74
7.990	999.10	1000.03	999.96	1000.06	999.97	1000.71	1000.50	1000.64	1000.46	1000.74	1000.52
7.988	999.10	999.36	999.33	999.58	999.51	1000.47	1000.29	1000.48	1000.28	1000.46	1000.31
7.490	995.20	995.13	995.11	995.11	995.09	994.62	994.59	994.53	994.47	994.48	994.44
6.990	990.20	990.12	990.20	989.73	989.89	989.29	989.54	989.24	989.53	989.21	989.53
6.930	989.90	990.09	990.00	989.90	989.86	989.74	989.70	989.74	989.60	989.73	989.68
6.910	989.50	988.82	989.07	988.91	989.10	988.75	989.01	988.56	988.83	988.85	989.10
6.890	989.40	989.40	989.40	989.40	989.40	989.40	989.40	991.00	990.86	989.40	989.40
6.888	989.40	987.91	987.91	987.91	987.91	987.90	987.87	987.91	987.87	987.91	987.89
6.820	984.80	985.01	984.93	985.24	985.09	984.64	984.51	984.57	984.46	984.60	984.46
6.430	981.00	980.94	980.94	980.88	980.87	980.80	980.64	980.81	980.65	980.81	980.64
6.070	976.70	976.96	976.95	977.12	977.10	977.56	977.47	977.56	977.42	977.49	977.38
6.068	976.70	977.04	977.02	977.16	977.15	977.55	977.44	977.54	977.39	977.48	977.35
5.900	975.40	975.36	975.37	975.43	975.42	975.89	975.82	975.87	975.81	975.83	975.75
5.750	973.70	973.79	973.78	973.80	973.79	974.31	974.26	974.21	974.15	974.18	974.11
5.689	973.85	974.13	974.13	974.35	974.33	975.04	974.99	974.97	974.91	974.91	974.84
5.380	971.40	971.05	971.05	970.91	970.91	970.82	970.79	970.79	970.77	970.78	970.75
5.290	971.50	971.34	971.34	971.16	971.16	971.20	971.19	971.10	971.11	971.15	971.10
5.203	970.00	970.00	970.00	970.00	970.00	970.00	970.00	970.30	970.29	970.00	970.00
5.201	969.10	970.05	970.06	969.20	969.19	969.19	969.19	969.10	969.11	969.13	969.14
5.150	967.40	967.05	967.03	967.05	967.02	964.76	965.32	964.78	965.31	964.80	965.34
4.790	961.10	960.88	960.91	960.94	960.94	962.90	962.82	963.19	963.14	963.26	963.18
4.754	960.30	961.95	961.95	962.15	962.13	963.79	963.79	963.86	963.90	963.97	963.97
4.700	959.10	959.63	959.63	960.02	960.00	962.05	962.03	962.05	962.05	962.18	962.19
4.300	957.60	957.65	957.65	957.78	957.77	959.42	959.42	959.16	959.16	959.14	959.17
4.094	958.50	958.50	958.50	958.50	958.50	958.50	958.50	958.71	958.72	958.50	958.50
4.092	955.20	955.28	955.27	955.21	955.21	955.22	955.22	955.20	955.20	955.21	955.21
3.767	952.90	952.49	952.52	951.90	951.95	951.16	951.24	951.39	951.58	951.49	951.64
3.757	952.10	952.06	952.02	951.96	951.93	951.12	951.05	951.18	951.11	951.33	951.33
3.734	952.30	951.91	951.77	951.92	951.82	951.10	951.05	951.47	951.31	951.20	951.22
3.729	952.20	951.92	951.92	951.91	951.80	951.11	951.05	951.15	951.08	951.26	951.23
3.430	946.00	945.74	945.73	945.76	945.80	946.47	946.42	946.33	946.25	946.47	946.43
3.370	943.40	944.16	944.17	944.46	944.49	945.22	945.19	945.01	944.97	944.97	944.94
3.270	944.50	944.59	944.59	944.73	944.73	945.53	945.49	945.55	945.52	945.52	945.50
2.800	942.00	942.01	942.01	942.02	942.02	941.38	941.43	941.48	941.53	941.47	941.51
2.600	939.60	939.52	939.52	939.44	939.45	937.99	938.01	937.89	937.92	937.86	937.88
2.020	932.70	932.44	932.44	932.32	932.33	931.29	931.26	931.33	931.29	931.36	931.31
1.710	928.20	928.55	928.56	928.73	928.73	927.97	927.96	928.02	928.02	927.98	927.99
1.330	925.50	925.28	925.28	925.07	925.07	922.07	922.06	921.97	921.97	921.90	921.89
0.730	916.90	916.90	916.89	916.86	916.86	916.28	916.23	916.20	916.17	916.15	916.15
0.630	915.70	915.21	915.24	915.08	915.16	914.54	914.63	914.55	914.66	914.53	914.66
0.440	912.80	912.88	912.92	912.84	912.98	912.72	912.82	912.60	912.87	912.54	912.85
0.160	908.30	908.66	908.26	908.70	908.29	908.44	908.22	908.27	908.03	908.74	908.11

Figure 1. Channel Velocity Comparison Plot
HEC-6 Fixed Bed/1996 FIS/HECRAS converted



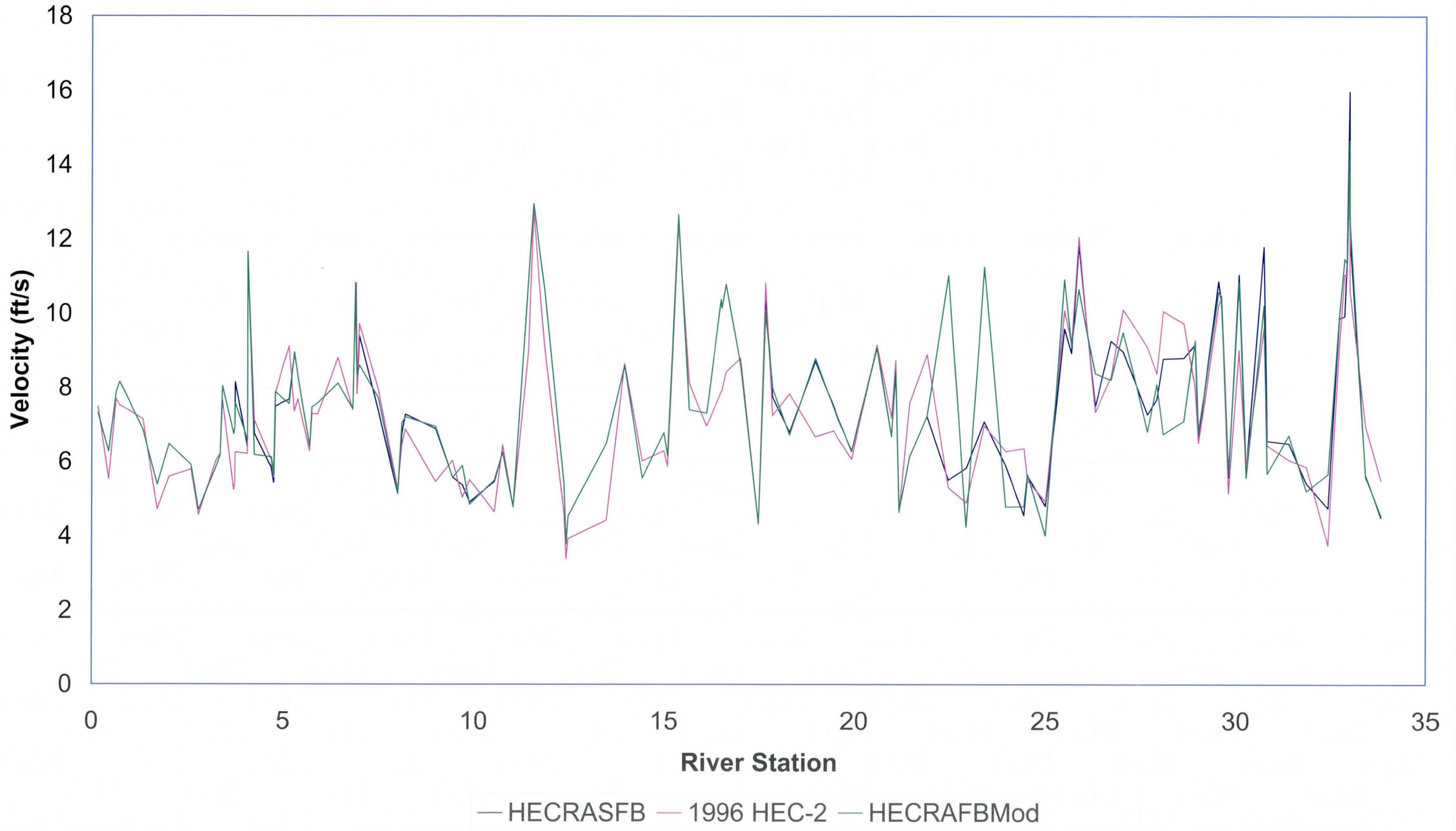
3/17/2002

Figure 2. Topwidth Comparison Plot
HEC-6 Fixed Bed/1996 FIS/HECRAS converted



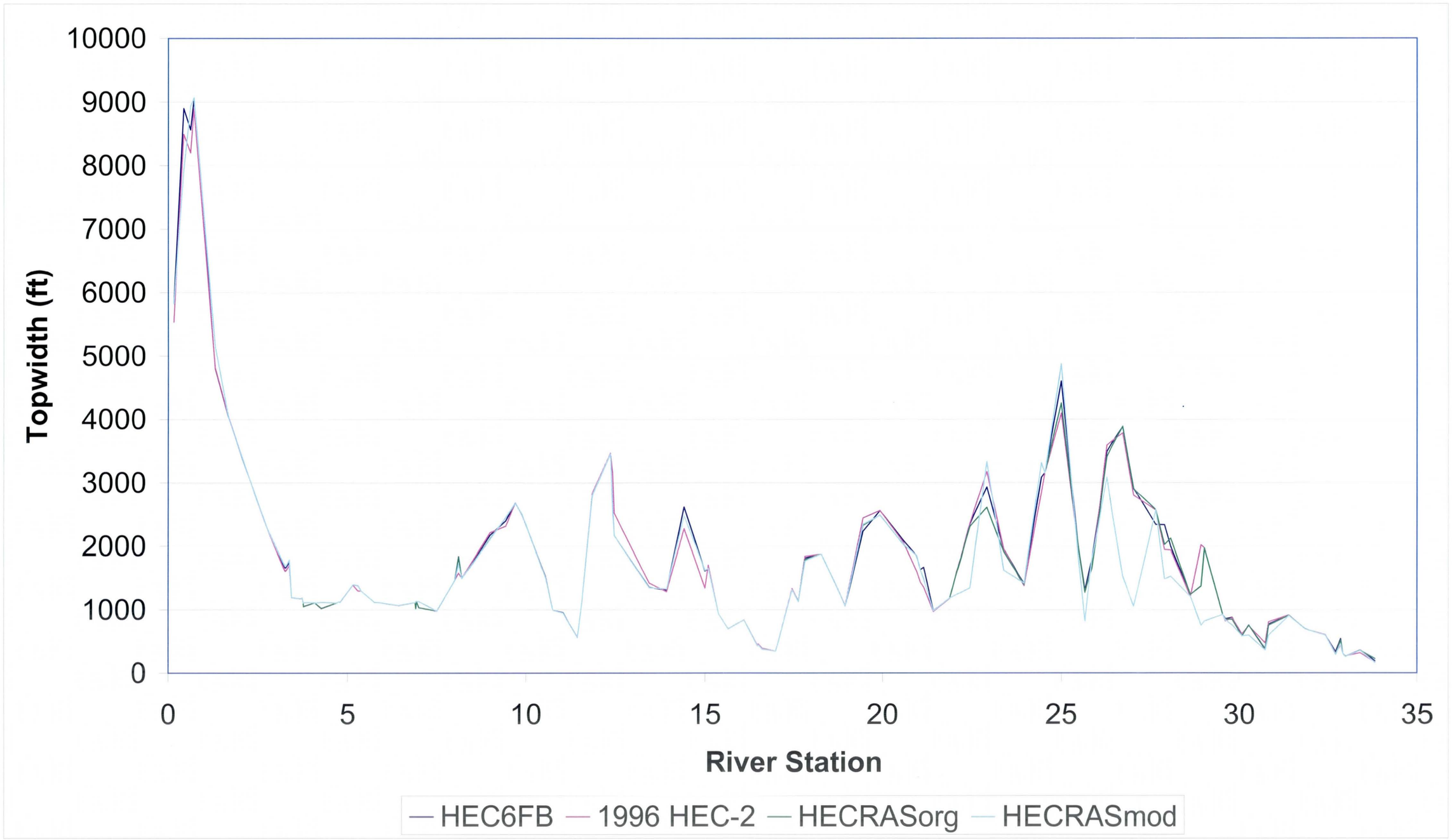
3/17/2002

Figure 3. Channel Velocity Comparison Plot
HECRasFCmodified



3/17/2002

Figure 4. Topwidth Comparison
HECRas modified fixed bed



3/17/2002

Figure 5. Comparison Plot of Channel Velocity for Original HEC-6 fixed bed versus Modified HEC-6 fixed bed models.

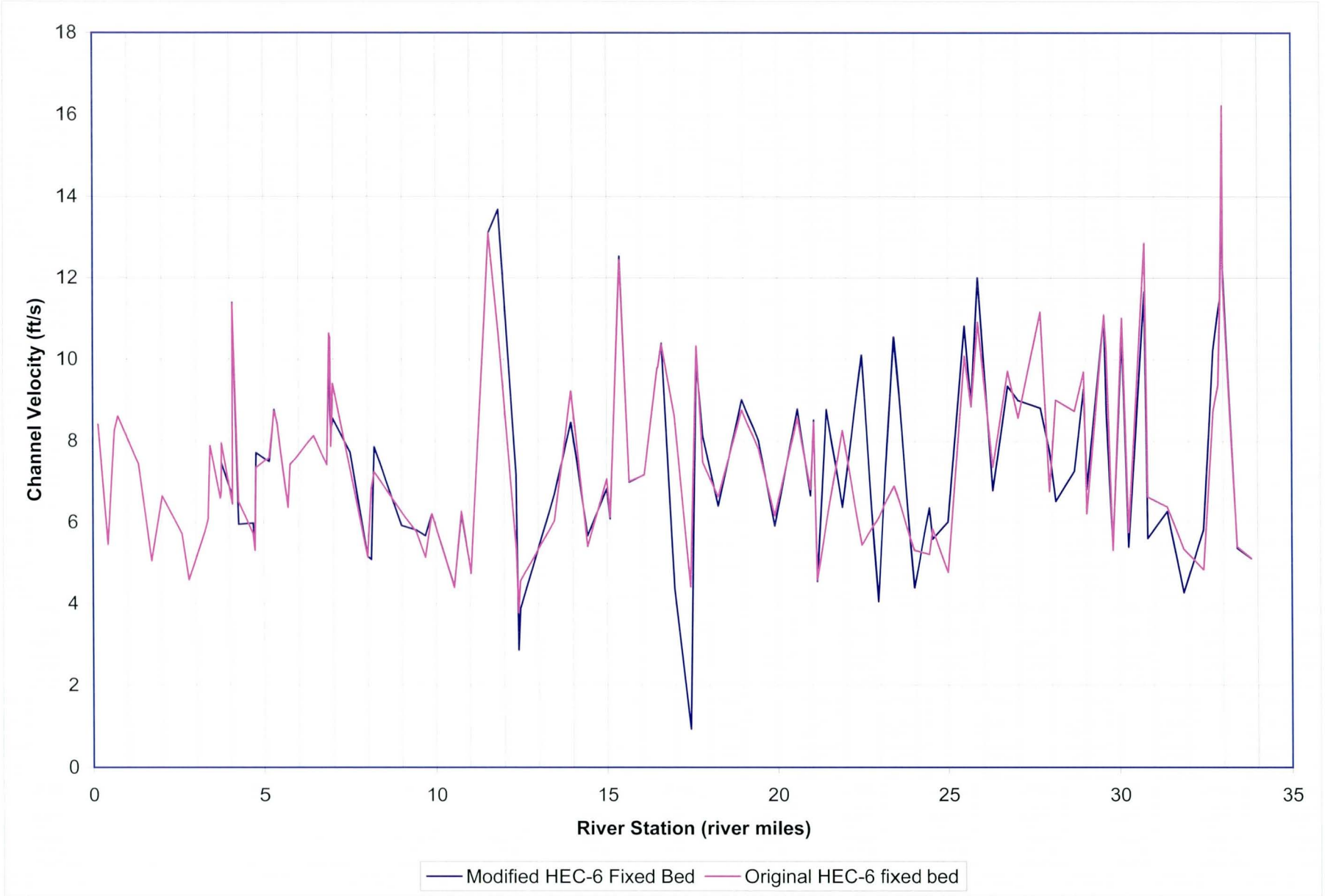
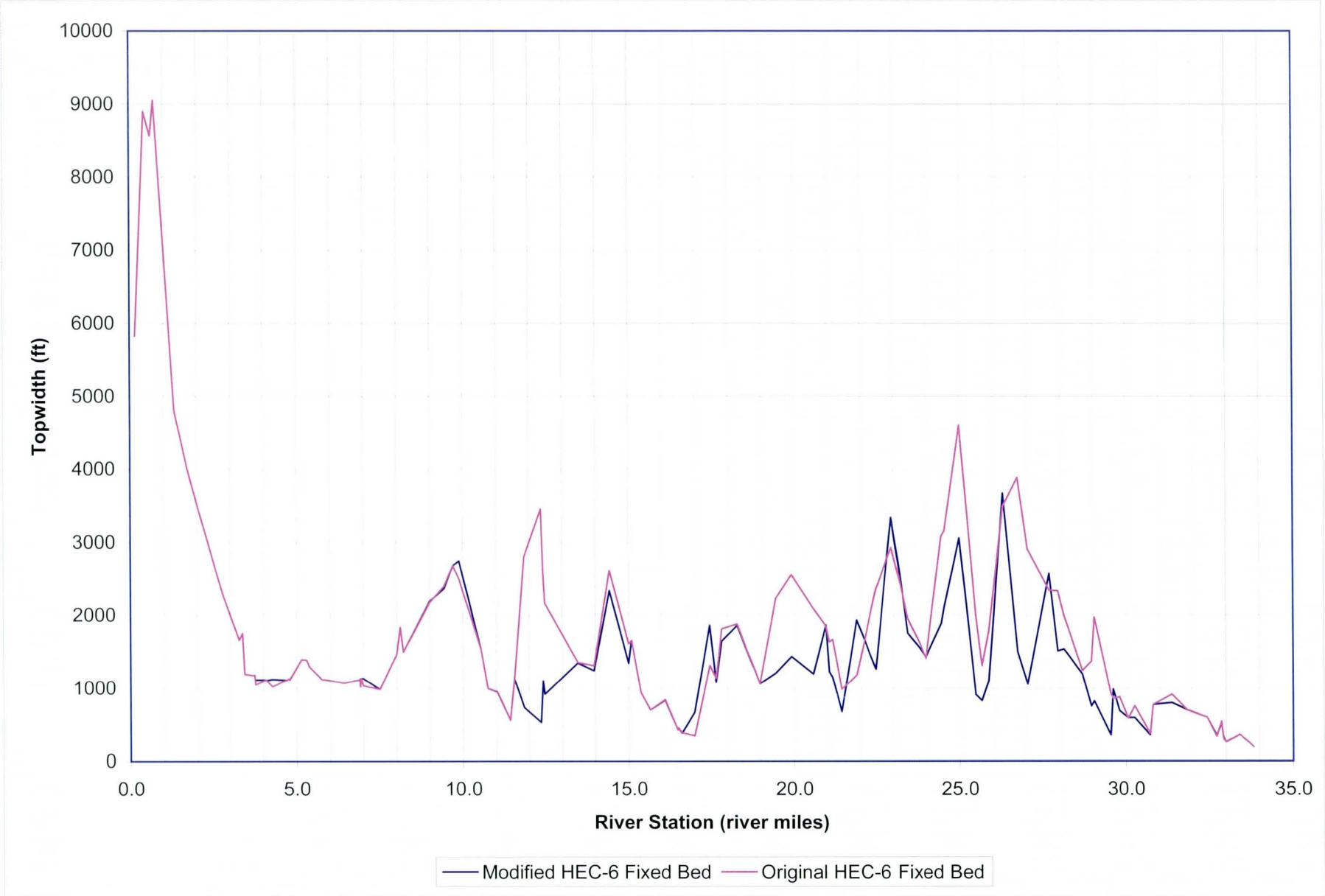
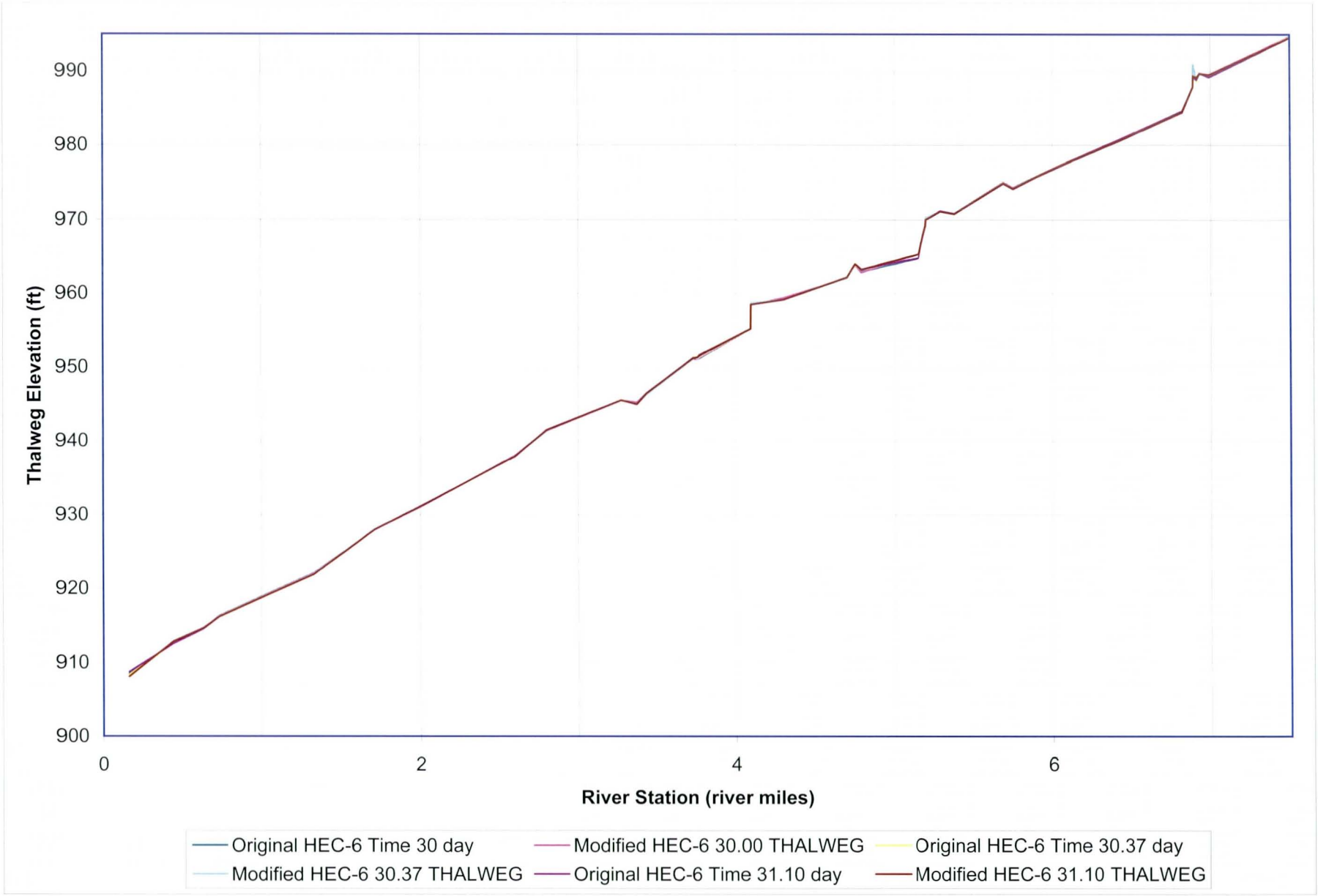


Figure 6. Comparison Plot of Topwidth for Original HEC-6 fixed bed versus Modified HEC-6 fixed bed models.



Channel Stations 0 to 7.49

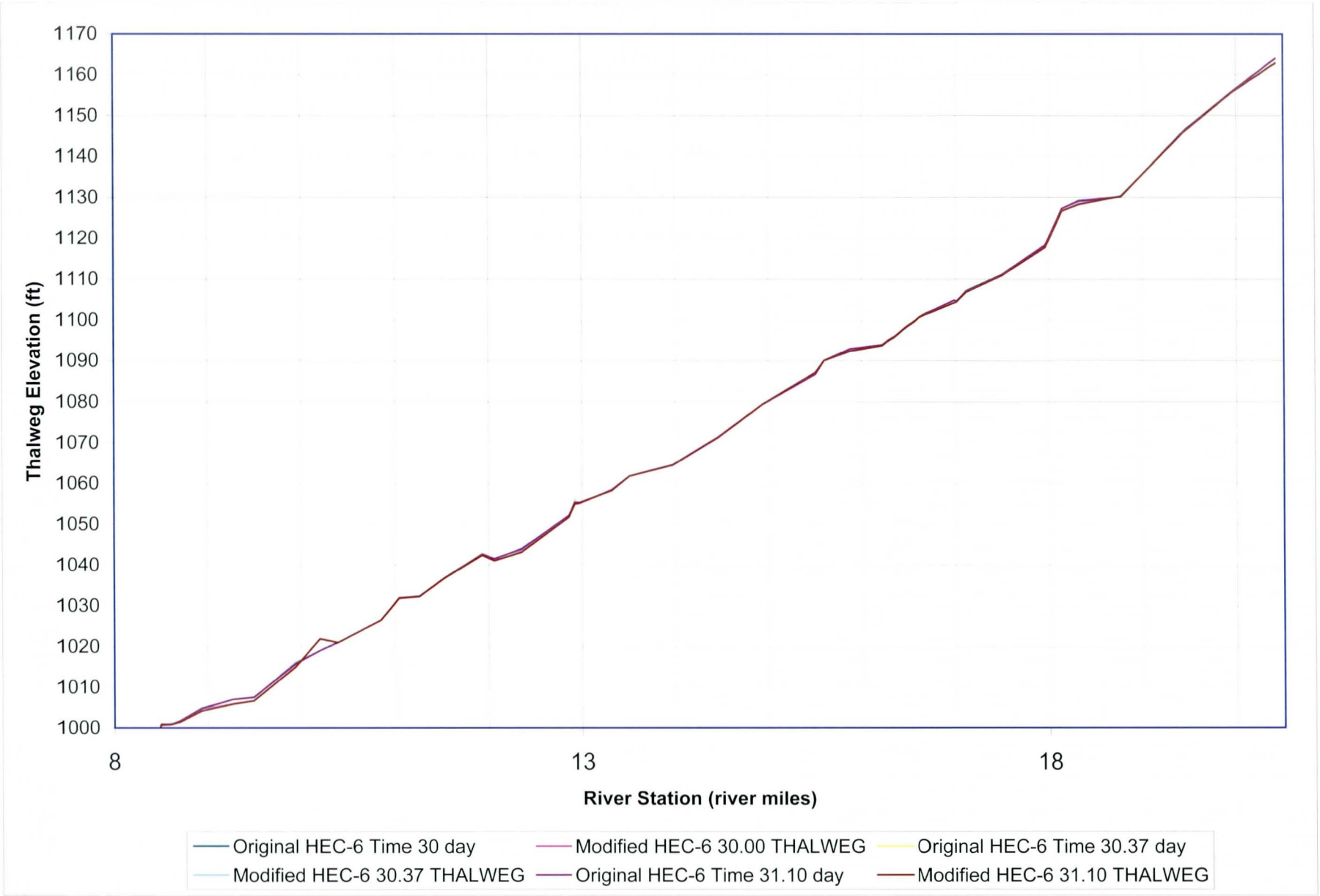
Figure 7. Comparison of Channel Thalweg Elevations
Original Existing Conditions HEC-6 vs Modified Existing Conditions HEC-6



3/17/2002

Channel Stations 7.988 to 19.92

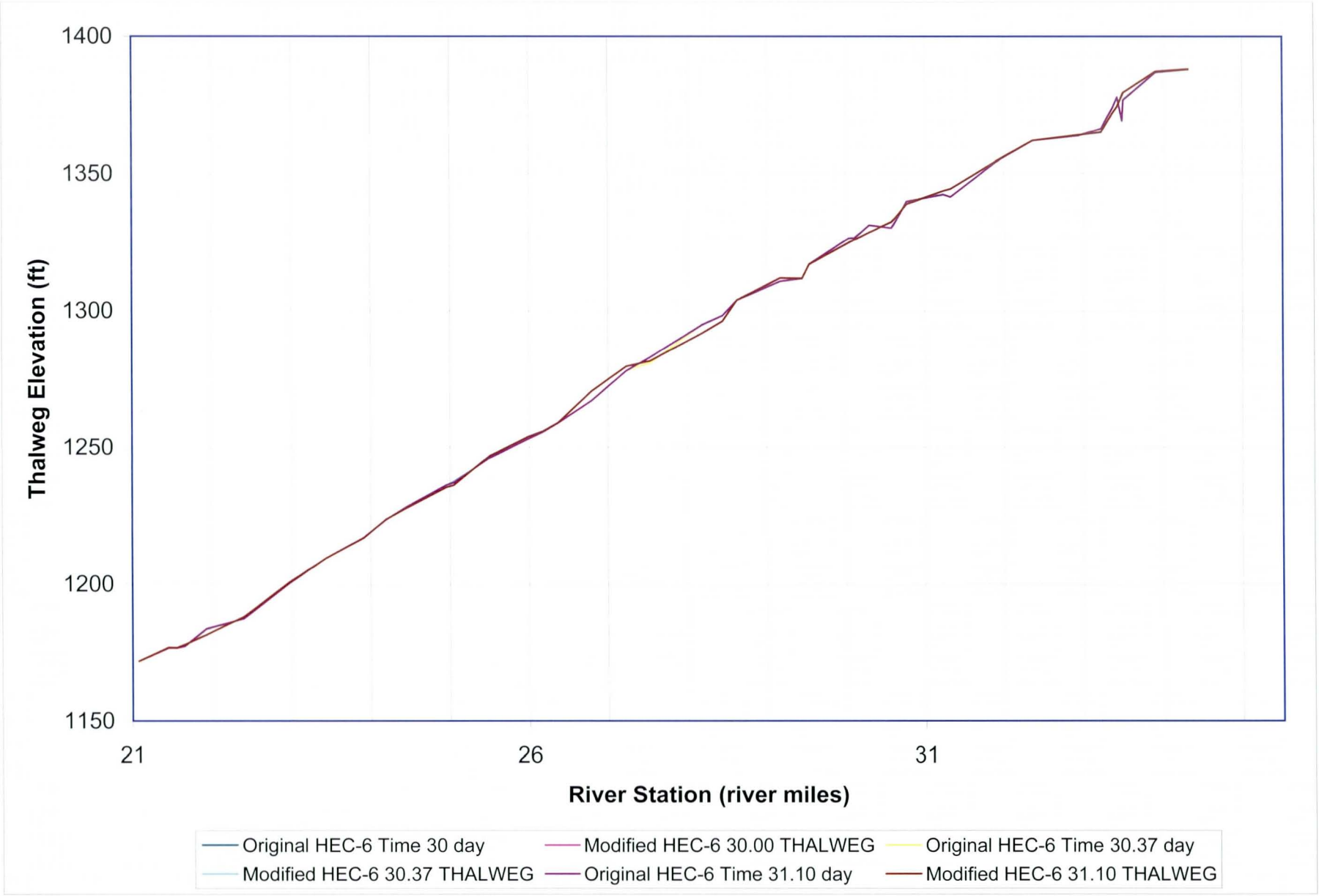
Figure 8. Comparison of Channel Thalweg Elevations
Original Existing Conditions HEC-6 vs Modified Conditions HEC-6



3/17/2002

Channel Stations 20.5 to 35

Figure 9. Comparison of Channel Thalweg Elevation
Original Existing Conditions HEC-6 vs Modified Existing Conditions HEC-6



3/17/2002

MODIFIED HYDRAULIC BASE MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

```
T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      100-YEAR EVENT FIXED BED MODEL FILE NAME - AFFBMOD.DAT MARCH 3, 2002
      REVISED FIXED BED MODEL AS NOTED...TAKE OUT HI GROUND, REVISED X3/XL COMBO
      CHECK EXPANSION/CONTRACTION, CHANGE BANK STATIONS,
NC    .045    0.064    0.035       .1       .3
X1   0.16       52     9720    10184        0        0        0
GR 924.4   4925.0    924.2   5199.0   921.8   5600.0   919.5   5760.0   919.4   5959.0
GR 920.9   6245.0    920.8   6516.0   919.3   6554.0   919.8   6850.0   919.6   7271.0
GR 920.5   7535.0    919.6   8000.0   917.6   8136.0   917.4   8339.0   912.3   8356.0
GR 917.2   8376.0    916.4   8991.0   916.0   9030.0   914.0   9212.0   911.6   9231.0
GR 913.2   9494.0    911.2   9620.0   911.8   9720.0   910.7  10000.0   909.7  10120.0
GR 909.6  10136.     921.6  10167.0   923.0  10184.0   913.7  10213.0   913.7  10477.0
GR 917.1  10590.     916.6  10873.0   910.5  10909.0   910.5  11042.0   915.2  11068.0
GR 912.1  11265.     911.5  11500.0   911.5  11516.0   908.3  11664.0   910.4  11830.0
GR 916.1  11911.     914.1  12098.0   914.9  12628.0   922.1  12652.0   922.7  12725.0
GR 916.5  12758.     916.8  13671.0   916.2  14363.0   917.2  14971.0   917.8  15391.0
GR 913.5  15403.     920.3  15459.0
HD   0.16
NC 0.045    0.10    0.035
X1   0.44      44     9798    10420     1510     1465     1485
GR 927.5   3107.0    925.0   4575.0   922.8   5984.0   921.8   6974.0   920.3   7816.0
GR 923.1   7847.0    923.3   7915.0   919.1   7942.0   919.1   7995.0   923.7   8029.0
GR 919.5   8152.0    918.5   8300.0   916.2   8640.0   915.1   8999.0   916.8   9023.0
GR 916.7   9710.0    916.7   9798.0   913.9   9815.0   913.5   9842.0   912.8  10000.0
GR 917.6  10016.0    916.8  10120.0   916.2  10201.0   917.0  10263.0   917.7  10313.0
GR 917.7  10385.0    925.2  10420.0   917.7  10455.0   917.8  11076.0   920.3  11103.0
GR 916.9  11133.0    916.4  11365.0   919.1  11391.0   918.7  12229.0   918.8  12650.0
GR 920.6  12691.0    919.8  12785.0   919.6  13644.0   920.2  14200.0   920.4  14355.0
GR 921.0    16110    921.8    16630   922.9    17240   924.0    17640
HD   0.44
NC 0.048    0.074    0.035
X1   0.63       36     9888    10209     1055      985     1010
X3                          6600      930
GR 927.8   3220.0    928.7   4462.0   927.0   5328.0   924.8   6127.0   923.4   6520.0
GR 925.1   6530.0    925.1   6553.0   917.7   6571.0   926.5   6600.0   923.7   6645.0
GR 923.1   7426.0    922.5   8068.0   921.2   8670.0   921.1   8772.0   917.5   8831.0
GR 920.1   9149.0    920.4   9522.0   919.9   9740.0   919.6   9888.0   915.7   9908.0
GR 916.1  10000.0    916.0  10095.0   929.0  10209.0   917.1  10273.0   916.6  10424.0
GR 919.7  10448.0    920.7  10644.0   926.6  10667.0   919.1  10704.0   921.3  11646.0
GR 921.5  12511.0    921.7  13595.0   921.7  14582.0   923.3    15500   923.8    15950
GR 925.0    16200
HD   0.63
NC 0.050    0.066    0.035
X1   0.73       39     9917    10162      510      490      500
GR 926.5   3285.0    926.3   3986.0   925.6   4737.0   925.2   5415.0   925.6   5760.0
GR 925.6   5797.0    925.7   5889.0   925.7   5945.0   924.5   6306.0   924.5   7206.0
GR 924.3   8340.0    921.6   8530.0   921.3   8800.0   921.1   8982.0   919.1   8999.0
GR 918.6   9126.0    921.0   9195.0   920.8   9760.0   920.0   9917.0   917.8   9927.0
GR 917.9  10000.0    916.9  10087.0   919.0  10100.0   928.8  10162.0   919.2  10205.0
GR 917.0  10479.0    919.8  10521.0   918.9  10591.0   928.7  10655.0   919.2  10697.0
GR 919.2  10771.0    922.2  10794.0   921.6  11725.0   922.6  11783.0   924.5  12394.0
GR 924.5  13563.0    924.0    14000   924.3    15050   926.0    15560
HD   0.73
NC 0.045    0.050    0.035
X1   1.33       32     9911    10456     3405     3325     3385
GR 934.6   6000.0    933.3   6025.0   932.9   6490.0   931.0   6748.0   931.3   7154.0
GR 931.8   7239.0    933.2   7837.0   934.0   8038.0   931.1   8083.0   930.0   8120.0
GR 929.8   8339.0    931.4   8777.0   929.3   8916.0   931.1   8945.0   929.8   9282.0
GR 929.1   9911.0    927.0   9920.0   927.0  10000.0   925.9  10122.0   925.5  10364.0
GR 932.0  10456.0    925.5  10490.0   931.1  10701.0   931.6  11006.0   930.6  11200.0
GR 930.4  11242.0    934.9  11261.0   931.9  11306.0   933.2  11377.0   934.8  11409.0
GR 936.3  12061.0    941.3  12490.0
HD   1.33
NC 0.045    0.05    0.035
X1   1.71       44     9091  10284.4     2000     2585     2480
GR 940.9   5684.9    943.3   5808.0   945.3   6004.6   945.1   6078.9   947.4   6100.1
GR 947.4   6117.9    939.1   6148.7   948.7   6187.8   948.6   6226.4   934.0   6296.9
GR 936.8   6795.4    942.6   6807.8   942.6   6816.3   935.2   6833.2   933.6   7016.1
GR 935.7   7029.0    935.7   7052.6   932.4   7065.5   932.0   7135.0   934.3   7164.7
GR 934.3   7198.3    931.9   7209.5   934.6   7333.9   933.3   7541.5   933.4   7601.4
GR 936.1   7704.9    936.0   8010.3   935.3   8305.9   935.8   8591.1   935.4   8888.0
GR 935.8   9091.0    933.0   9104.6   933.1   9230.9   931.1   9247.7   929.7   9534.8
GR 928.2   9542.9    928.2   9966.4   928.2  10000.0   930.4  10058.7   930.5  10277.8
GR 935.9  10284.4    941.2  10511.3   951.5  11351.7   952.3  11442.6
HD   1.71
X1   2.02       31  8839.4  10077.3      890     2065     1965
GR 950.0   5981.1    948.6   6066.6   951.6   6121.6   954.7   6293.7   955.1   6434.3
GR 940.7   6514.7    939.9   6533.9   937.1   6557.3   936.4   6934.6   937.1   7244.1
GR 944.6   7260.1    944.6   7278.4   937.0   7304.1   936.3   7340.1   938.6   7388.3
GR 938.4   7687.8    936.3   7711.0   938.5   7824.6   938.8   7961.0   937.2   8390.4
GR 938.4   8544.9    938.1   8839.4   935.2   8854.5   935.2   9121.5   935.4   9418.2
GR 934.2   9860.0    932.7   9918.6   933.3  10000.0   934.5  10062.4   944.8  10077.3
GR 944.8  10079.1
HD   2.02
NC     .04      .04     .035
X1    2.60       26     9437    10850     2700     2945     3320
GR 947.1     7292    967.4   7442.4   961.7   7739.8   957.5   7927.3   953.0   8217.8
GR 947.7   8560.5    944.7   8730.1   944.9   9057.3   944.8   9437.0   940.5   9449.9
GR 941.9   9684.7    939.6   9951.4   939.6  10000.0   939.6  10090.3   941.7  10102.7
GR 943.1  10322.7    940.5  10500.3   946.6  10580.6   946.6  10625.8   945.8  10652.9
GR 942.2  10671.4    943.4  10811.0   943.6  10850.0   944.8  11140.9   954.6  11152.0
GR 954.6    11164
HD   2.60
X1   2.80       19     9200    11222     1250      655     1000
GR 956.4   8817.0    952.8   8856.3   944.9   9060.9   943.4     9200   943.2   9214.4
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GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80
X[redacted].27      17  9692.6 11130.5    2800    1995    2505
GR [redacted]1.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27
X1  3.37      17  9716.5 10970.3     585     460     510
GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37
X1  3.43      12  9758.5 10873.4     925     795     850
GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43
X1 3.729     6.0    9420   10603    1575    1585    1580
GR 972.0    9405     968    9420   952.2    9425   952.2   10588   967.2   10603
GR 967.2   10613
HD 3.729
NC                          0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25
GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734
X1 3.757     7.0    9425   10555     120     120     120
GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757
X[redacted].767      92  9428.1 10572.0      50      50      50
          -------CODED OUT BRIDGE PIERS-----------
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   953.0  9762.0
GR 953.0  9778.0   952.9  9778.1   952.9  9915.0   953.0  9915.1   953.0  9931.1
GR 952.9  9931.2   952.9 10068.9   953.0 10069.0   953.0 10085.0   952.9 10085.1
GR 952.9 10220.9   953.0 10221.0   953.0 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
GR 952.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
GR 952.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0    9440   10578    1760    1750    1755
GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092
X1 4.094     7.0    9440   10578      10      10      10
GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094
X1  4.27     9.0    9449   10588     925     925     925
          --------DELETED TOWER-------
GR 975.0  9440.0   974.9  9449.0   959.5  9466.0   958.0  9791.0   958.0  9910.0
GR 957.1 10000.0   958.9 10317.0   959.7 10563.0   974.4 10588.0
HD  4.27
X1  4.70     9.0    9451   10579    2320    2180    2250
GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70
X[redacted].754    53.0  9402.5 10572.3     150     310     225
X[redacted]  10
GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960.3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3   10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
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GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD  754
X[illegible].79     6.0    9440   10590     357     187     277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79
X1  5.15     9.0    9291   10713    1780    1960    1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15
X1 5.290      82  9250.8 10672.4     695     865     775
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290
QT
X1 5.380     20.0  9266.0 10656.0     305     645     465
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380
X1 5.689      42  9371.3 10552.8    1320    1740    1620
GR 996.9  9371.2   990.8  9371.3 973.85  9399.5 973.85  9488.7 973.85  9488.8
GR973.85  9496.2 973.85  9496.3 973.85  9606.6 973.85  9606.7 973.85  9614.1
GR973.85  9614.2 973.85  9725.8 973.85  9725.9 973.85  9733.3 973.85  9733.4
GR973.85  9843.3 973.85  9843.4 973.85  9850.8 973.85  9850.9 973.85  9961.3
GR973.85  9961.4 973.85  9968.8 973.85  9968.9 973.85 10078.9 973.85 10079.0
GR[illegible].85 10086.4 973.85 10086.5 973.85 10196.2 973.85 10196.3 973.85 10203.7
[illegible].85 10203.8 973.85 10314.4 973.85 10314.5 973.85 10321.9 973.85 10322.0
GR[illegible].85 10432.1 973.85 10432.2 973.85 10439.6 973.85 10439.7 973.85 10524.6
GR 990.8 10552.8   996.9 10552.9
HD 5.689
X1 5.750     22.0  9426.0 10579.0     370     370     370
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
GR 973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750
X1 5.900     17.0  9429.0 10561.0     945     950     950
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
HD 5.900
X1 6.430     20.0  9452.0 10537.0    2960    2755    2855
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430
X1 6.820     17.0  9444.0 10573.0    2145    1820    1980
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820
      ------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888     16.0  9439.0 10577.0     357     357     357
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888
X1 6.890     16.0  9439.0 10577.0       8       8       8
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
H[illegible]890
X[illegible]910     17.0  9430.0 10579.0     105     115     110
          ----------CODE OUT TOWER BY LOWERING GR ELEVATIONS TO CHANNEL BOTTOM -
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
GR 989.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0   989.5 10037.0
GR 989.8 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR1002.7 10579.0  1002.7 10589.0
HD 6.910
X1 6.930     17.0  9413.0 10573.0     105     105     105
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
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GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
H[redacted]930
X[redacted]990    19.0  9400.0 10559.0     315     355     335
          ----------CODE OUT TOWER BY LOWERING GR ELEVATIONS TO CHANNEL BOTTOM -
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   991.3 10313.0   991.0 10323.0   990.2 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990
X1 7.490    13.0  9509.0 10525.0    2645    2610    2595
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490
NC                          .3      .5
X1 8.000     85  9235.5  10725.    2865    2540    2685
GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000
NC                          0.1     0.3
X1 8.105     91  9381.7 10978.6     405     745  522.59
    -----CHANGE LEFT BANK STATION
GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
G[redacted]11.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
G[redacted]2.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
G[redacted]01.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1014.4 10978.6  1014.9 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105
X1 8.198     92  9458.7 10971.0     420     620  490.43
      DELETE X3  ADD XL
XL                       9458.7 10971.0
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
GR1003.1  9193.7  1003.0  9320.6  1003.2  9389.6  1016.4  9413.0  1016.7  9455.0
GR1014.9  9458.7  1006.2  9474.2  1003.0  9479.0  1002.7  9484.7  1003.3  9489.8
GR1002.2  9512.1  1002.6  9529.9  1004.0  9536.6  1003.7  9541.4  1003.4  9592.1
GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198
NC  .040    .040    .035
X1 8.992     91  9819.1 11458.9    4120    4130    4190
X3                     9300    1022   11545    1022
G[redacted]19.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
G[redacted]8.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
G[redacted]8.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
GR1016.9 10052.9  1015.9 10160.6  1016.0 10270.5  1016.5 10316.7  1016.2 10350.3
GR1018.0 10379.5  1019.3 10546.0  1017.0 10601.9  1014.8 10621.9  1014.4 10655.5
GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
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GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0
HD 8.992
NC  0.05    0.05   0.035     0.1     0.3
X1 9.435      83  9548.8 11146.3    2414    1804    2318
   TAKE OUT X3 INEFF LIMT  USE XL
XL                          9548   12000
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
GR1020.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
GR1025.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR1024.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD 9.435
X1 9.696      91  9818.1 10996.2    1430    1330 1383.24
      CHANGE LF BANK STATION  TAKE OUT X3 USE XL
XL                         9015.0   11702
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR1028.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
GR1019.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
GR1024.7 10030.2  1025.6 10107.8  1025.2 10146.5  1024.5 10147.3  1024.7 10232.4
GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR1027.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
GR1023.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR1021.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696
QT
X1 9.885      91  9327.8 10706.6    1090     825  996.40
        DELETE X3 AND ADD XL
XL                          8500   12000
GR1039.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
GR1029.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR1023.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
GR1029.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
GR1028.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
GR1031.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
GR1031.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
GR1035.2 15177.3
HD 9.885
NC  0.05    0.05   0.045
X110.538      87  9573.5 10478.1    3655    2815 3447.92
   DELETED X3 AND ADD XL
XL                          9514   11058
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
GR1040.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
GR1041.2  7536.3  1043.3  7856.8  1042.5  7964.9  1043.8  7979.7  1040.8  8090.9
GR1038.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR1036.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1044.0  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
GR1038.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
GR1037.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR1035.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
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GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR[illegible]37.2 13424.5  1036.8 13435.8
H[illegible]538
X[illegible].752      90  9651.8 10329.8    1070    1140 1124.93
     DELETED X3 AND ADD XL
XL                          9335 10329.9
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
GR1042.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
GR1039.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR1040.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
GR1041.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
GR1036.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752
NC  0.05   0.095   0.045
X111.029      70  9513.1 10404.2    1545    1345 1463.98
    TAKE OUT X3 INEFF AREA AND ADD XL  TAKE OUT FIRST 20 GR POINTS
XL                           9513   10500
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR1046.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
GR1042.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
GR1041.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR[illegible]45.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
H[illegible]029
N[illegible]                      0.3     0.5
X111.428      94  9814.2 10227.2    1960    2335    2160
GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR1053.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
GR1055.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428
NC  0.15   0.055   0.035     0.3     0.5
QT
X111.557      95  9881.6 10100.9     675     675  677.68
    TAKE OUT X3 AND ADD XL
XL                           8970   10100
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
G[illegible]050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
G[illegible]050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
GR1042.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
HD11.557
X111.847      95  9914.3 10113.4    1530    1530 1531.67
     TAKE OUT X3 AND ADD XL
XL                           9400   10173
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GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR 1056   7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
G  1056   7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR 1056.6 7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1063.4  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847
X112.359      73  9691.6 10061.0    2510    2730  2701.6
    Ineffective flow until out of channel ADD XL
X3    10
XL                      9691.6   10300
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR1058.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
GR  1066   10095    1068   10250  1070.1 10395.0
HD12.359
X1 12.42      90  9014.1 10111.3     380     270  302.47
      Ineffective flow until out of channel  AND ADD XL
X3    10
XL                      9014.1 10111.3
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
G  1063   6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR 1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
GR1063.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
GR  1060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42
NC  .045    .040    .035     0.1     0.3
X1 12.47      89  9382.2 10296.2     230     240     255
      Ineffective flow until out of channel AND ADD XL
X3    10
XL                      9382.2 10296.2
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
H  .47
N  045    .045    .035     0.3     0.5
X113.467      89  8693.6 10286.7  5180.4  5305.4  5295.5
GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5    8382
GR  1088    8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
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GR1074.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8    8915  1067.8  8921.2
GR1067.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4    9884  1070.3  9924.4
GR1070.1  9949.1  1069.2    9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3   10253  1090.6 10286.7
GR1090.5   10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467
NC                          0.1     0.3
X113.952       93  9432.8 10076.3    2525    2585 2566.36
   ADD XL
XL                         9000   10500
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR1083.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR1078.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952
X114.430       93  9171.4 10301.1    2175    2625 2523.57
   ADD XL TAKE OUT X3 INEFF  DELETE LAST TWO GRS
XL                         8200 10847.9
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
GR1092.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
GR1093.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
GR1092.0  8194.9  1091.5  8233.1  1092.1  8266.0  1092.1  8279.7  1088.9  8296.7
GR1087.9  8349.4  1088.0  8356.7  1090.6  8393.8  1090.6  8428.0  1092.7  8449.0
GR1092.3  8510.5  1091.7  8551.5  1089.9  8570.9  1091.7  8660.6  1092.0  8710.6
GR1091.9  8760.6  1091.0  8810.6  1090.8  8860.6  1089.9  8937.3  1089.9  8990.6
GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
GR1089.0  9184.9  1085.7  9213.3  1086.2  9236.5  1083.2  9251.1  1083.8  9327.2
GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
GR1086.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7
HD14.430
X115.000       93  9346.3 10081.6    2700    3130  3009.7
   AD XL
XL                         9175.6   10550
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
GR1094.7  9835.6  1093.9  9875.1  1091.8  9911.5  1091.4  9946.6  1092.3  9974.0
GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
GR1096.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
GR1094.0 10495.3  1100.0 10526.1  1100.6 10561.4  1101.1 10679.6  1101.4 10895.6
GR1101.2 10958.4  1101.8 11017.3  1101.4 11192.8  1101.3 11274.2  1100.7 11355.6
GR1099.3 11392.9  1098.1 11400.2  1096.6 11405.2  1096.5 11410.1  1097.8 11419.6
GR1098.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
GR1100.2 11466.1  1097.6 11479.7  1097.3 11498.8  1099.1 11540.6  1099.9 11574.4
GR1099.9 11593.7  1101.2 11685.2  1101.1 11736.6  1101.7 11756.7  1101.5 11782.1
GR1102.6 11787.3  1102.1 11802.9  1100.2 11815.5  1100.5 11836.4  1098.5 11890.8
GR1098.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
GR1100.7 12125.7  1102.8 12147.6  1103.6 12163.7  1103.8 12179.4  1101.5 12212.6
GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
GR1104.2 12758.9  1103.7 12782.7  1104.1 12821.1
HD15.000
X115.094       93  9336.0 10125.1     495     495  496.49
      change rt ineff limit  ADD XL
X3                         9293.4    1102   12565    1102
XL                         9293.4   11000
GR1092.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
GR1098.7  9317.6  1099.1  9336.0  1093.7  9355.8  1092.1  9366.0  1093.0  9426.0
GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
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GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
GR1096.4 10911.4  1097.7 10930.8  1100.9 10959.2  1100.7 10987.0  1102.5 11002.3
GR1102.3 11152.4  1101.1 11308.7  1100.6 11317.7  1099.8 11395.4  1100.0 11416.9
GR[illegible]8.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
G[illegible]2.6 12022.7  1102.6 12073.5  1099.0 12224.6  1098.4 12273.7  1099.4 12426.5
GR[illegible]0.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094
NC  .040    .045    .035
X115.374      92  9832.4 10085.5    1650    1260 1478.26
       changed rt ineff limit AND ADD XL
X3                          9822    1106   11930    1106
XL                          9825   10770
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
GR1096.2 10025.3  1098.6 10044.5  1101.9 10085.5  1103.7 10130.8  1100.9 10141.2
GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR1101.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
GR1103.5 11613.3  1104.1 11633.1  1104.6 11679.6  1104.4 11729.7  1104.3 11830.0
GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374
NC  .040    .040    .035
X115.658      94  9920.1 10083.7    1555    1325 1501.51
     change rt ineff limit AND ADD XL
X3                          9447    1111 11553.9    1111
XL                        9446.5   10150
GR1112.0  9446.5  1102.9  9461.8  1100.4  9465.5  1099.9  9483.7  1099.2  9525.8
GR1099.0  9567.9  1099.2  9593.1  1099.1  9623.6  1098.3  9661.4  1099.0  9692.6
GR1099.6  9731.7  1105.5  9771.5  1104.8  9821.5  1106.7  9842.5  1108.3  9871.1
GR1107.7  9920.1  1105.9  9948.6  1104.8  9955.5  1100.0  9980.4  1097.1 10019.8
GR[illegible]8.5 10032.1  1099.1 10035.6  1099.1 10047.6  1102.0 10063.9  1103.1 10083.7
G[illegible]5.1 10102.2  1105.6 10123.1  1105.3 10172.7  1105.7 10224.6  1104.9 10285.3
GR[illegible]8.5 10297.1  1102.3 10314.8  1103.6 10344.9  1104.6 10376.8  1104.1 10404.4
GR1108.7 10421.4  1109.0 10424.8  1109.1 10479.6  1108.9 10529.0  1109.2 10579.4
GR1109.3 10629.5  1109.3 10659.2  1109.7 10706.2  1109.4 10729.7  1109.8 10756.5
GR1109.9 10810.1  1109.9 10847.3  1109.7 10894.4  1110.3 10980.2  1109.8 11030.4
GR1109.8 11078.1  1109.9 11130.6  1109.1 11168.2  1108.6 11181.1  1108.3 11181.6
GR1107.5 11220.8  1104.3 11235.1  1102.8 11283.3  1103.7 11301.1  1104.5 11331.3
GR1106.5 11371.9  1107.8 11386.7  1106.8 11396.5  1106.2 11416.0  1104.7 11430.3
GR1104.6 11481.3  1103.0 11511.9  1112.2 11553.9  1110.1 11576.5  1107.0 11618.7
GR1107.8 11631.6  1108.1 11663.4  1108.7 11681.8  1108.9 11731.8  1108.8 11788.1
GR1108.7 11832.1  1108.8 11882.2  1108.9 11932.3  1108.9 11982.4  1108.9 12070.3
GR1109.2 12164.3  1109.4 12232.9  1109.4 12283.0  1109.3 12305.5  1109.4 12333.1
GR1109.1 12352.5  1108.5 12418.3  1108.4 12483.5  1108.6 12587.7  1108.6 12683.9
GR1108.6 12734.0  1108.5 12784.1  1109.0 12815.2  1109.8 12846.4
HD15.658
X116.099      92  9804.0 10081.1    2360    2315 2324.63
    El Mirage Landfill  ADD XL
X3                          9192    1178   10300    1178
XL                          9235   10081
GR1132.1  9191.9  1126.8  9200.4  1111.0  9233.0  1104.9  9259.9  1105.0  9274.3
GR1104.8  9282.4  1106.9  9313.0  1108.3  9366.1  1109.2  9418.0  1109.2  9466.8
GR1110.2  9517.2  1109.5  9549.3  1109.5  9567.6  1108.4  9606.1  1105.8  9624.0
GR1106.1  9629.4  1106.4  9668.4  1106.2  9694.8  1106.5  9705.3  1107.2  9716.8
GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
GR1102.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
GR1113.5 11456.5  1111.4 11479.4  1111.7 11481.5  1113.2 11504.1  1113.1 11516.6
GR1112.4 11531.3  1112.5 11549.4  1113.1 11567.8  1113.4 11729.2  1113.2 11911.4
GR1113.5 12079.2  1113.9 12179.2  1114.1 12304.0  1114.4 12329.3  1114.1 12501.3
GR1113.9 12675.5  1114.0 12727.4  1114.2 12746.8  1114.1 12929.3  1114.6 13041.6
GR1115.1 13090.7  1115.1 13122.1
HD16.099
NC                            0.3     0.5
X11[illegible]6.482      90  9781.9 10219.8    1980    2160 2026.23
[illegible]D XL
X                           9750  1127.5   10290  1127.5
XL                          9780   10220
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
GR1139.3  9451.2  1138.5  9456.3  1137.2  9528.1  1136.8  9537.1  1137.1  9563.8
GR1136.6  9616.0  1135.9  9622.7  1134.7  9645.4  1133.3  9704.0  1131.9  9731.2
GR1130.9  9750.4  1130.6  9765.2  1126.1  9774.7  1122.1  9781.9  1117.0  9795.4
GR1114.2  9802.5  1111.1  9816.2  1109.7  9859.8  1108.9  9880.3  1108.6  9915.4
GR1107.7  9931.8  1105.6  9947.6  1105.8  9985.2  1108.0 10015.1  1109.8 10086.8
GR1108.8 10140.7  1109.1 10210.9  1117.6 10219.8  1119.6 10222.0  1120.1 10266.0
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GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR[illegible]3.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
G[illegible]1.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
GR[illegible]8 10994.6  1118.6 11064.6  1118.2 11105.9  1117.3 11151.7  1116.3 11206.3
GR1116.2 11210.6  1117.1 11245.1  1116.8 11253.8  1117.1 11286.7  1118.3 11329.8
GR1118.3 11349.3  1118.5 11378.5  1118.7 11406.2  1119.3 11448.7  1119.7 11562.0
GR1120.2 11569.8  1120.5 11673.4  1120.6 11689.2  1120.7 11754.4  1121.0 11817.9
GR1121.1 11822.8  1122.0 11961.4  1122.4 11986.6  1122.8 12071.0  1123.0 12098.0
GR1123.1 12149.2  1123.1 12151.2  1123.2 12191.5  1124.0 12254.5  1124.0 12264.5
HD16.482
X116.506      72  9768.0 10245.4     125     125  126.72
    ADDED RT INEFF LIMIT
X3                                          11206.5    1122
GR1143.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
GR1140.0  9334.9  1139.6  9379.4  1139.0  9386.3  1138.3  9448.3  1138.4  9482.6
GR1138.0  9525.0  1137.9  9526.8  1136.5  9625.1  1135.2  9710.2  1135.3  9731.2
GR1126.2  9750.8  1124.5  9756.7  1122.2  9768.0  1113.9  9802.5  1112.2  9807.7
GR1110.1  9853.7  1109.1  9878.2  1107.6  9903.9  1106.7  9917.3  1105.4  9933.8
GR1105.6  9939.1  1105.9  9960.5  1105.8  9970.9  1106.6  9982.4  1108.1 10007.8
GR1109.2 10031.5  1110.0 10081.1  1110.5 10104.0  1110.0 10129.9  1110.1 10176.4
GR1110.7 10177.1  1113.8 10221.4  1122.4 10245.4  1122.5 10247.4  1123.5 10250.2
GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506
NC  0.05    0.05    0.04     0.1     0.3
X116.612      84  9808.2 10161.2     627     342     581
    TAKE OUT X3 INEFF LIMIT AND ADD XL
XL                              9794   10200
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR[illegible]1.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
G[illegible]1.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR[illegible]1.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR1119.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR1119.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612
NC  0.05    0.05    0.04     0.1     0.3
X116.990      92  9810.0 10135.4    1990    1985    1993
    TAKE OUT X3 INEFF LIMIT AND ADD XL
XL                              9748   12400
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.4 11140.9
GR1128.0 11189.2  1127.6 11250.5  1126.3 11293.3  1127.0 11338.2  1126.5 11403.1
GR1127.4 11410.4  1126.6 11445.7  1127.3 11465.2  1127.6 11519.1  1128.1 11532.8
GR1127.6 11586.4  1126.8 11609.9  1126.7 11843.9  1126.8 11988.7  1129.0 12041.8
GR1125.8 12048.3  1128.5 12056.1  1127.1 12097.2  1127.8 12170.8  1124.8 12180.6
GR1119.2 12188.4  1116.2 12191.6  1111.2 12195.4  1090.6 12206.1  1092.1 12285.4
GR1093.9 12332.8  1101.0 12334.5  1112.0 12337.1  1125.2 12341.0  1125.1 12367.4
GR1125.8 12393.1  1124.4 12431.4  1123.9 12507.9  1123.2 12529.8  1123.6 12585.8
GR1127.2 12630.0  1136.9 12660.9  1128.6 12676.3  1127.0 12692.1  1125.9 12746.2
GR1127.9 12795.1  1130.4 12813.6  1130.5 12826.3  1128.3 12904.8  1129.2 12916.6
GR1127.6 12934.8  1125.7 12966.4  1126.6 12979.5  1125.4 13179.1  1126.4 13287.4
GR1124.9 13341.6  1125.6 13503.0  1125.2 13561.0  1120.4 13574.0  1121.1 13632.4
GR1128.6 13654.8  1128.6 13664.2
HD16.990
X117.458      92  9370.6 10225.3    3035    1705 2468.67
   CHANGE RT INEFF LIMIT AND ADD XL
X3                              8808    1132 11640.7    1134
XL                              9100 11640.7
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR[illegible]3.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
G[illegible]8.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
G[illegible]8.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR1131.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
GR1123.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
GR1113.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
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GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR[redacted]3.3 14132.7  1133.3 14165.7
H[redacted]458
X117.638      90  9197.8 10288.4     955     895  949.45
    DELETE X3 INEFF LIMIT   CHANGE LEFT BANK   CODED OUT HI GRND IN CHANNEL
    ADD XL
XL                        9197.8 10288.4
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1130.0  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4  1137.5 13723.0
HD17.638
NC 0.045    0.05   0.035
QT
X117.821      92  9764.8 10227.7     950     970  964.24
    CHANGE RT INEFF LIMIT  CODE OUT HI GRND AT 11086.7 AND ADD XL
X3                          8350    1140 10814.3    1140
XL                          8550 10227.7
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR[redacted]0.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
G[redacted]8.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR[redacted]2.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1138.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821
X118.275      92  9752.1 10210.5    2170    2440 2398.82
    TAKE OUT LT INEFF LIMIT AND ADD XL
X3                                      10715    1144
XL                          8800   10700
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0
HD18.275
NC                          0.3     0.5
X118.962      74    9840 10223.7    3175    3885 3627.72
   CODE OUT LO SPOT IN LFT OVRBNK STA 8465.2 TO 8497.9 TO EL 1163.5
X3                          9391    1156   10535    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR[redacted]3.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1163.5  8465.2
G[redacted]3.5  8466.9  1163.5  8479.5  1163.5  8495.9  1163.5  8497.9  1163.6  8500.4
G[redacted]3.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
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GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962
NC 0.045   0.045   0.035     0.1     0.3
X[redacted]446      91  9592.8 10078.6    2455    2490 2559.18
   [redacted]DD XL
XL                          8890   10100
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446
X119.920      92  9744.6 10129.1    2510    2450 2499.03
   ADD XL
XL                          9700   11200
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR[redacted]6.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
G[redacted]8.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR[redacted]1.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920
X120.579      90  9825.6 10324.2    3420    3400 3482.23
   ADD XL
XL                          9100   10340
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
GR1178.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
GR1175.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
GR1174.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579
X120.958      90  9787.3 10383.8    1815    2044 2006.06
      TAKE OUT LEFT INEFF LIMIT AND ADD XL
X3                                        10760    1188
XL                          8797   10760
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
GR1184.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
GR1182.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR[redacted]5.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
G[redacted]7.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
G[redacted]6.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1183.9 10392.4  1183.9 10432.5  1184.6 10483.3
GR1184.6 10534.2  1184.4 10605.2  1182.1 10732.8  1182.1 10742.4  1194.0 10760.0
HD20.958
X121.061      91  9850.0 10325.4     340     655  542.53
      TAKE OUT LEFT INEFF LIMIT AND ADD XL
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X3                                          11069    1188
XL                          9800   11045
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR[illegible]0.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
G[illegible]0.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR[illegible]82.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061
NC  .055    .055    .050
X121.157      90  9377.3 10376.3     340     630  509.07
      TAKE OUT LEFT INEFF LIMIT AND ADD XL
X3                                          11150    1190
XL                          9300   10500
GR1196.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR[illegible]89.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4
H[illegible]157
X1[illegible].431      75  9467.9 10343.5    1205    1490 1443.17
       WALKER PIT
       TAKE OUT LEFT INEFF LIMIT AND ADD XL TO CHANNEL ONLY
X3                                          10343    1193
XL                        9667.9   10343
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431
NC  .045    .055    .035
X121.893      93  9558.8 10146.5    2525    2070 2442.15
    CHNAGE RT INEFFECTIVE TO BLOCK FLOW IN RT OVERBANK
X3                          9546    1200   12117    1210
GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR1203.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR1169.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
G[illegible]6.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
G[illegible]5.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893
NC  .045    .045    .035
QT
X122.462      77  9887.4 10318.9    2955    2920 3005.37
      ADD X3 RT TO BLOCK FLOW IN OFF CHANNEL S&G PIT
X3                                      10789.3   1208
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XL                              9041 10318.9
GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR[illegible]5.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
G[illegible]8.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR[illegible]8.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462
X122.935       94  9530.2 10351.6    2480    2125 2490.47
GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR1213.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR1212.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935
NC  .045    .045    .035
X123.409       90  9675.2 10060.2    2450    2360 2505.26
      TAKE OUT LEFT INEFF LIMIT AND ADD XL
X3                                    12265.5    1226
XL                              9550   11600
GR[illegible]6.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
G[illegible]8.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR[illegible]4.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8
HD23.409
NC  .055    .055    .050
X123.974       93  9716.2 10115.2    2880    2925 2982.25
      TAKE OUT LEFT INEFF LIMIT AND ADD XL
X3                                     11205    1238
XL                              9716   11185
GR1269.8  7466.3  1269.5  7473.5  1273.0  7482.1  1266.9  7509.6  1265.6  7558.6
GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
G[illegible]6.3 11109.1  1237.7 11139.4  1254.2 11185.4
H[illegible]974
NC  .045    .045    .035
X124.449       92  9496.2 10169.3    2380    2560 2506.65
   ADD XL
XL                              9300   11340
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
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GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR[illegible]0.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
G[illegible]0.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR[illegible]0.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449
X124.543       91  9646.7 10243.6     495     495  500.50
     ADD XL
XL                          9200   11435
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543
NC   .05     .05    .035
X124.996       96  9774.0 10632.3    2320    2330 2388.18
     ADD XL
XL                          8560   11750
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
G[illegible]0.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
G[illegible]1.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR[illegible]0.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR1246.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
GR1248.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
GR1250.9 12975.2  1250.9 13009.4  1248.8 13019.0  1250.7 13059.6  1254.0 13074.1
GR1270.0 13110.8
HD24.996
NC  0.05    0.05    0.03
QT
X125.478       93  9750.7 10127.1    2600    2485 2546.34
     ADD XL
XL                          9600   10700
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR[illegible]0.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
G[illegible]1.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
G[illegible]0.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478
X125.666       66  9842.4 10115.1    1035     975  995.18
XL                          9732   10610

GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR1255.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
GR1256.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
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GR1258.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR 1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR 1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666
X1 25.86      25    9940   10200    1575    1565    1585
     ADD XL
XL                          9052   10250
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86
NC  0.06   0.065   0.035
X1 26.29    26.0    9696   10120    2090    2295    2240
GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13190.0
HD 26.29
NC  0.06    0.07   0.035
X1 26.73    31.0    9898   10125    2320    2310    2330
     ADD XL
XL                          9355   11252
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR1310.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
GR1346.0 14190.0
HD 26.73
X1 27.03    23.0    9922   10079    1660    1020    1590
    ADD  XL
XL                          9679   10755
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1283.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
HD 27.03
NC 0.055   0.055   0.035
X1 27.68    35.0    9853   10125    4120    3200    3430
    CHANGE RT BANK ST
GR1310.1  7060.0  1305.9  7509.0  1301.3  7550.0  1302.2  7781.0  1301.9  8224.0
GR1297.0  8243.0  1298.6  8317.0  1299.3  8587.0  1302.4  8679.0  1298.7  8774.0
GR1301.1  8870.0  1300.8  8938.0  1297.9  8961.0  1301.1  8999.0  1301.3  9184.0
GR1297.6  9230.0  1300.8  9293.0  1298.8  9379.0  1300.1  9459.0  1299.0  9624.0
GR1295.3  9640.0  1295.4  9695.0  1301.1  9738.0  1301.6  9853.0  1295.7 10000.0
GR1294.7 10078.0  1310.2 10125.0  1310.7 10428.0  1311.8 10663.0  1305.9 10703.0
GR1312.1 10728.0  1309.4 10746.0  1311.0 10884.0  1330.0 10991.0  1330.2 11145.0
HD 27.68
QT
X1 27.94    24.0    9944   10187    1370    1415    1405
     ADD XL
XL                          8670   10212
GR1360.4  7500.0  1356.7  7704.0  1305.1  7886.0  1307.7  8084.0  1306.0  8202.0
GR1307.3  8314.0  1308.0  8514.0  1308.2  8676.0  1304.3  8729.0  1304.4  8806.0
GR1308.0  9057.0  1304.2  9174.0  1306.7  9260.0  1302.0  9309.0  1301.5  9374.0
GR1303.4  9391.0  1304.1  9657.0  1304.1  9944.0  1299.1 10000.0  1303.6 10035.0
GR1303.5 10187.0  1309.6 10212.0  1323.7 10246.0  1327.4 10339.0
HD 27.94
X1 28.12    27.0    9524   10107     990     960     950
    CHANGED BANK STATIONS AND ADD XL
XL                          9409   11000
GR1357.3  8340.0  1355.3  8384.0  1323.5  8506.0  1320.1  8630.0  1313.6  8697.0
GR1309.5  8719.0  1311.3  8878.0  1311.1  9108.0  1307.8  9129.0  1307.5  9182.0
GR1310.6  9258.0  1308.2  9300.0  1310.5  9411.0  1308.6  9524.0  1306.6  9675.0
GR1304.9  9906.0  1304.6 10000.0  1304.6 10076.0  1310.3 10107.0  1310.7 10411.0
GR1306.3 10527.0  1307.3 10680.0  1308.6 10781.0  1308.5 10866.0  1310.8 10916.0
GR1312.7 11051.0  1314.2 11435.0
HD 28.12
X1 28.67    37.0    9950   10514    2785    2925    2885
    DELETED  X3   RECORD  CHANGED BANK STATIONS AND ADD XL
XL                          9409   11203
GR1372.7  9450.0  1371.0  9866.0  1319.8  9950.0  1311.5  9964.0  1312.2 10000.0
GR1312.2 10192.0  1319.8 10514.0  1316.1 10819.0  1318.6 10989.0  1315.2 11044.0
GR 1322.5 11203.0  1321.6 11445.0  1322.3 11634.0  1319.8 11968.0  1318.7 12107.0
GR 1325.5 12170.0  1321.3 12228.0  1325.2 12397.0  1326.4 12792.0  1328.9 12823.0
GR1324.8 12860.0  1327.4 12972.0  1345.8 13057.0  1345.8 13259.0  1339.7 13321.0
GR1341.1 13419.0  1352.8 13484.0  1356.1 13572.0  1358.7 13589.0  1358.8 13606.0
GR1348.0 13629.0  1348.2 13655.0  1363.9 13681.0  1363.8 13698.0  1355.7 13713.0
GR1356.7 13851.0  1373.9 13912.0
HD 28.67
X1 28.95    34.0    9946   10353    1550     940    1465
    ADD XL
XL                          9784   10699
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GR1376.3  9615.0  1376.6  9784.0  1371.6  9871.0  1325.0  9946.0  1314.8  9962.0
GR1312.3 10000.0  1317.7 10112.0  1321.6 10138.0  1324.5 10353.0  1322.2 10383.0
GR1322.5 10551.0  1318.3 10659.0  1325.0 10702.0  1324.6 11069.0  1325.8 11366.0
GR[illegible]4.5 11583.0  1322.1 11633.0  1324.9 11727.0  1323.6 12024.0  1329.7 12138.0
G[illegible]6.2 12496.0  1330.1 12888.0  1335.9 13349.0  1348.0 13760.0  1355.7 13815.0
GR[illegible]5.7 13835.0  1345.5 13852.0  1345.5 13879.0  1354.8 13895.0  1352.9 13945.0
GR1360.9 14104.0  1364.9 14118.0  1364.9 14138.0  1376.2 14210.0
HD 28.95
X1 29.04     34.0     9808   10239      550      330      510
    CHANGED LEFT BANK STATION AND ADD XL
XL                           9808   10626
GR1360.0     9770  1326.7  9808.0  1320.3  9815.0  1317.3  9828.0  1317.2  9859.0
GR1319.6  9940.0  1317.2 10000.0  1317.2 10048.0  1322.9 10073.0  1324.3 10239.0
GR1324.4 10414.0  1321.2 10499.0  1319.4 10584.0  1326.7 10638.0  1326.0 10868.0
GR1326.7 11104.0  1325.3 11444.0  1322.9 11472.0  1324.3 11521.0  1323.1 11750.0
GR1330.4 11802.0  1330.3 12323.0  1331.2 12554.0  1336.4 12706.0  1332.2 12882.0
GR1335.8 13217.0  1343.9 13578.0  1351.5 13599.0  1352.4 13621.0  1344.3 13633.0
GR1344.4 13654.0  1357.1 13668.0  1357.5 13697.0  1379.5 13780.0
HD 29.04
X1 29.54     30.0     9846   10150     2750     2235     2640
   ADD XL
X3    10
XL                           9782   10150
GR1378.7  9025.0  1375.5  9068.0  1350.7  9135.0  1348.6  9179.0  1340.7  9198.0
GR1332.4  9217.0  1333.5  9321.0  1333.9  9460.0  1331.2  9697.0  1328.7  9726.0
GR1328.4  9758.0  1332.9  9782.0  1332.2  9846.0  1327.0  9882.0  1326.7 10000.0
GR1326.7 10116.0  1340.7 10150.0  1343.0 10343.0  1346.5 10482.0  1348.3 10927.0
GR1347.8 11457.0  1349.2 11687.0  1354.2 11697.0  1354.2 11723.0  1345.8 11737.0
GR1345.8 11763.0  1355.3 11783.0  1355.4 11812.0  1352.6 11829.0  1378.3 11981.0
HD 29.54
X129.611     31.0     9791   10094      315      315      375
GR1377.8  8825.0  1353.2  9052.0  1337.2  9136.0  1336.3  9285.0  1332.4  9541.0
GR1332.9  9713.0  1334.0  9791.0  1328.9  9812.0  1328.9  9849.0  1331.6 10000.0
GR1331.6 10094.0  1342.3 10133.0  1351.2 10244.0  1345.5 10331.0  1349.1 10528.0
GR1349.1 10688.0  1349.9 10923.0  1353.4 10966.0  1353.4 11037.0  1345.1 11072.0
GR1345.1 11124.0  1352.5 11156.0  1352.5 11163.0  1345.4 11178.0  1345.5 11204.0
GR1353.7 11221.0  1353.4 11251.0  1351.1 11259.0  1353.1 11405.0  1358.4 11533.0
GR1378.5 11635.0
HD29.611
NC 0.055   0.055   0.040
X1 29.80     16.0     9882   10205      980     1025     1025
   ADD XL
XL                           9882   10600
GR1378.4  9270.0  1373.4  9347.0  1338.8  9419.0  1335.4  9475.0  1340.8  9512.0
GR[illegible]2.7  9656.0  1338.9  9882.0  1331.2  9924.0  1331.4 10000.0  1332.7 10180.0
G[illegible]7.6 10205.0  1337.6 10215.0  1327.7 10335.0  1336.3 10521.0  1344.4 10610.0
GR[illegible]9.2 10676.0
HD 29.80
X1 30.07     17.0     9925   10098     1425     1440     1420
GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR1335.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
GR1365.9 10306.0  1365.0 10356.0
HD 30.07
X1 30.26     12.0     9711   10338      870     1090     1005
   CHANGED BANK STATIONS AND ADD XL
XL                           9700   10330
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26
QT
X1 30.73     14.0     9839   10148     2455     2470     2460
    CHANGED BANK STATIONS    ADDED RT INEFF FLOW X3
X3                                    10951   1356.4
GR1369.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR1352.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73
X1 30.82     12.0     9865   10398      500      370      500
       CHANGED BANK STATIONS  ADDED RT INEFF FLOW X3
       X3                                    10582     1358
GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD 30.82
X1 31.39     17.0     9792   10242     2900     3165     2970
   CHANGED RT BANK
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39
X1 31.86     10.0     9490   10321     2550     2485     2505
   CHANGED BANK STATIONS
GR[illegible]1.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
G[illegible]6.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
H[illegible].86
NC 0.045   0.050   0.045
X1 32.43     14.0     9438   10112     2885     2970     2980
    CHANGED LFT BANK STATION
GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43
X1 32.72     28.0     9879   10150     1725     1145     1535
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   DELETED X3 RECORD
GR1434.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR[illegible]5.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
G[illegible]9.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR[illegible]97.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72
X1 32.86    12.0    9928   10079     680     990     760
    CHANGED RT BANK ST
GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86
X1 32.92     9.0    9891   10143     290     370     310
    DELETED X3 RECORD AND ADD XL
XL                          9800   10250
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92
X132.984      33    9962   10053     338     358     343
    CHANGED RT BANK STATION
GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984
X132.998     9.0    9851   10108      72      72      72
GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998
NC 0.045   0.045   0.050
X1 33.41    12.0    9944   10366    1880    2270    2170
GR1448.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
GR1406.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41
QT
X1 33.82    20.0    9861   10068    2165    2220    2175
GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR[illegible]7.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
G[illegible]5.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
HD[illegible]3.82
EJ
$HYD
*   A      AGUA FRIA RIVER FIXED BED  DISCHARGE BASE FROM CVL 1996 FIS STUDY
Q  52000   -2400   24400   -5000   -1000    4000    4000    4000    4000   11000
R 916.83
T     60
W      1
$$END
```

```
**************************************************     ***********************************
*  SCOUR AND DEPOSITION IN RIVERS AND RESERVOIRS  *     *  U.S. ARMY CORPS OF ENGINEERS   *
*       Version: 4.1.07 -  OCT93+FIXS95           *     *  HYDROLOGIC ENGINEERING CENTER  *
*  INPUT FILE:  AFFBMOD.DAT                       *     *  609 SECOND STREET              *
*  OUTPUT FILE: AFFBMOD.OUT                       *     *  DAVIS, CALIFORNIA 95616-4687   *
*  RUN DATE: 03 MAR 02    RUN TIME: 17:08:13      *     *  (916) 756-1104                 *
**************************************************     ***********************************

                     X     X  XXXXXXX   XXXXX           XXXXX
                     X     X  X        X     X         X     X
                     X     X  X        X               X
                     XXXXXXX  XXXX     X        XXXXX  XXXXXX
                     X     X  X        X               X     X
                     X     X  X        X     X         X     X
                     X     X  XXXXXXX   XXXXX           XXXXX

        **********************************************************************
        *  MAXIMUM LIMITS FOR THIS VERSION ARE:                              *
        *       10  Stream Segments (Main Stem + Tributaries)                *
        *      150  Cross Sections                                           *
        *      100  Elevation/Station Points per Cross Section               *
        *       20  Grain Sizes                                              *
        *       10  Control Points                                           *
        **********************************************************************

T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      100-YEAR EVENT FIXED BED MODEL FILE NAME - AFFBMOD.DAT MARCH 3, 2002

N values...  Left   Channel   Right    Contraction    Expansion
           0.0450   0.0350   0.0640       1.1000     0.7000

SECTION NO.     0.160
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0450   0.0350   0.1000       1.1000     0.7000

SECTION NO.     0.440
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0480   0.0350   0.0740       1.1000     0.7000

SECTION NO.     0.630
Left Encroachment defined at station  6600.000 at elevation   930.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0500   0.0350   0.0660       1.1000     0.7000

SECTION NO.     0.730
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0450   0.0350   0.0500       1.1000     0.7000

SECTION NO.     1.330
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0450   0.0350   0.0500       1.1000     0.7000

SECTION NO.     1.710
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     2.020
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0400   0.0350   0.0400       1.1000     0.7000

SECTION NO.     2.600
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     2.800
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     3.270
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     3.370
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     3.430
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     3.729
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
           0.0400   0.0350   0.0400       1.3000     0.5000

SECTION NO.     3.734
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.
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SECTION NO.      3.757
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      3.767
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left    Channel   Right    Contraction    Expansion
           0.0400   0.0300   0.0400       1.1000     0.7000

SECTION NO.      4.092
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      4.094
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      4.270
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      4.700
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      4.754
...Ineffective Flow Area - Method 1 - Left Overbank  Right Overbank
          Natural Levees at Station       9402.500      10572.300
              Ineffective Elevation        988.100        981.200
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      4.790
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      5.150
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      5.290
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

LOCAL INFLOW POINT  1 occurs upstream from Section No.       5.290

SECTION NO.      5.380
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      5.689
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      5.750
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      5.900
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.430
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.820
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.888
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.890
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.910
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.930
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      6.990
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      7.490
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left    Channel   Right    Contraction    Expansion
           0.0400   0.0300   0.0400       1.3000     0.5000

SECTION NO.      8.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left    Channel   Right    Contraction    Expansion
           0.0400   0.0300   0.0400       1.1000     0.7000

SECTION NO.      8.105
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.      8.198
...Limit CONVEYANCE between stations    9458.700 and   10971.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left    Channel   Right    Contraction    Expansion
           0.0400   0.0350   0.0400       1.1000     0.7000

SECTION NO.      8.992
...Left Encroachment defined at station  9300.000 at elevation  1022.000
...Right Encroachment defined at station 11545.000 at elevation  1022.000
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...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0350   0.0500       1.1000     0.7000

SECTION NO.     9.435
...Limit CONVEYANCE between stations    9548.000 and   12000.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.     9.696
...Limit CONVEYANCE between stations    9015.000 and   11702.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

LOCAL INFLOW POINT  2 occurs upstream from Section No.       9.696

SECTION NO.     9.885
...Limit CONVEYANCE between stations    8500.000 and   12000.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0450   0.0500       1.1000     0.7000

SECTION NO.    10.538
...Limit CONVEYANCE between stations    9514.000 and   11058.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    10.752
...Limit CONVEYANCE between stations    9335.000 and   10329.900
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0450   0.0950       1.1000     0.7000

SECTION NO.    11.029
...Limit CONVEYANCE between stations    9513.000 and   10500.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0450   0.0950       1.3000     0.5000

SECTION NO.    11.428
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.1500   0.0350   0.0550       1.3000     0.5000

LOCAL INFLOW POINT  3 occurs upstream from Section No.      11.428

SECTION NO.    11.557
...Limit CONVEYANCE between stations    8970.000 and   10100.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    11.847
...Limit CONVEYANCE between stations    9400.000 and   10173.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    12.359
...Limit CONVEYANCE between stations    9691.600 and   10300.000
...Ineffective Flow Area - Method 1 - Left Overbank  Right Overbank
         Natural Levees at Station       9691.600      10061.000
             Ineffective Elevation       1065.300       1054.700
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    12.420
...Limit CONVEYANCE between stations    9014.100 and   10111.300
...Ineffective Flow Area - Method 1 - Left Overbank  Right Overbank
         Natural Levees at Station       9014.100      10111.300
             Ineffective Elevation       1065.100       1065.200
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0350   0.0400       1.1000     0.7000

SECTION NO.    12.470
...Limit CONVEYANCE between stations    9382.200 and   10296.200
...Ineffective Flow Area - Method 1 - Left Overbank  Right Overbank
         Natural Levees at Station       9382.200      10296.200
             Ineffective Elevation       1064.000       1064.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0350   0.0450       1.3000     0.5000

SECTION NO.    13.467
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0350   0.0450       1.1000     0.7000

SECTION NO.    13.952
...Limit CONVEYANCE between stations    9000.000 and   10500.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    14.430
...Limit CONVEYANCE between stations    8200.000 and   10847.900
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.
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SECTION NO.    15.000
...Limit CONVEYANCE between stations    9175.600 and   10550.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    15.094
...Left Encroachment defined at station  9293.400 at elevation  1102.000
...Right Encroachment defined at station 12565.000 at elevation  1102.000
...Limit CONVEYANCE between stations    9293.400 and   11000.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0400   0.0350   0.0450       1.1000     0.7000

SECTION NO.    15.374
...Left Encroachment defined at station  9822.000 at elevation  1106.000
...Right Encroachment defined at station 11930.000 at elevation  1106.000
...Limit CONVEYANCE between stations    9825.000 and   10770.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0400   0.0350   0.0400       1.1000     0.7000

SECTION NO.    15.658
...Left Encroachment defined at station  9447.000 at elevation  1111.000
...Right Encroachment defined at station 11553.900 at elevation  1111.000
...Limit CONVEYANCE between stations    9446.500 and   10150.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    16.099
...Left Encroachment defined at station  9192.000 at elevation  1178.000
...Right Encroachment defined at station 10300.000 at elevation  1178.000
...Limit CONVEYANCE between stations    9235.000 and   10081.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0400   0.0350   0.0400       1.3000     0.5000

SECTION NO.    16.482
...Left Encroachment defined at station  9750.000 at elevation  1127.500
...Right Encroachment defined at station 10290.000 at elevation  1127.500
...Limit CONVEYANCE between stations    9780.000 and   10220.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    16.506
...Right Encroachment defined at station 11206.500 at elevation  1122.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0400   0.0500       1.1000     0.7000

SECTION NO.    16.612
...Limit CONVEYANCE between stations    9794.000 and   10200.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0400   0.0500       1.1000     0.7000

SECTION NO.    16.990
...Limit CONVEYANCE between stations    9748.000 and   12400.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    17.458
...Left Encroachment defined at station  8808.000 at elevation  1132.000
...Right Encroachment defined at station 11640.700 at elevation  1134.000
...Limit CONVEYANCE between stations    9100.000 and   11640.700
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    17.638
...Limit CONVEYANCE between stations    9197.800 and   10288.400
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0350   0.0500       1.1000     0.7000

LOCAL INFLOW POINT  4 occurs upstream from Section No.      17.638

SECTION NO.    17.821
...Left Encroachment defined at station  8350.000 at elevation  1140.000
...Right Encroachment defined at station 10814.300 at elevation  1140.000
...Limit CONVEYANCE between stations    8550.000 and   10227.700
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    18.275
...Right Encroachment defined at station 10715.000 at elevation  1144.000
...Limit CONVEYANCE between stations    8800.000 and   10700.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0350   0.0500       1.3000     0.5000

SECTION NO.    18.962
...Left Encroachment defined at station  9391.000 at elevation  1156.000
...Right Encroachment defined at station 10535.000 at elevation  1156.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.
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N values...  Left    Channel   Right     Contraction     Expansion
           0.0450    0.0350    0.0450       1.1000       0.7000

SECTION NO.    19.446
...Limit CONVEYANCE between stations     8890.000 and    10100.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    19.920
...Limit CONVEYANCE between stations     9700.000 and    11200.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    20.579
...Limit CONVEYANCE between stations     9100.000 and    10340.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    20.958
...Right Encroachment defined at station 10760.000 at elevation  1188.000
...Limit CONVEYANCE between stations     8797.000 and    10760.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    21.061
...Right Encroachment defined at station 11069.000 at elevation  1188.000
...Limit CONVEYANCE between stations     9800.000 and    11045.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0550    0.0500    0.0550       1.1000       0.7000

SECTION NO.    21.157
...Right Encroachment defined at station 11150.000 at elevation  1190.000
...Limit CONVEYANCE between stations     9300.000 and    10500.000
FLOW IN CROSS SECTION RESTRICTED BETWEEN STATIONS =     8182.200    11134.400
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    21.431
...Right Encroachment defined at station 10343.000 at elevation  1193.000
...Limit CONVEYANCE between stations     9667.900 and    10343.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0450    0.0350    0.0550       1.1000       0.7000

SECTION NO.    21.893
...Left Encroachment defined at station  9546.000 at elevation  1200.000
...Right Encroachment defined at station 12117.000 at elevation  1210.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0450    0.0350    0.0450       1.1000       0.7000

LOCAL INFLOW POINT  5 occurs upstream from Section No.      21.893

SECTION NO.    22.462
...Right Encroachment defined at station 10789.300 at elevation  1208.000
...Limit CONVEYANCE between stations     9041.000 and    10318.900
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    22.935
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0450    0.0350    0.0450       1.1000       0.7000

SECTION NO.    23.409
...Right Encroachment defined at station 12265.500 at elevation  1226.000
...Limit CONVEYANCE between stations     9550.000 and    11600.000
FLOW IN CROSS SECTION RESTRICTED BETWEEN STATIONS =     7735.900    11990.800
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0550    0.0500    0.0550       1.1000       0.7000

SECTION NO.    23.974
...Right Encroachment defined at station 11205.000 at elevation  1238.000
...Limit CONVEYANCE between stations     9716.000 and    11185.000
FLOW IN CROSS SECTION RESTRICTED BETWEEN STATIONS =     7466.300    11185.400
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0450    0.0350    0.0450       1.1000       0.7000

SECTION NO.    24.449
...Limit CONVEYANCE between stations     9300.000 and    11340.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

SECTION NO.    24.543
...Limit CONVEYANCE between stations     9200.000 and    11435.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.

N values...  Left    Channel   Right     Contraction     Expansion
           0.0500    0.0350    0.0500       1.1000       0.7000

SECTION NO.    24.996
...Limit CONVEYANCE between stations     8560.000 and    11750.000
...DEPTH of the Bed Sediment Control Volume =     0.00 ft.
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N values...  Left   Channel   Right    Contraction    Expansion
          0.0500   0.0300   0.0500       1.1000     0.7000

[redacted]L INFLOW POINT  6 occurs upstream from Section No.      24.996

[redacted]TION NO.    25.478
...Limit CONVEYANCE between stations    9600.000 and   10700.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    25.666
...Limit CONVEYANCE between stations    9732.000 and   10610.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    25.860
...Limit CONVEYANCE between stations    9052.000 and   10250.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0600   0.0350   0.0650       1.1000     0.7000

SECTION NO.    26.290
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0600   0.0350   0.0700       1.1000     0.7000

SECTION NO.    26.730
...Limit CONVEYANCE between stations    9355.000 and   11252.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    27.030
...Limit CONVEYANCE between stations    9679.000 and   10755.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0550   0.0350   0.0550       1.1000     0.7000

SECTION NO.    27.680
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

LOCAL INFLOW POINT  7 occurs upstream from Section No.      27.680

SECTION NO.    27.940
...Limit CONVEYANCE between stations    8670.000 and   10212.000
[redacted]EPTH of the Bed Sediment Control Volume =    0.00 ft.

[redacted]TION NO.    28.120
...Limit CONVEYANCE between stations    9409.000 and   11000.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    28.670
...Limit CONVEYANCE between stations    9409.000 and   11203.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    28.950
...Limit CONVEYANCE between stations    9784.000 and   10699.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    29.040
...Limit CONVEYANCE between stations    9808.000 and   10626.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    29.540
...Limit CONVEYANCE between stations    9782.000 and   10150.000
...Ineffective Flow Area - Method 1 - Left Overbank  Right Overbank
         Natural Levees at Station       9846.000      10150.000
             Ineffective Elevation       1332.200       1340.700
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    29.611
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0550   0.0400   0.0550       1.1000     0.7000

SECTION NO.    29.800
...Limit CONVEYANCE between stations    9882.000 and   10600.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    30.070
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    30.260
...Limit CONVEYANCE between stations    9700.000 and   10330.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

[redacted]L INFLOW POINT  8 occurs upstream from Section No.      30.260

SECTION NO.    30.730
...Right Encroachment defined at station 10951.000 at elevation  1356.400
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    30.820
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    31.390
```

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...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    31.860
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0450   0.0500       1.1000     0.7000

SECTION NO.    32.430
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    32.720
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    32.860
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    32.920
...Limit CONVEYANCE between stations    9800.000 and   10250.000
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    32.984
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

SECTION NO.    32.998
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

N values...  Left   Channel   Right    Contraction    Expansion
          0.0450   0.0500   0.0450       1.1000     0.7000

SECTION NO.    33.410
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

LOCAL INFLOW POINT  9 occurs upstream from Section No.      33.410

SECTION NO.    33.820
...DEPTH of the Bed Sediment Control Volume =    0.00 ft.

NO. OF CROSS SECTIONS IN STREAM SEGMENT=113
NO. OF INPUT DATA MESSAGES =   0

TOTAL NO. OF CROSS SECTIONS IN THE NETWORK = 113
TOTAL NO. OF STREAM SEGMENTS IN THE NETWORK=   1
END OF GEOMETRIC DATA
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$HYD
FIXED BED MODEL

================================================================================
TIME STEP #       1
*   AB     AGUA FRIA RIVER FIXED BED  DISCHARGE BASE FROM CVL 1996 FIS STUDY

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
ACCUMULATED TIME (yrs).....      0.000

--- Downstream Boundary Condition Data for STREAM SEGMENT NO.  1 at Control Point #  1 ---
                          DISCHARGE   TEMPERATURE  WATER SURFACE
                            (cfs)       (deg F)        (ft)
                          52000.000       60.00        916.830

****  DISCHARGE    WATER    ENERGY  VELOCITY   ALPHA     TOP       AVG       AVG VEL (by subsection)
        (CFS)     SURFACE    LINE     HEAD              WIDTH     BED        1       2       3

SECTION NO.      0.160
****  52000.000   916.830   917.360   0.530    2.497  5823.743   910.986   3.834   8.407   2.267
                                                FLOW DISTRIBUTION (%) =   21.107  41.074  37.819
SECTION NO.      0.440
****  52000.000   921.309   921.540   0.231    2.626  8899.971   915.810   3.049   5.454   0.903
                                                FLOW DISTRIBUTION (%) =   46.871  34.838  18.292
SECTION NO.      0.630
****  52000.000   923.448   923.802   0.354    3.051  8559.477   916.996   2.774   8.250   1.861
                                                FLOW DISTRIBUTION (%) =   31.376  27.877  40.748
SECTION NO.      0.730
****  52000.000   925.023   925.370   0.347    2.820  9049.220   918.427   2.747   8.609   1.967
                                                FLOW DISTRIBUTION (%) =   40.299  24.156  35.545
SECTION NO.      1.330
****  52000.000   933.074   933.563   0.489    1.941  4800.831   926.598   2.738   7.420   2.792
                                                FLOW DISTRIBUTION (%) =   37.589  50.352  12.058
SECTION NO.      1.710
****  52000.000   937.021   937.357   0.336    1.555  4016.709   929.872   1.648   5.053   0.647
                                                FLOW DISTRIBUTION (%) =   17.058  82.909   0.033
SECTION NO.      2.020
****  52000.000   939.631   940.181   0.550    1.407  3488.145   934.803   2.836   6.639   0.000
                                                FLOW DISTRIBUTION (%) =   24.162  75.838   0.000
SECTION NO.      2.600
****  52000.000   947.276   947.724   0.449    1.163  2559.447   941.885   2.799   5.716   3.426
                                                FLOW DISTRIBUTION (%) =   10.344  83.732   5.925
SECTION NO.      2.800
****  52000.000   948.975   949.291   0.316    1.021  2253.423   943.619   3.088   4.579   0.000
                                                FLOW DISTRIBUTION (%) =    5.265  94.735   0.000
SECTION NO.      3.270
****  52000.000   952.356   952.869   0.514    1.029  1660.621   946.067   1.314   5.762   0.000
                                                FLOW DISTRIBUTION (%) =    0.491  99.509   0.000
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SECTION NO.       3.370
****  52000.000    953.137   953.699   0.562    1.089  1749.577   946.364   1.746   6.075   0.000
                                                 FLOW DISTRIBUTION (%) =    2.192  97.808   0.000
SECTION NO.       3.430
****  52000.000    954.745   955.705   0.959    1.022  1191.020   948.793   2.938   7.886   0.000
                                                 FLOW DISTRIBUTION (%) =    0.866  99.134   0.000
SECTION NO.       3.729
****  52000.000    958.943   959.618   0.675    1.000  1171.896   952.211   0.000   6.591   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       3.734
****  52000.000    958.990   959.667   0.676    1.000  1182.039   952.322   0.000   6.597   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       3.757
****  52000.000    959.204   959.915   0.710    1.000  1105.904   952.249   0.000   6.761   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       3.767
****  52000.000    959.242   960.103   0.861    1.000  1112.261   952.962   0.000   7.445   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.092
****  52000.000    962.263   962.949   0.687    1.000  1110.785   955.220   0.000   6.647   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.094
** SUPERCRITICAL **  Using Critical Water Surface +
SECTION NO.       4.094 TIME =      1.000 DAYS.
TRIAL     TRIAL        COMPUTED      CRITICAL
 NO.        WS            WS            WS
  0.     962.555       961.293
  1.     962.649       961.359       962.599
****  52000.000    962.649   964.669   2.020    1.000  1105.730   958.524   0.000  11.401   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.270
****  52000.000    966.396   966.945   0.549    1.000  1115.992   958.557   0.000   5.944   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.700
****  52000.000    968.494   969.049   0.555    1.000  1107.641   960.639   0.000   5.977   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.754
****  52000.000    968.772   969.243   0.471    1.000  1124.231   960.370   0.000   5.505   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       4.790
****  52000.000    968.791   969.714   0.923    1.000  1115.404   962.743   0.000   7.708   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       5.150
****  52000.000    973.371   974.241   0.870    1.000  1390.853   968.373   0.000   7.481   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       5.290
****  52000.000    975.807   977.001   1.194    1.000  1382.190   971.515   0.000   8.766   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000

--- LOCAL INFLOW POINT #  1 is upstream of Section No.       5.290 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:  -2400.000       0.00
                   Total:  54400.000      57.35

SECTION NO.       5.380
****  54400.000    977.798   978.900   1.102    1.000  1291.519   972.797   0.000   8.422   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       5.689
****  54400.000    981.365   981.994   0.629    1.000  1150.112   973.930   0.000   6.362   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       5.750
****  54400.000    981.738   982.592   0.854    1.000  1116.168   975.164   0.000   7.414   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       5.900
****  54400.000    983.502   984.391   0.888    1.000  1111.413   977.028   0.000   7.560   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.430
****  54400.000    989.479   990.505   1.026    1.000  1067.735   983.208   0.000   8.124   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.820
****  54400.000    993.718   994.570   0.852    1.000  1106.071   987.075   0.000   7.403   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.888
****  54400.000    994.196   995.959   1.763    1.000  1110.503   989.596   0.000  10.650   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.890
****  54400.000    994.258   996.008   1.750    1.000  1110.552   989.642   0.000  10.612   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.910
****  54400.000    995.361   996.536   1.174    1.000  1126.487   989.806   0.000   8.693   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.930
****  54400.000    995.792   996.851   1.059    1.000  1131.143   989.965   0.000   8.254   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       6.990
****  54400.000    996.681   997.817   1.135    1.000  1130.183   991.050   0.000   8.547   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       7.490
****  54400.000   1002.785  1003.711   0.926    1.000   980.851   995.600   0.000   7.719   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       8.000
****  54400.000   1006.477  1006.890   0.414    1.000  1462.843   999.269   0.000   5.159   0.000
                                                 FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.       8.105
****  54400.000   1006.958  1007.625   0.667    1.026  1835.047  1001.968   0.995   6.625   4.736
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                                                FLOW DISTRIBUTION (%) =    0.130  95.651   4.219
SECTION NO.      8.198
****  54400.000  1008.007  1008.845   0.837    1.000  1492.437  1003.042   0.000   7.340   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.      8.992
****  54400.000  1020.747  1021.317   0.570    1.082  2173.679  1015.645   2.616   6.181   4.073
                                                FLOW DISTRIBUTION (%) =    4.021  94.630   1.350
SECTION NO.      9.435
****  54400.000  1025.612  1026.116   0.504    1.127  2373.491  1019.827   0.906   5.758   1.389
                                                FLOW DISTRIBUTION (%) =    0.001  97.672   2.327
SECTION NO.      9.696
****  54400.000  1028.569  1028.981   0.412    1.164  2676.183  1023.200   4.031   5.671   1.303
                                                FLOW DISTRIBUTION (%) =   32.360  65.944   1.696

--- LOCAL INFLOW POINT #  2 is upstream of Section No.       9.696 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
              Local Inflow:  24400.000       0.00
                     Total:  30000.000     104.00

SECTION NO.      9.885
****  30000.000  1030.029  1030.576   0.546    1.283  2743.395  1026.848   0.860   6.198   2.209
                                                FLOW DISTRIBUTION (%) =    0.204  90.304   9.492
SECTION NO.     10.538
****  30000.000  1039.950  1040.227   0.277    1.149  1530.644  1033.287   3.222   4.409   1.976
                                                FLOW DISTRIBUTION (%) =    2.486  88.575   8.939
SECTION NO.     10.752
****  30000.000  1041.926  1042.509   0.583    1.102   991.579  1034.967   1.923   6.206   0.000
                                                FLOW DISTRIBUTION (%) =    2.853  97.147   0.000
SECTION NO.     11.029
****  30000.000  1045.129  1045.479   0.350    1.027   947.188  1038.079   0.110   4.755   1.044
                                                FLOW DISTRIBUTION (%) =    0.000  99.567   0.433
SECTION NO.     11.428
****  30000.000  1050.771  1052.602   1.832    1.077   560.045  1043.528   2.315  10.918   0.000
                                                FLOW DISTRIBUTION (%) =    1.177  98.823   0.000

--- LOCAL INFLOW POINT #  3 is upstream of Section No.      11.428 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
              Local Inflow:  -5000.000       0.00
                     Total:  35000.000      89.14

SECTION NO.     11.557
****  35000.000  1054.395  1056.533   2.138    4.217  1122.036  1044.288   1.779  13.110   0.000
                                                FLOW DISTRIBUTION (%) =   20.332  79.668   0.000
SECTION NO.     11.847
****  35000.000  1060.466  1063.224   2.757    2.122   731.955  1047.943   1.120  13.683   3.731
                                                FLOW DISTRIBUTION (%) =    4.132  94.645   1.222
SECTION NO.     12.359
****  35000.000  1067.597  1068.385   0.788    1.109   527.319  1054.596   0.000   7.173   1.464
                                                FLOW DISTRIBUTION (%) =    0.000  98.432   1.568
SECTION NO.     12.420
****  35000.000  1068.558  1068.685   0.127    1.000  1097.200  1057.409   0.000   2.861   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     12.470
****  35000.000  1068.551  1068.784   0.233    1.000   914.000  1058.667   0.000   3.874   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     13.467
****  35000.000  1073.756  1074.449   0.694    1.000  1340.962  1069.849   0.000   6.681   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     13.952
****  35000.000  1083.723  1084.730   1.007    1.213  1235.871  1078.059   1.977   8.453   4.163
                                                FLOW DISTRIBUTION (%) =    1.486  88.037  10.478
SECTION NO.     14.430
****  35000.000  1091.732  1092.168   0.435    1.262  2333.451  1087.146   2.019   5.666   2.872
                                                FLOW DISTRIBUTION (%) =    5.402  83.766  10.833
SECTION NO.     15.000
****  35000.000  1099.115  1099.735   0.621    1.153  1337.368  1093.684   2.315   6.819   4.229
                                                FLOW DISTRIBUTION (%) =    1.685  77.803  20.511
SECTION NO.     15.094
****  35000.000  1100.436  1100.913   0.477    1.230  1652.946  1094.833   1.717   6.080   3.163
                                                FLOW DISTRIBUTION (%) =    0.204  76.805  22.990
SECTION NO.     15.374
** SUPERCRITICAL **  Using Critical Water Surface +
SECTION NO.     15.374 TIME =     1.000 DAYS.
TRIAL     TRIAL       COMPUTED     CRITICAL
 NO.        WS           WS           WS
  0.    1104.218     1103.499
  1.    1104.312     1103.466     1104.262
****  35000.000  1104.312  1106.266   1.954    1.598   937.122  1095.796   2.871  12.531   4.468
                                                FLOW DISTRIBUTION (%) =    0.042  77.171  22.787
SECTION NO.     15.658
****  35000.000  1110.394  1110.984   0.590    1.033   700.874  1101.489   5.877   6.980   4.373
                                                FLOW DISTRIBUTION (%) =   66.498  29.054   4.447
SECTION NO.     16.099
****  35000.000  1113.553  1114.142   0.589    1.240   832.746  1102.152   4.047   7.163   0.000
                                                FLOW DISTRIBUTION (%) =   38.456  61.544   0.000
SECTION NO.     16.482
****  35000.000  1117.325  1118.814   1.489    1.000   425.005  1108.912   0.000   9.789   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     16.506
****  35000.000  1117.735  1119.227   1.492    1.000   445.606  1109.720   0.000   9.799   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     16.612
****  35000.000  1120.007  1121.679   1.672    1.021   377.417  1110.534   3.601  10.402   3.052
                                                FLOW DISTRIBUTION (%) =    0.297  99.380   0.322
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SECTION NO.     16.990
****  35000.000  1124.615  1124.880   0.265    1.015   665.025  1113.534   1.953   4.363   3.946
                                                FLOW DISTRIBUTION (%) =    0.500  44.698  54.802
SECTION NO.     17.458
****  35000.000  1125.179  1125.222   0.043    1.092  1858.157  1120.318   0.281   0.924   1.720
                                                FLOW DISTRIBUTION (%) =    0.149   8.040  91.811
SECTION NO.     17.638
** SUPERCRITICAL **  Using Critical Water Surface +
SECTION NO.     17.638 TIME =      1.000 DAYS.
TRIAL     TRIAL        COMPUTED      CRITICAL
 NO.        WS            WS            WS
  0.    1133.633      1124.575
  1.    1133.727      1124.636      1133.677
****  35000.000  1133.727  1135.275   1.548    1.000  1077.305  1130.472   0.000   9.982   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000

--- LOCAL INFLOW POINT #  4 is upstream of Section No.      17.638 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:  -1000.000       0.00
                   Total:  36000.000      86.67

SECTION NO.     17.821
****  36000.000  1139.057  1139.934   0.876    1.587  1640.400  1131.031   2.498   8.126   0.000
                                                FLOW DISTRIBUTION (%) =   16.131  83.869   0.000
SECTION NO.     18.275
****  36000.000  1144.163  1144.618   0.455    1.531  1854.874  1136.268   2.345   6.391   3.278
                                                FLOW DISTRIBUTION (%) =   15.788  64.241  19.971
SECTION NO.     18.962
****  36000.000  1153.538  1154.485   0.947    1.083  1055.883  1148.887   6.070   9.007   7.191
                                                FLOW DISTRIBUTION (%) =   26.374  44.646  28.980
SECTION NO.     19.446
****  36000.000  1164.582  1165.363   0.781    1.268  1204.756  1158.075   4.208   8.004   2.439
                                                FLOW DISTRIBUTION (%) =   29.486  70.283   0.231
SECTION NO.     19.920
****  36000.000  1172.058  1172.435   0.378    1.084  1429.706  1166.239   2.811   5.906   4.280
                                                FLOW DISTRIBUTION (%) =    0.968  36.705  62.327
SECTION NO.     20.579
****  36000.000  1181.669  1182.709   1.040    1.355  1189.915  1174.714   3.360   8.779   2.479
                                                FLOW DISTRIBUTION (%) =   15.366  84.569   0.065
SECTION NO.     20.958
****  36000.000  1186.868  1187.438   0.570    1.489  1863.093  1179.591   2.190   6.647   2.880
                                                FLOW DISTRIBUTION (%) =   10.977  80.147   8.876
SECTION NO.     21.061
****  36000.000  1187.633  1188.678   1.045    1.363  1220.324  1179.410   2.096   8.507   2.261
                                                FLOW DISTRIBUTION (%) =    0.230  92.382   7.388
SECTION NO.     21.157
****  36000.000  1189.686  1190.001   0.315    1.016  1142.070  1182.070   0.764   4.542   3.509
                                                FLOW DISTRIBUTION (%) =    0.100  95.998   3.902
SECTION NO.     21.431
****  36000.000  1193.683  1194.878   1.195    1.000   673.589  1187.588   0.000   8.768   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.     21.893
****  36000.000  1200.582  1201.090   0.508    1.681  1930.039  1193.016   0.881   6.365   2.087
                                                FLOW DISTRIBUTION (%) =    0.016  78.415  21.569

--- LOCAL INFLOW POINT #  5 is upstream of Section No.      21.893 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:   4000.000       0.00
                   Total:  32000.000      97.50

SECTION NO.     22.462
****  32000.000  1208.493  1209.709   1.216    1.369  1258.558  1203.343   4.761  10.100   0.000
                                                FLOW DISTRIBUTION (%) =   29.976  70.024   0.000
SECTION NO.     22.935
****  32000.000  1216.491  1216.656   0.165    1.228  3335.098  1212.101   2.530   4.050   2.276
                                                FLOW DISTRIBUTION (%) =   26.198  45.645  28.156
SECTION NO.     23.409
****  32000.000  1224.283  1225.373   1.090    1.204  1752.159  1221.022   2.675  10.553   6.527
                                                FLOW DISTRIBUTION (%) =    0.634  40.326  59.041
SECTION NO.     23.974
****  32000.000  1238.034  1238.255   0.221    1.067  1423.357  1230.387   0.000   4.387   3.260
                                                FLOW DISTRIBUTION (%) =    0.000  41.745  58.255
SECTION NO.     24.449
****  32000.000  1241.949  1242.414   0.465    1.142  1883.901  1237.963   1.997   6.347   4.321
                                                FLOW DISTRIBUTION (%) =    1.095  52.817  46.089
SECTION NO.     24.543
****  32000.000  1243.873  1244.217   0.344    1.059  2118.948  1240.430   4.326   5.588   4.141
                                                FLOW DISTRIBUTION (%) =   18.030  33.243  48.728
SECTION NO.     24.996
****  32000.000  1253.159  1253.556   0.398    1.301  3054.146  1249.861   1.889   6.004   3.918
                                                FLOW DISTRIBUTION (%) =    6.320  53.103  40.577

--- LOCAL INFLOW POINT #  6 is upstream of Section No.      24.996 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:   4000.000       0.00
                   Total:  28000.000     111.43

SECTION NO.     25.478
****  28000.000  1261.021  1262.474   1.453    1.469   908.058  1255.736   2.945  10.820   4.417
                                                FLOW DISTRIBUTION (%) =    0.541  75.887  23.573
SECTION NO.     25.666
****  28000.000  1264.640  1265.566   0.926    1.588   823.682  1256.465   2.374   8.892   3.563
                                                FLOW DISTRIBUTION (%) =    1.181  70.795  28.023
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SECTION NO.      25.860
****  28000.000  1268.616  1270.491   1.875    1.954  1094.324  1261.193   2.965  12.001   2.571
                                                FLOW DISTRIBUTION (%) =   17.189  82.720   0.092
SECTION NO.      26.290
****  28000.000  1279.349  1279.742   0.393    2.345  3666.383  1274.538   2.554   6.772   1.784
                                                FLOW DISTRIBUTION (%) =   30.939  49.332  19.729
SECTION NO.      26.730
****  28000.000  1286.867  1287.639   0.772    2.271  1494.061  1280.022   3.189   9.340   3.023
                                                FLOW DISTRIBUTION (%) =    6.084  51.833  42.082
SECTION NO.      27.030
****  28000.000  1291.751  1292.469   0.718    1.749  1052.651  1283.937   5.707   8.990   2.554
                                                FLOW DISTRIBUTION (%) =   40.016  39.390  20.593
SECTION NO.      27.680
****  28000.000  1302.598  1303.172   0.575    1.952  2563.465  1297.573   3.278   8.800   0.000
                                                FLOW DISTRIBUTION (%) =   60.685  39.315   0.000

--- LOCAL INFLOW POINT #  7 is upstream of Section No.      27.680 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:   4000.000        0.00
                   Total:  24000.000      130.00

SECTION NO.      27.940
****  24000.000  1307.813  1308.306   0.493    1.501  1504.481  1302.785   3.642   7.752   2.755
                                                FLOW DISTRIBUTION (%) =   60.099  39.463   0.437
SECTION NO.      28.120
****  24000.000  1311.143  1311.693   0.550    1.519  1531.798  1306.002   1.889   6.507   2.317
                                                FLOW DISTRIBUTION (%) =    1.433  81.252  17.315
SECTION NO.      28.670
****  24000.000  1319.531  1320.252   0.721    1.395  1190.181  1314.319   0.000   7.247   2.451
                                                FLOW DISTRIBUTION (%) =    0.000  86.897  13.103
SECTION NO.      28.950
****  24000.000  1324.786  1325.925   1.140    1.281   752.670  1319.598   0.000   9.274   4.178
                                                FLOW DISTRIBUTION (%) =    0.000  81.512  18.488
SECTION NO.      29.040
****  24000.000  1326.897  1327.502   0.605    1.285   818.000  1320.376   0.000   6.804   3.144
                                                FLOW DISTRIBUTION (%) =    0.000  79.683  20.317
SECTION NO.      29.540
****  24000.000  1334.733  1336.605   1.872    1.076   353.534  1327.383   3.159  11.069   0.000
                                                FLOW DISTRIBUTION (%) =    1.848  98.152   0.000
SECTION NO.      29.611
****  24000.000  1337.283  1338.188   0.905    1.633   979.196  1330.582   3.200   8.690   3.053
                                                FLOW DISTRIBUTION (%) =   25.728  73.522   0.750
SECTION NO.      29.800
****  24000.000  1340.566  1340.920   0.354    1.105   686.044  1332.488   0.000   5.400   3.700
                                                FLOW DISTRIBUTION (%) =    0.000  58.704  41.296
SECTION NO.      30.070
****  24000.000  1343.696  1345.014   1.318    1.248   591.068  1337.118   3.874  10.621   8.327
                                                FLOW DISTRIBUTION (%) =    9.870  47.902  42.227
SECTION NO.      30.260
****  24000.000  1347.879  1348.331   0.452    1.000   592.080  1340.359   0.000   5.390   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000

--- LOCAL INFLOW POINT #  8 is upstream of Section No.      30.260 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
            Local Inflow:   4000.000        0.00
                   Total:  20000.000      156.00

SECTION NO.      30.730
****  20000.000  1352.649  1354.730   2.081    1.070   352.736  1346.617   0.000  11.657   3.152
                                                FLOW DISTRIBUTION (%) =    0.000  98.440   1.560
SECTION NO.      30.820
****  20000.000  1356.104  1356.588   0.483    1.094   722.682  1349.006   0.000   5.613   1.131
                                                FLOW DISTRIBUTION (%) =    0.000  98.675   1.325
SECTION NO.      31.390
****  20000.000  1364.143  1364.629   0.487    1.153   907.929  1359.404   4.134   6.260   3.418
                                                FLOW DISTRIBUTION (%) =   23.744  66.746   9.510
SECTION NO.      31.860
****  20000.000  1371.360  1371.756   0.396    1.000   693.221  1365.644   0.000   5.048   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.      32.430
****  20000.000  1378.404  1378.869   0.465    1.000   597.568  1372.284   0.000   5.469   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000
SECTION NO.      32.720
****  20000.000  1382.125  1383.504   1.379    1.225   343.236  1370.669   2.153  10.348   5.758
                                                FLOW DISTRIBUTION (%) =    0.664  75.396  23.940
SECTION NO.      32.860
****  20000.000  1386.323  1387.888   1.566    1.336   518.555  1377.699   6.938  11.158   3.666
                                                FLOW DISTRIBUTION (%) =   19.078  72.647   8.275
SECTION NO.      32.920
****  20000.000  1388.510  1390.459   1.949    1.070   327.898  1382.002   6.371  11.458   5.702
                                                FLOW DISTRIBUTION (%) =    1.398  93.955   4.647
SECTION NO.      32.984
****  20000.000  1391.483  1394.108   2.625    1.139   258.998  1382.120   9.989  14.602   5.504
                                                FLOW DISTRIBUTION (%) =   35.747  62.207   2.046
SECTION NO.      32.998
****  20000.000  1392.644  1394.943   2.299    1.007   260.364  1386.175   4.892  12.180   0.000
                                                FLOW DISTRIBUTION (%) =    0.331  99.669   0.000
SECTION NO.      33.410
****  20000.000  1402.707  1403.154   0.447    1.000   359.053  1392.320   0.000   5.363   0.000
                                                FLOW DISTRIBUTION (%) =    0.000 100.000   0.000

--- LOCAL INFLOW POINT #  9 is upstream of Section No.      33.410 ---
                          DISCHARGE   TEMPERATURE
                            (cfs)       (deg F)
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           Local Inflow:    11000.000        0.00
                  Total:     9000.000      346.67

 SECTION NO.      33.820
    9000.000  1403.893  1404.297   0.404    1.025   190.273  1392.612   1.078   5.110   0.000
                                          FLOW DISTRIBUTION (%) =    0.377  99.623   0.000

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$$END

       0   DATA ERRORS DETECTED.

TOTAL NO. OF TIME STEPS READ =      1
TOTAL NO. OF WS PROFILES =          1
ITERATIONS IN EXNER EQ =            0

COMPUTATIONS COMPLETED
RUN TIME =  0 HOURS,  0 MINUTES &  2.00 SECONDS
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MODIFIED EXISTING CONDITION HEC-6 MODEL

Sediment Trend Analysis Report
Agua Fria River Watercourse Master Plan
KHA Project No. 091131004

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T1      KIMLEY-HORN AND ASSOCIATES, INC. (KHA PROJECT NO. 091131004) EICHINGER
T2      AGUA FRIA RIVER, GILA RIVER TO NEW WADDELL DAM SEDIMENT TREND ANALYSIS
T3      100-YEAR EVENT EXISTING CONDTIONS MODEL - ECAFRev.DAT JUNE 18 2001
          EC - EXISTING CONDITIONS
          AF - AGUA FRIA
          Rev - Revised from April 25, 2001 model titled EC100AF.DAT
        ***UPDATE***(1) CHANGE BED VOLUME RESERVOIR AT STATE ROUTE 74 X-SECTION 32.984
        TO 6 FT; (2) CHANGE MOVEABLE BED LEFT LIMIT FOR X-SECTION 24.542 TO STA. 9000.
    ********************************************************************************
     ECAFREV.DAT modified or revised to change bank stations, revise X3/XL combinations
     and change of movable bed limits.  changes reflect modifications to fixed bed model.
     Model name ECMOD.dat   March 4 2002    P.S. code out hi ground and extra gr points
    ********************************************************************************


NC 0.045   0.064   0.035      .1      .3
X1  0.16      52    9720   10184       0       0       0

GR 924.4  4925.0   924.2  5199.0   921.8  5600.0   919.5  5760.0   919.4  5959.0
GR 920.9  6245.0   920.8  6516.0   919.3  6554.0   919.8  6850.0   919.6  7271.0
GR 920.5  7535.0   919.6  8000.0   917.6  8136.0   917.4  8339.0   912.3  8356.0
GR 917.2  8376.0   916.4  8991.0   916.0  9030.0   914.0  9212.0   911.6  9231.0
GR 913.2  9494.0   911.2  9620.0   911.8  9720.0   910.7 10000.0   909.7 10120.0
GR 909.6 10136.    913.7 10167.0   913.7 10184.0   913.7 10213.0   913.7 10477.0
GR 917.1 10590.    916.6 10873.0   910.5 10909.0   910.5 11042.0   915.2 11068.0
GR 912.1 11265.    911.5 11500.0   911.5 11516.0   908.3 11664.0   910.4 11830.0
GR 916.1 11911.    914.1 12098.0   914.9 12628.0   922.1 12652.0   922.7 12725.0
GR 916.5 12758.    916.8 13671.0   916.2 14363.0   917.2 14971.0   917.8 15391.0
GR 913.5 15403.    920.3 15459.0
HD  0.16      10    8200   12250
NC 0.045    0.10   0.035
X1  0.44    44.0    9798   10420    1510    1465    1485

GR 927.5  3107.0   925.0  4575.0   922.8  5984.0   921.8  6974.0   920.3  7816.0
GR 923.1  7847.0   923.3  7915.0   919.1  7942.0   919.1  7995.0   923.7  8029.0
GR 919.5  8152.0   918.5  8300.0   916.2  8640.0   915.1  8999.0   916.8  9023.0
GR 916.7  9710.0   916.7  9798.0   913.9  9815.0   913.5  9842.0   912.8 10000.0
GR 917.6 10016.0   916.8 10120.0   916.2 10201.0   917.0 10263.0   917.7 10313.0
GR 917.7 10385.0   917.7 10420.0   917.7 10455.0   917.8 11076.0   920.3 11103.0
GR 916.9 11133.0   916.4 11365.0   919.1 11391.0   918.7 12229.0   918.8 12650.0
GR 920.6 12691.0   919.8 12785.0   919.6 13644.0   920.2 14200.0   920.4 14355.0
GR 921.0   16110   921.8   16630   922.9   17240   924.0   17640
HD  0.44      10    8100   12750
NC 0.048   0.074   0.035
X1  0.63    36.0    9888   10209    1055     985    1010
X1                         6600     930
GR 927.8  3220.0   928.7  4462.0   927.0  5328.0   924.8  6127.0   923.4  6520.0
GR 925.1  6530.0   925.1  6553.0   917.7  6571.0   926.5  6600.0   923.7  6645.0
GR 923.1  7426.0   922.5  8068.0   921.2  8670.0   921.1  8772.0   917.5  8831.0
GR 920.1  9149.0   920.4  9522.0   919.9  9740.0   919.6  9888.0   915.7  9908.0
GR 916.1 10000.0   916.0 10095.0   929.0 10209.0   917.1 10273.0   916.6 10424.0
GR 919.7 10448.0   920.7 10644.0   926.6 10667.0   919.1 10704.0   921.3 11646.0
GR 921.5 12511.0   921.7 13595.0   921.7 14582.0   923.3   15500   923.8   15950
GR 925.0   16200
HD  0.63      10    8270   12400
NC 0.050   0.066   0.035
X1  0.73    39.0    9917   10162     510     490     500

GR 926.5  3285.0   926.3  3986.0   925.6  4737.0   925.2  5415.0   925.6  5760.0
GR 925.6  5797.0   925.7  5889.0   925.7  5945.0   924.5  6306.0   924.5  7206.0
GR 924.3  8340.0   921.6  8530.0   921.3  8800.0   921.1  8982.0   919.1  8999.0
GR 918.6  9126.0   921.0  9195.0   920.8  9760.0   920.0  9917.0   917.8  9927.0
GR 917.9 10000.0   916.9 10087.0   919.0 10100.0   919.3 10162.0   919.2 10205.0
GR 917.0 10479.0   919.8 10521.0   918.9 10591.0   919.2 10655.0   919.2 10697.0
GR 919.2 10771.0   922.2 10794.0   921.6 11725.0   922.6 11783.0   924.5 12394.0
GR 924.5 13563.0   924.0   14000   924.3   15050   926.0   15560
HD  0.73      10    8200   12400
NC 0.045   0.050   0.035
X1  1.33    32.0    9911   10456    3405    3325    3385

GR 934.6  6000.0   933.3  6025.0   932.9  6490.0   931.0  6748.0   931.3  7154.0
GR 931.8  7239.0   933.2  7837.0   934.0  8038.0   931.1  8083.0   930.0  8120.0
GR 929.8  8339.0   931.4  8777.0   929.3  8916.0   931.1  8945.0   929.8  9282.0
GR 929.1  9911.0   927.0  9920.0   927.0 10000.0   925.9 10122.0   925.5 10364.0
GR 925.5 10456.0   925.5 10490.0   931.1 10701.0   931.6 11006.0   930.6 11200.0
GR 930.4 11242.0   934.9 11261.0   931.9 11306.0   933.2 11377.0   934.8 11409.0
GR 936.3 12061.0   941.3 12490.0
HD  1.33      10    8000   10456
NC 0.045    0.05   0.035
X1  1.71      44    9091 10284.4    2000    2585    2480

GR 940.9  5684.9   943.3  5808.0   945.3  6004.6   945.1  6078.9   947.4  6100.1
GR 947.4  6117.9   939.1  6148.7   948.7  6187.8   948.6  6226.4   934.0  6296.9
GR 936.8  6795.4   942.6  6807.8   942.6  6816.3   935.2  6833.2   933.6  7016.1
GR 935.7  7029.0   935.7  7052.6   932.4  7065.5   932.0  7135.0   934.3  7164.7
GR 934.3  7198.3   931.9  7209.5   934.6  7333.9   933.3  7541.5   933.4  7601.4
GR 936.1  7704.9   936.0  8010.3   935.3  8305.9   935.8  8591.1   935.4  8888.0
GR 935.8  9091.0   933.0  9104.6   933.1  9230.9   931.1  9247.7   929.7  9534.8
GR 928.2  9542.9   928.2  9966.4   928.2 10000.0   930.4 10058.7   930.5 10277.8
GR 935.9 10284.4   941.2 10511.3   951.5 11351.7   952.3 11442.6
HD  1.71      10    9091 10284.4
X1  2.02      31  8839.4 10077.3     890    2065    1965

GR 950.0  5981.1   948.6  6066.6   951.6  6121.6   954.7  6293.7   955.1  6434.3
GR 940.7  6514.7   939.9  6533.9   937.1  6557.3   936.4  6934.6   937.1  7244.1
GR 944.6  7260.1   944.6  7278.4   937.0  7304.1   936.3  7340.1   938.6  7388.3
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GR 938.4  7687.8   936.3  7711.0   938.5  7824.6   938.8  7961.0   937.2  8390.4
GR 938.4  8544.9   938.1  8839.4   935.2  8854.5   935.2  9121.5   935.4  9418.2
GR 934.2  9860.0   932.7  9918.6   933.3 10000.0   934.5 10062.4   944.8 10077.3
G  4.8 10079.1
H  .02      10     7400   10070
NC  .04     .04     .035
X1  2.60     26     9437   10850    2700    2945    3320

GR 967.1    7292   967.4  7442.4   961.7  7739.8   957.5  7927.3   953.0  8217.8
GR 947.7  8560.5   944.7  8730.1   944.9  9057.3   944.8  9437.0   940.5  9449.9
GR 941.9  9684.7   939.6  9951.4   939.6 10000.0   939.6 10090.3   941.7 10102.7
GR 943.1 10322.7   940.5 10500.3   946.6 10580.6   946.6 10625.8   945.8 10652.9
GR 942.2 10671.4   943.4 10811.0   943.6 10850.0   944.8 11140.9   954.6 11152.0
GR 954.6   11164
HD  2.60     10     9437   10850
X1  2.80     19     9200   11222    1250     655    1000

GR 956.4  8817.0   952.8  8856.3   944.9  9060.9   943.4    9200   943.2  9214.4
GR 943.5  9447.6   942.0 10000.0   943.9 10091.2   943.9 10170.9   942.8 10185.3
GR 943.0 10439.2   945.6 10464.6   945.8 10582.0   943.7 10628.0   945.8 10774.1
GR 945.7 10820.4   942.3 10890.9   945.9 11203.4   956.6   11222
HD  2.80     10     9150   10850
X1  3.27     17  9692.6 11130.5    2800    1995    2505

GR 961.5  7808.3   958.3  8137.4   956.3  8362.4   953.4  9316.6   950.7  9692.6
GR 945.5  9724.1   944.5  9770.5   944.8 10000.0   944.8 10158.6   951.4 10188.1
GR 947.8 10278.9   948.5 10405.5   944.5 10606.9   944.5 10822.2   945.7 10915.2
GR 948.5 11116.0   960.5 11130.5
HD  3.27     10     9300 11130.5
X1  3.37     17  9716.5 10970.3     585     460     510

GR 961.6  7874.4   957.2  8296.6   954.5  8930.2   950.8  9667.0   950.9  9716.5
GR 945.1  9738.3   945.1 10000.0   945.5 10237.8   948.9 10256.9   946.7 10280.2
GR 945.1 10477.2   945.1 10515.3   945.6 10619.0   943.4 10669.0   950.7 10741.4
GR 949.3 10945.1   961.9 10970.3
HD  3.37     10     9500 10970.3
X1  3.43     12  9758.5 10873.4     925     795     850

GR 961.5  7958.9   957.8  8287.1   956.3  8796.5   955.8  9654.5   953.0  9684.2
GR 952.8  9758.5   946.2  9788.6   946.0 10000.0   946.0 10271.7   951.1 10293.1
GR 951.1 10849.9   963.7 10873.4
HD  3.43     10     9650 10873.4
X1 3.729    6.0     9420   10603    1575    1585    1580

G  72.0     9405      968    9420   952.2    9425   952.2   10588   967.2   10603
C  7.2    10613
HD 3.729     10     9420   10603
NC                    0.3     0.5
X1 3.734    63.0  9400.9 10599.3      25      25      25

GR 972.4  9400.8   967.5  9400.9   952.3  9416.0   952.3  9422.1   952.3  9474.5
GR 952.3  9474.6   952.3  9481.6   952.3  9481.7   952.3  9554.7   952.3  9554.8
GR 952.3  9561.8   952.3  9561.9   952.3  9634.6   952.3  9634.7   952.3  9641.7
GR 952.3  9641.8   952.3  9714.5   952.3  9714.6   952.3  9721.6   952.3  9721.7
GR 952.3  9794.7   952.3  9794.8   952.3  9801.8   952.3  9801.9   952.3  9874.9
GR 952.3  9875.0   952.3  9882.0   952.3  9882.1   952.3  9955.1   952.3  9955.2
GR 952.3  9962.2   952.3  9962.3   952.3 10034.9   952.3 10035.0   952.3 10042.0
GR 952.3 10042.1   952.3 10115.1   952.3 10115.2   952.3 10122.2   952.3 10122.3
GR 952.3 10194.8   952.3 10194.9   952.3 10201.9   952.3 10202.0   952.3 10275.0
GR 952.3 10275.1   952.3 10282.1   952.3 10282.2   952.3 10355.2   952.3 10355.3
GR 952.3 10362.3   952.3 10362.4   952.3 10434.9   952.3 10435.0   952.3 10442.0
GR 952.3 10442.1   952.3 10515.1   952.3 10515.2   952.3 10522.2   952.3 10522.3
GR 952.3 10585.2   967.6 10599.3   971.1 10599.4
HD 3.734     10  9400.9 10599.3
X1 3.757    7.0     9425   10555     120     120     120

GR 968.3  9400.0   966.5  9425.0   952.3  9454.0   952.4  9708.0   952.1 10000.0
GR 952.1 10538.0   967.7 10555.0
HD 3.757     10     9425   10555
X1 3.767     92  9428.1 10572.0      50      50      50

          -------CODED OUT BRIDGE PIERS-----------
GR 970.9  9428.0   966.9  9428.1   952.9  9457.5   952.9  9457.6   952.9  9460.6
GR 952.9  9460.7   952.9  9492.4   952.9  9492.5   952.9  9498.5   952.9  9498.6
GR 952.9  9510.4   952.9  9510.5   952.9  9513.5   952.9  9513.6   952.9  9525.5
GR 952.9  9525.6   952.9  9528.6   952.9  9528.7   952.9  9540.4   952.9  9540.5
GR 952.9  9543.5   952.9  9543.6   952.9  9555.4   952.9  9555.5   952.9  9558.5
GR 952.9  9558.6   952.9  9570.4   952.9  9570.5   952.9  9573.5   952.9  9573.6
GR 952.9  9585.4   952.9  9585.5   952.9  9588.5   952.9  9588.6   952.9  9600.4
GR 952.9  9600.5   952.9  9625.0   952.9  9625.1   952.9  9761.9   953.0  9762.0
GR 953.0  9778.0   952.9  9778.1   952.9  9915.0   953.0  9915.1   953.0  9931.1
GR 952.9  9931.2   952.9 10068.9   953.0 10069.0   953.0 10085.0   952.9 10085.1
GR 952.9 10220.9   953.0 10221.0   953.0 10237.0   952.9 10237.1   952.9 10374.9
GR 952.9 10375.0   952.9 10400.2   952.9 10400.3   952.9 10410.9   952.9 10411.0
GR 952.9 10414.9   952.9 10415.0   952.9 10426.9   952.9 10427.0   952.9 10430.0
GR 952.9 10430.1   952.9 10441.8   952.9 10441.9   952.9 10444.9   952.9 10445.0
G  2.9 10456.9   952.9 10457.0   952.9 10460.0   952.9 10460.1   952.9 10472.0
G  2.9 10472.1   952.9 10475.1   952.9 10475.2   952.9 10486.9   952.9 10487.0
GR 952.9 10490.0   952.9 10490.1   952.9 10501.9   952.9 10502.0   952.9 10508.9
GR 952.9 10509.0   952.9 10540.8   952.9 10540.9   952.9 10543.9   952.9 10544.0
GR 967.2 10571.9   970.9 10572.0
HD 3.767     10  9428.1   10572
NC  0.04    0.04    0.03     0.1     0.3
          ------GRADE CONTROL U/S BUCKEYE ROAD--------
X1 4.092     7.0     9440   10578    1760    1750    1755
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GR 973.3  9440.0   955.2  9465.0   955.2  9757.0   955.2 10000.0   955.2 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.092       0    9440   10578
X[redacted]094     7.0    9440   10578      10       10       10

GR 973.3  9440.0   958.5  9465.0   958.5  9757.0   958.5 10000.0   958.5 10558.0
GR 973.0 10578.0   973.0 10582.0
HD 4.094       0    9440   10578
X1  4.30     7.0    9458   10594    1040     1040     1040

GR 974.8  9458.0   959.6  9475.0   958.7  9760.0   957.6 10000.0   958.6 10293.0
GR 961.1 10573.0   974.9 10594.0
HD  4.30      10    9480   10570
X1  4.70     9.0    9451   10579    2205     2065     2135

GR 978.4  9440.0   978.4  9451.0   961.5  9467.0   960.2  9774.0   959.1 10000.0
GR 961.1 10353.0   962.8 10562.0   978.8 10579.0   978.9 10595.0
HD  4.70      10    9451   10579
X1 4.754    53.0  9402.5 10572.3     150      310      225
X3    10

GR 973.0  7150.0   972.7  8115.0   973.6  8831.0   984.3  9296.0   988.1  9402.5
GR 988.1  9427.7   980.6  9427.8   960:3  9445.8   960.3  9525.5   960.3  9525.6
GR 960.3  9537.6   960.3  9537.7   960.3  9641.5   960.3  9641.6   960.3  9653.6
GR 960.3  9653.7   960.3  9757.4   960.3  9757.5   960.3  9769.5   960.3  9769.6
GR 960.3  9873.4   960.3  9873.5   960.3  9885.5   960.3  9885.6   960.3  9997.8
GR 960.3  9997.9   960.3 10009.9   960.3    10010   960.3 10105.8   960.3 10105.9
GR 960.3 10117.9   960.3 10118.0   960.3 10221.3   960.3 10221.4   960.3 10233.4
GR 960.3 10233.5   960.3 10337.9   960.3 10338.0   960.3 10349.0   960.3 10349.1
GR 960.3 10453.5   960.3 10453.6   960.3 10465.6   960.3 10465.7   960.3 10555.9
GR 981.2 10572.3   988.7 10572.4   988.7 10597.0   987.2 10612.0   978.1 11023.0
GR 978.7 11497.0   980.6 12014.0   982.4 12466.0
HD 4.754      10  9402.5 10572.3
X1  4.79     6.0    9440   10590     357      187      277
GR 980.2  9440.0   964.0  9466.0   961.1 10000.0   964.6 10568.0   980.8 10590.0
GR 980.8 10600.0
HD  4.79      10    9440   10590
X1  5.15     9.0    9291   10713    1780     1960     1873
GR 986.0  9275.0   986.0  9291.0   969.9  9310.0   968.1  9678.0   967.4 10000.0
GR 968.7 10469.0   968.9 10691.0   986.0 10713.0   986.0 10720.0
HD  5.15      10    9291   10590
          ----------GRADE CONTROL STRUCTURE DOWNSTREAM OF I-10-------
X1 5.201     9.0    9291   10713     180      360      270
GR 987.0  9275.0   987.0  9291.0   969.1  9310.0   969.1  9678.0   969.1 10000.0
G[redacted]69.1 10469.0   969.1 10691.0   987.0 10713.0   987.0 10720.0
H[redacted]201       0    9291   10713
X[redacted]5.203     9.0    9291   10713      10       10       10
GR 987.0  9275.0   987.0  9291.0   970.0  9310.0   970.0  9678.0   970.0 10000.0
GR 970.0 10469.0   970.0 10691.0   987.0 10713.0   987.0 10720.0
HD 5.203       0    9291   10713
X1 5.290      82  9250.8 10672.4     505      675      585
GR 994.5  9250.7   986.4  9250.8   971.5  9277.5   971.5  9318.7   971.5  9318.8
GR 971.5  9323.4   971.5  9323.5   971.5  9389.9   971.5  9390.0   971.5  9394.5
GR 971.5  9394.6   971.5  9460.9   971.5  9461.0   971.5  9465.6   971.5  9465.7
GR 971.5  9532.1   971.5  9532.2   971.5  9536.8   971.5  9536.9   971.5  9603.3
GR 971.5  9603.4   971.5  9608.0   971.5  9608.1   971.5  9674.5   971.5  9674.6
GR 971.5  9679.2   971.5  9679.3   971.5  9745.7   971.5  9745.8   971.5  9750.4
GR 971.5  9750.5   971.5  9816.9   971.5  9817.0   971.5  9821.6   971.5  9821.7
GR 971.5  9888.1   971.5  9888.2   971.5  9892.8   971.5  9892.9   971.5  9959.3
GR 971.5  9959.4   971.5  9964.0   971.5  9964.1   971.5 10030.0   971.5 10030.1
GR 971.5 10034.7   971.5 10034.8   971.5 10101.2   971.5 10101.3   971.5 10105.9
GR 971.5 10106.0   971.5 10172.3   971.5 10172.4   971.5 10177.0   971.5 10177.1
GR 971.5 10243.7   971.5 10243.8   971.5 10248.4   971.5 10248.5   971.5 10314.9
GR 971.5 10315.0   971.5 10319.6   971.5 10319.7   971.5 10386.0   971.5 10386.1
GR 971.5 10390.7   971.5 10390.8   971.5 10457.2   971.5 10457.3   971.5 10461.9
GR 971.5 10462.0   971.5 10528.4   971.5 10528.5   971.5 10533.0   971.5 10533.1
GR 971.5 10599.5   971.5 10599.6   971.5 10604.2   971.5 10604.3   971.5 10645.5
GR 989.4 10672.3   997.7 10672.4
HD 5.290      10  9250.8 10672.4
X1 5.380    20.0  9266.0 10656.0     305      645      465
GR 993.0  9214.0   987.7  9266.0   985.7  9342.0   972.8  9358.0   972.3  9413.0
GR 972.2  9565.0   972.2  9734.0   972.2  9889.0   972.2  9994.0   971.4 10000.0
GR 971.4 10062.0   971.4 10195.0   974.3 10208.0   974.2 10263.0   974.2 10420.0
GR 974.2 10582.0   974.2 10639.0   988.4 10656.0   988.6 10671.0   982.3 10702.0
HD 5.380      10    9266   10656
          ----------MCDOWELL ROAD------
X1 5.689      42  9371.3 10552.8    1320     1740     1620
GR 996.9  9371.2   990.8  9371.3  973.85  9399.5  973.85  9488.7  973.85  9488.8
GR973.85  9496.2  973.85  9496.3  973.85  9606.6  973.85  9606.7  973.85  9614.1
GR973.85  9614.2  973.85  9725.8  973.85  9725.9  973.85  9733.3  973.85  9733.4
GR973.85  9843.3  973.85  9843.4  973.85  9850.8  973.85  9850.9  973.85  9961.3
GR973.85  9961.4  973.85  9968.8  973.85  9968.9  973.85 10078.9  973.85 10079.0
GR973.85 10086.4  973.85 10086.5  973.85 10196.2  973.85 10196.3  973.85 10203.7
GR973.85 10203.8  973.85 10314.4  973.85 10314.5  973.85 10321.9  973.85 10322.0
GR973.85 10432.1  973.85 10432.2  973.85 10439.6  973.85 10439.7  973.85 10524.6
GR[redacted]90.8 10552.8   996.9 10552.9
H[redacted]689      10  9371.3 10552.8
X[redacted].750    22.0  9426.0 10579.0     370      370      370
GR 990.7  9287.0   990.7  9295.0   985.9  9330.0   983.9  9362.0   985.6  9388.0
GR 990.1  9416.0   990.3  9426.0   975.3  9477.0   975.3  9595.0   975.5  9715.0
GR 975.5  9864.0   975.5  9981.0   974.0  9994.0   973.7 10030.0   973.7 10095.0
GR 973.7 10244.0   975.6 10259.0   975.6 10349.0   975.7 10474.0   975.7 10565.0
GR 989.2 10579.0   989.6 10596.0
HD 5.750      10    9426   10579
X1 5.900    17.0  9429.0 10561.0     945      950      950
GR 993.0  9414.0   993.0  9429.0   977.5  9447.0   977.5  9506.0   977.5  9598.0
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GR 977.5  9714.0   977.6  9829.0   977.4  9946.0   975.4  9958.0   975.5 10040.0
GR 975.5 10099.0   975.5 10230.0   977.4 10257.0   977.6 10344.0   977.6 10459.0
GR 977.6 10544.0   991.1 10561.0
H[redacted]900   10       9429   10561
       -------GRADE CONTOL STRUCTURE UPSTREAM OF MCDOWELL-------
X1 6.068    15.0  9416.0 10545.0      907     897     902
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.068      10  9416.0 10545.0
X1 6.070    15.0  9416.0 10545.0        8       8       8
GR 992.7  9416.0   979.3  9431.0   979.3  9490.0   979.2  9585.0   979.2  9712.0
GR 979.0  9831.0   978.7  9925.0   976.7  9971.0   976.7 10000.0   976.7 10114.0
GR 976.7 10208.0   977.8 10260.0   978.4 10376.0   978.6 10528.0   992.4 10545.0
HD 6.070       0  9416.0 10545.0
X1 6.430    20.0  9452.0 10537.0     2045    1850    1945
GR 996.1  9390.0   991.8  9409.0   991.6  9433.0   996.5  9443.0   996.5  9452.0
GR 984.1  9467.0   984.0  9528.0   984.3  9631.0   984.3  9768.0   984.1  9894.0
GR 983.2  9980.0   981.0 10000.0   981.0 10057.0   981.3 10156.0   981.9 10213.0
GR 983.2 10232.0   983.2 10359.0   982.5 10519.0   996.1 10537.0   996.1 10550.0
HD 6.430      10     9452   10537
X1 6.820    17.0  9444.0 10573.0     2145    1820    1980
GR1002.7  9434.0  1002.7  9444.0   989.2  9465.0   987.3  9582.0   985.9  9607.0
GR 985.7  9745.0   985.9  9860.0   984.8  9990.0   984.8 10000.0   985.9 10065.0
GR 988.4 10076.0   988.4 10157.0   988.0 10268.0   988.0 10400.0   988.0 10557.0
GR1001.0 10573.0  1001.0 10591.0
HD 6.820      10     9444   10573
                                    357     357     357
        -------------GRADE CONTROL STRUCTURE D/S OF THOMAS RD-------------
X1 6.888    16.0  9439.0 10577.0      357     357     357
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.888      10     9439   10577
X1 6.890    16.0  9439.0 10577.0        8       8       8
GR1004.2  9428.0  1004.2  9439.0   989.9  9461.0   989.9  9574.0   989.9  9700.0
GR 989.8  9818.0   989.4  9954.0   989.4  9973.0   989.4 10000.0   989.4 10039.0
GR 989.4 10132.0   989.4 10266.0   989.4 10427.0   989.4 10558.0  1002.7 10577.0
GR1002.7 10588.0
HD 6.890       0     9439   10577
X1 6.910    17.0  9430.0 10579.0      105     115     110
         ----------CODE OUT TOWER BY LOWERING GR ELEVATIONS TO CHANNEL BOTTOM -
GR1002.8  9417.0  1002.8  9430.0   989.5  9452.0   989.9  9524.0   989.9  9677.0
G[redacted]9.9  9807.0   989.5  9970.0   989.5 10000.0   989.5 10018.0   989.5 10037.0
G[redacted]9.8 10125.0   989.8 10142.0   989.8 10236.0   989.8 10390.0   989.8 10561.0
GR[redacted]2.7 10579.0  1002.7 10589.0
HD 6.910      10     9430   10579
X1 6.930    17.0  9413.0 10573.0      105     105     105
GR1004.8  9405.0  1004.8  9413.0   999.9  9417.0   999.9  9426.0   989.9  9442.0
GR 989.9  9572.0   989.9  9706.0   990.0  9833.0   990.1  9955.0   989.9 10000.0
GR 989.9 10053.0   989.9 10201.0   989.9 10359.0   990.1 10545.0   990.9 10558.0
GR1003.9 10573.0  1003.9 10582.0
HD 6.930      10     9413   10573
X1 6.990    19.0  9400.0 10559.0      315     355     335
         ----------CODE OUT TOWER BY LOWERING GR ELEVATIONS TO CHANNEL BOTTOM -
GR1003.3  9393.0  1003.4  9400.0   997.4  9411.0   997.3  9418.0   991.4  9429.0
GR 991.4  9534.0   991.1  9695.0   991.1  9871.0   991.1 10000.0   991.1 10072.0
GR 991.2 10186.0   991.3 10300.0   991.3 10313.0   991.0 10323.0   990.2 10404.0
GR 990.2 10418.0   990.2 10540.0  1003.5 10559.0  1004.0 10574.0
HD 6.990      10     9400   10559
X1 7.490    13.0  9509.0 10525.0     2645    2610    2595
GR1009.5  9493.0  1009.5  9509.0   995.2  9526.0   995.4  9612.0   995.6  9736.0
GR 995.5  9871.0   995.3 10000.0   995.3 10064.0   995.4 10173.0   995.7 10289.0
GR 995.7 10474.0  1010.9 10525.0  1010.9 10541.0
HD 7.490      10     9509   10525
         -------GRADE CONTROL STRUCTURE DOWNSTREAM FACE OF INDIAN SCHOOL RD BRI
X1 7.988    37.0  9293.0 10732.0     2805    2480    2625

GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR1007.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
GR1006.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
GR1016.3 12943.0  1016.3 12959.0
HD 7.988      10  9293.0 10732.0
X1 7.990    37.0  9293.0 10732.0       10      10     105

GR1012.2  8010.0  1013.2  8065.0  1014.0  8150.0  1012.5  8436.0  1010.7  8709.0
GR1010.4  8948.0  1017.0  9058.0  1017.0  9110.0  1009.4  9176.0  1015.2  9236.0
GR1014.9  9293.0   999.2  9338.0   999.2  9550.0   999.1  9925.0   999.1  9990.0
GR 999.1 10000.0   999.1 10303.0   999.3 10681.0  1014.8 10732.0  1017.3 10907.0
GR1010.5 10932.0  1010.0 11152.0  1015.2 11167.0  1015.2 11213.0  1007.3 11242.0
GR[redacted]7.1 11529.0  1007.2 11773.0  1006.9 11957.0  1007.1 12138.0  1007.1 12341.0
G[redacted]6.9 12504.0  1009.2 12604.0  1009.9 12677.0  1014.2 12703.0  1015.0 12810.0
G[redacted]6.3 12943.0  1016.3 12959.0
HD 7.990       0  9293.0 10732.0
NC                    .3      .5
         ---------INDIAN SCHOOL ROAD------
X1 8.000      85  9235.5  10725.      50      50      50


GR1014.4  7828.0  1015.5  8173.0  1016.3  8411.0  1017.9  8735.0  1018.7  9144.0
GR1018.6  9235.4  1013.3  9235.5   999.2  9263.1   999.2  9271.2   999.2  9271.3
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GR 999.2  9285.3   999.2  9285.4   999.2  9362.9   999.2  9363.0   999.2  9377.0
GR 999.2  9377.1   999.2  9452.9   999.2  9453.0   999.2  9467.0   999.2  9467.1
GR 999.2  9542.9   999.2  9543.0   999.2  9557.0   999.2  9557.1   999.2  9632.9
GR 999.2  9633.0   999.2  9647.0   999.2  9647.1   999.2  9722.9   999.2  9723.0
GR 999.2  9737.0   999.2  9737.1   999.2  9812.9   999.2  9813.0   999.2  9827.0
GR 999.2  9827.1   999.2  9902.9   999.2  9903.0   999.2  9917.0   999.2  9917.1
GR 999.2  9992.9   999.2  9993.0   999.2 10007.0   999.2 10007.1   999.2 10082.9
GR 999.2 10083.0   999.2 10097.0   999.2 10097.1   999.2 10172.9   999.2 10173.0
GR 999.2 10187.0   999.2 10187.1   999.2 10262.9   999.2 10263.0   999.2 10277.0
GR 999.2 10277.1   999.2 10352.8   999.2 10352.9   999.2 10366.9   999.2 10367.0
GR 999.2 10442.9   999.2 10443.0   999.2 10457.0   999.2 10457.1   999.2 10532.9
GR 999.2 10533.0   999.2 10547.0   999.2 10547.1   999.2 10622.9   999.2 10623.0
GR 999.2 10637.0   999.2 10637.1   999.2 10697.5  1013.3 10725.0  1021.3 10725.1
GR1018.6 10725.2  1016.4 10735.0  1017.3 10914.0  1016.9 11234.0  1012.8 11759.0
GR1013.2 12195.0  1013.8 12510.0  1014.9 12742.0  1016.1 13028.0  1018.6 13458.0
HD 8.000       10  9235.5   10725
NC                      0.1     0.3
X1 8.105       91  9381.7 10978.6     405     745  522.59

GR1015.2  8211.4  1015.3  8277.1  1010.8  8330.6  1009.3  8341.9  1009.3  8372.5
GR1011.2  8392.0  1011.2  8467.9  1009.9  8559.8  1009.8  8618.0  1009.3  8629.1
GR1008.8  8657.4  1008.1  8664.5  1006.7  8671.1  1005.9  8676.7  1005.3  8685.7
GR1008.0  8694.0  1007.4  8712.9  1007.2  8759.6  1007.6  8767.4  1007.3  8945.8
GR1007.7  8986.4  1007.0  9027.6  1006.6  9098.5  1006.1  9130.7  1007.5  9189.4
GR1011.7  9241.0  1013.1  9281.5  1014.3  9352.7  1015.1  9381.7  1004.4  9401.0
GR1002.0  9404.5  1002.1  9413.6  1000.7  9416.1  1000.8  9423.2  1002.3  9432.7
GR1001.8  9493.9  1001.9  9540.9  1001.0  9545.5  1000.9  9563.5  1001.1  9565.1
GR1001.5  9581.8  1002.2  9583.6  1002.9  9587.6  1002.8  9594.1  1003.1  9599.5
GR1004.8  9613.8  1002.9  9623.8  1001.5  9649.6  1002.2  9701.5  1001.6  9791.9
GR1002.5  9801.8  1002.6  9835.3  1001.6  9840.4  1001.1  9856.5  1003.0  9863.7
GR1001.8  9909.1  1002.1  9961.6  1002.0  9995.6  1001.0 10012.9  1000.7 10057.2
GR1000.8 10168.4  1000.5 10169.9  1002.7 10181.4  1003.2 10220.5  1002.5 10428.1
GR1001.9 10536.6  1002.1 10732.3  1001.6 10813.5  1001.7 10895.2  1000.8 10949.7
GR1001.5 10964.0  1001.4 10978.6  1001.3 10997.9  1001.1 11037.6  1000.5 11077.1
GR1001.9 11081.4  1003.0 11094.1  1002.0 11108.9  1001.7 11110.1  1005.8 11120.6
GR1010.4 11129.8  1008.8 11140.0  1008.9 11273.0  1008.4 11417.4  1009.5 11426.7
GR1008.8 11471.3  1010.6 11534.8  1011.0 11604.6  1010.7 11613.6  1009.8 11618.7
GR1009.6 11624.4
HD 8.105       10    9400 10978.6
X1 8.198       92  9458.7 10971.0     420     620  490.43

XL                      9458.7   10971
GR1013.7  7538.8  1013.7  7659.7  1013.0  7679.9  1012.1  7681.9  1012.2  7702.4
GR1009.4  7704.2  1009.4  7707.5  1011.7  7718.2  1011.0  7757.7  1010.6  7818.7
GR1009.9  7842.6  1009.7  7956.3  1010.5  8028.5  1010.8  8229.1  1011.2  8250.2
GR1011.0  8283.7  1011.2  8445.3  1011.6  8447.8  1011.8  8453.3  1011.5  8465.8
GR1010.7  8469.4  1010.2  8484.3  1010.7  8495.1  1011.0  8542.9  1009.4  8558.4
GR1007.8  8568.0  1007.4  8575.1  1007.6  8611.0  1006.2  8674.1  1006.4  8788.0
GR1005.6  8837.3  1005.5  8883.8  1004.3  8938.3  1004.6  9047.4  1003.7  9102.0
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GR1004.0  9620.4  1004.1  9647.5  1003.4  9715.0  1002.5  9730.9  1002.0  9756.6
GR1003.0  9851.4  1002.2  9972.1  1002.5  9983.7  1002.0 10053.3  1001.5 10071.8
GR1002.5 10093.2  1003.1 10143.0  1002.7 10193.2  1003.7 10230.0  1002.2 10240.8
GR1001.9 10266.0  1003.7 10292.6  1003.3 10497.1  1002.8 10629.5  1003.2 10847.7
GR1003.0 10958.7  1015.8 10971.0  1015.7 10984.6  1015.3 10990.1  1011.0 11007.3
GR1010.7 11051.4  1010.2 11065.9  1010.6 11074.9  1010.2 11120.5  1010.3 11154.3
GR1009.3 11167.8  1009.5 11177.5  1007.9 11194.6  1007.4 11229.6  1007.8 11253.3
GR1011.7 11279.9  1012.3 11327.5  1011.2 11391.5  1012.2 11447.8  1012.1 11502.4
GR1012.9 11568.6  1013.0 11705.6
HD 8.198       10    8600   10971
NC  .040    .040    .035
   ----------Gravel Mine Between Camelback Road and Indian School----------
X1 8.433       87  9583.1 10597.5     1155     1365 1241.36
X3                      9009.5     1012    11000     1012
XL                        9000 10597.5
GR1016.6  5737.3  1015.2  5913.0  1011.2  5923.1  1011.2  5929.8  1015.2  5938.3
GR1013.0  6101.5  1013.1  6236.2  1012.0  6437.5  1011.5  6682.9  1010.8  6885.4
GR1011.3  6918.9  1013.3  6929.4  1014.0  6941.7  1012.7  6944.3  1011.1  6952.1
GR1011.1  6957.5  1012.4  6964.4  1010.1  6973.7  1011.4  7022.6  1011.2  7053.6
GR1010.3  7053.9  1010.3  7111.1  1011.8  7151.3  1011.0  7155.6  1012.0  7391.8
GR1011.6  7613.9  1012.1  7874.2  1013.4  8117.3  1013.0  8158.4  1014.3  8163.4
GR1014.4  8173.5  1012.8  8179.0  1013.0  8214.2  1014.4  8284.9  1013.6  8286.3
GR1012.9  8294.9  1014.2  8304.5  1012.9  8390.4  1013.0  8565.3  1008.1  8767.6
GR1006.0  8952.1  1020.6  8973.4  1020.7  9009.5  1006.2  9025.2  1006.9  9130.7
GR1005.9  9153.1  1007.9  9194.9  1009.0  9401.2  1008.8  9516.9  1009.7  9523.9
GR1008.5  9529.4  1008.8  9564.7  1010.0  9583.1  1005.0  9600.1  1005.0  9755.8
GR1006.4  9786.9  1006.6  9828.4  1005.7  9854.9  1007.7  9870.6  1008.1 10010.8
GR1008.3 10123.7  1006.4 10265.7  1006.8 10307.4  1006.3 10480.7  1009.6 10507.5
GR1012.5 10519.8  1013.8 10597.5  1013.5 10766.3  1012.5 10795.4  1013.5 10816.7
GR1011.6 10827.2  1010.6 10883.1  1011.5 10884.0  1011.7 10991.4  1013.3 10999.4
GR1011.9 11154.1  1013.8 11176.2  1014.1 11233.5  1013.1 11268.3  1013.7 11274.5
GR1013.2 11293.3  1012.3 11294.1  1017.5 11322.2  1018.2 11337.1  1017.0 11359.4
GR1015.0 11376.3  1014.8 11586.0
HD 8.433       10    6300 10597.5
   POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 8.534 TO 8.875.
X1 8.768       73  9584.7 10102.8     1735     1765 1764.77
X3                      8182.6     1018    11500     1018
XL                        9000    11000
GR1021.5  6820.4  1020.9  6871.9  1018.3  6891.7  1019.6  6913.5  1019.1  6923.6
GR1016.2  6931.0  1019.3  6940.2  1017.2  7099.1  1014.8  7135.2  1015.0  7168.0
GR1016.7  7199.0  1014.7  7325.5  1015.5  7354.6  1015.1  7667.5  1015.3  8018.9
GR1016.3  8177.8  1017.4  8182.6  1016.2  8185.7  1014.8  8221.7  1016.6  8233.2
GR1016.4  8609.8  1017.3  8912.1  1018.3  8921.6  1017.4  8929.1  1016.3  9053.3
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GR1018.5  9082.6  1017.0  9103.2  1016.2  9147.4  1014.6  9168.7  1011.9  9186.9
GR1010.1  9230.0  1010.6  9376.9  1014.4  9399.6  1015.0  9575.4  1014.3  9584.7
GR1011.7  9596.2  1011.9  9616.7  1014.9  9627.9  1014.2  9882.6  1008.4  9901.1
GR[illegible]8.4 10075.9  1015.8 10102.8  1015.6 10460.9  1014.6 10627.3  1013.9 10650.0
G[illegible]3.9 11250.5  1017.1 11275.3  1018.8 11523.5  1017.7 11656.2  1018.3 11826.0
GR1017.7 11888.7  1019.3 11923.5  1018.0 11936.7  1017.8 12001.1  1017.8 12505.3
GR1018.9 12523.0  1018.1 12551.7  1017.8 12561.4  1017.8 12885.4  1027.8 12901.0
GR1028.2 12921.5  1023.3 12934.8  1022.6 12954.5  1017.8 12997.1  1017.8 13068.9
GR1021.4 13136.0  1022.6 13179.3  1028.0 13212.5  1028.2 13251.1  1022.8 13271.3
GR1022.5 13295.0  1026.9 13348.6  1027.0 13388.5
HD 8.768      10    7000   11000
X1 8.992      92  9819.1 11458.9    1230    1000    1185
X3                       9300    1022   11545    1022

GR1019.7  6650.5  1019.9  6869.8  1019.3  7088.8  1018.3  7308.1  1018.1  7357.4
GR1018.4  7405.7  1018.1  7504.7  1018.5  7653.7  1018.2  7853.7  1018.0  8053.8
GR1018.1  8264.5  1018.4  8468.0  1018.5  8703.9  1018.7  8903.9  1019.0  9027.4
GR1019.5  9087.0  1021.0  9090.7  1020.7  9100.0  1019.3  9109.2  1020.1  9296.8
GR1021.5  9328.8  1020.5  9349.7  1020.0  9438.9  1020.1  9504.0  1019.5  9556.4
GR1017.3  9599.3  1018.2  9666.3  1018.3  9706.1  1019.2  9732.7  1017.7  9759.7
GR1018.5  9768.4  1017.8  9819.1  1009.1  9833.6  1009.0  9846.9  1008.1  9861.1
GR1010.3  9909.7  1010.7  9990.4  1008.9 10005.9  1008.8 10022.3  1016.4 10042.0
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GR1015.3 10874.6  1016.7 10991.6  1015.2 11039.4  1015.3 11125.6  1017.1 11151.2
GR1016.3 11204.2  1016.4 11261.7  1018.9 11299.8  1017.9 11310.6  1018.5 11319.2
GR1018.0 11328.3  1016.3 11336.4  1017.5 11339.8  1018.8 11349.2  1016.2 11362.2
GR1017.6 11368.0  1017.7 11375.3  1016.4 11385.1  1021.2 11407.1  1019.8 11426.3
GR1019.0 11458.9  1017.6 11474.7  1016.3 11480.5  1015.1 11493.3  1021.9 11515.7
GR1023.5 11522.7  1024.3 11529.3  1026.1 11539.3  1026.6 11545.6  1025.5 11561.6
GR1016.2 11587.4  1016.1 11604.1  1022.6 11633.5  1023.3 11713.8  1021.5 11863.3
GR1022.4 11891.7  1022.0 11904.7  1020.8 11918.2  1020.0 11940.3  1020.6 12044.9
GR1022.2 12097.0  1025.2 12129.3
HD 8.992      10    9700 11458.9
NC  0.05    0.05   0.035     0.1     0.3
      -----------U/S CAMELBACK ROAD AND D/S OF NEW RIVER CONFLUENCE---
X1 9.435      83  9548.8 11146.3    2414    1804    2318

XL                       9548   12000
GR1026.4  8158.2  1026.9  8488.2  1026.6  8820.8  1026.6  9153.1  1027.0  9359.2
GR1024.3  9366.6  1026.9  9375.9  1025.8  9380.2  1024.1  9489.5  1025.0  9548.8
GR1019.4  9576.8  1019.2  9849.0  1018.4  9908.7  1019.6  9922.6  1015.2  9933.9
GR1015.4  9996.3  1018.3 10046.3  1018.6 10097.9  1017.2 10118.4  1017.3 10146.3
GR1016.2 10155.8  1016.5 10181.7  1020.3 10199.6  1021.2 10546.3  1020.0 10889.1
G[illegible]0.7 11048.3  1019.4 11060.7  1023.5 11095.3  1023.2 11111.6  1025.8 11146.3
G[illegible]5.1 11318.4  1022.3 11346.7  1023.9 11346.8  1025.4 11396.3  1023.4 11715.2
GR[illegible]4.4 11799.5  1023.5 11816.9  1031.5 11839.2  1024.4 11854.6  1023.6 12095.2
GR1026.5 12103.4  1023.3 12111.2  1023.4 12173.1  1021.8 12180.1  1025.3 12196.4
GR1026.7 12210.6  1024.4 12279.4  1024.9 12296.3  1023.9 12317.6  1024.1 12372.9
GR1025.8 12381.3  1024.7 12389.2  1026.0 12412.9  1025.1 12426.1  1022.6 12436.7
GR1024.1 12462.4  1023.1 12467.5  1023.5 12488.3  1027.8 12501.1  1023.6 12514.8
GR1024.8 12652.4  1024.8 12948.7  1025.7 13145.7  1023.8 13152.6  1024.7 13198.4
GR1028.4 13207.9  1028.1 13222.0  1024.3 13232.5  1023.0 13249.0  1023.7 13452.5
GR1028.8 13477.7  1028.7 13513.8  1024.3 13534.0  1023.4 13714.2  1020.2 13778.8
GR1020.1 14098.7  1020.7 14275.7  1025.3 14461.9  1025.7 14778.3  1024.9 15117.5
GR1025.7 15440.3  1028.8 15731.5  1030.3 15743.1
HD 9.435      10  9548.8   15000
QT
X1 9.696      91  9818.1 10996.2    1430    1330 1383.24

XL                       9015   11702
GR1029.9  7599.1  1029.2  7912.4  1029.7  8257.2  1030.5  8619.8  1029.9  8831.5
GR1028.9  8845.5  1028.1  8992.0  1029.5  9015.3  1026.3  9041.5  1020.9  9075.8
GR1019.3  9100.8  1019.0  9317.2  1023.7  9420.4  1023.3  9442.7  1024.3  9588.4
GR1026.2  9602.6  1026.1  9618.1  1027.9  9632.9  1026.0  9655.6  1027.2  9668.0
GR1027.6  9692.2  1028.3  9696.5  1026.7  9753.2  1027.0  9818.1  1022.2  9845.3
GR1020.6  9885.0  1022.9  9958.5  1022.2  9970.0  1022.9  9987.3  1022.2 10010.3
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GR1018.7 10247.8  1018.7 10339.8  1020.3 10349.2  1022.2 10433.3  1021.8 10446.8
GR1023.6 10545.7  1023.9 10724.6  1024.9 10739.3  1024.4 10971.5  1026.9 10996.2
GR1028.4 11103.5  1026.2 11181.0  1027.7 11201.0  1027.4 11533.9  1028.1 11659.0
GR1027.1 11690.8  1029.1 11702.1  1024.2 11713.9  1023.4 11748.9  1024.0 11775.8
GR1023.2 12099.7  1024.0 12265.9  1024.8 12280.0  1025.1 12425.6  1022.1 12449.5
GR1021.3 12467.7  1022.9 12487.3  1025.4 12493.6  1025.4 12539.0  1023.3 12552.1
GR1025.5 12557.5  1024.9 12601.6  1025.9 12902.3  1027.4 13067.7  1030.4 13077.2
GR1027.9 13089.0  1026.4 13183.5  1025.5 13215.4  1027.3 13280.3  1028.4 13555.0
GR1027.3 13906.4  1027.2 14209.6  1027.1 14347.5  1028.2 14354.0  1028.0 14669.0
GR1027.3 14730.2  1027.7 15048.9  1028.6 15362.0  1028.8 15462.4  1028.7 15548.9
GR1030.4 15610.3  1034.4 15621.3  1034.8 15633.1  1030.2 15641.5  1029.5 15651.1
GR1030.2 15663.0
HD 9.696      10    9600   15500
       -------SOUTH OF GLENDALE AIRPORT------
     --------------SAND AND GRAVEL MINE WEST OF GLENDALE AIRPORT---------
X1 9.885      91  9327.8 10706.6    1090     825  996.40

XL                       8500   12000
G[illegible]9.2  7565.7  1040.2  7662.3  1034.6  7685.9  1030.3  7700.2  1031.3  7867.8
G[illegible]9.7  7916.4  1027.5  7931.4  1026.9  7950.4  1030.6  7976.2  1031.5  7997.4
GR1036.9  8022.8  1038.7  8074.4  1037.7  8126.1  1038.6  8229.3  1030.0  8275.0
GR1029.1  8298.7  1024.4  8321.0  1023.7  8351.4  1031.1  8385.8  1031.2  8512.7
GR1033.1  8528.7  1031.2  8560.8  1030.8  8895.1  1030.9  8906.2  1029.6  8919.4
GR1029.8  9072.1  1029.1  9082.1  1030.3  9093.1  1029.6  9210.6  1032.3  9290.7
GR1030.8  9299.0  1031.3  9327.8  1026.1  9346.9  1027.3  9423.2  1028.4  9430.8
GR1029.2  9506.5  1028.0  9575.4  1029.3  9589.9  1028.9  9891.7  1028.8  9906.9
GR1023.8  9943.1  1021.1 10038.7  1023.4 10078.6  1026.8 10380.8  1027.1 10669.0
GR1029.9 10706.6  1028.7 11026.7  1028.5 11086.3  1027.3 11098.7  1028.9 11111.9
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GR1028.5 11220.7  1028.4 11325.3  1027.6 11358.6  1028.7 11372.0  1025.8 11398.6
GR1029.1 11415.3  1028.9 11748.4  1028.5 11808.8  1030.7 11828.7  1031.0 12156.6
GR1030.4 12166.2  1030.1 12236.2  1031.4 12257.8  1031.2 12452.6  1028.4 12472.0
G[redacted]1.1 12656.6  1030.8 12906.6  1029.6 12946.3  1031.2 13006.6  1030.2 13048.4
G[redacted]1.1 13078.7  1029.6 13093.9  1029.3 13107.9  1031.3 13116.8  1030.8 13158.5
GR1028.0 13195.5  1028.6 13366.4  1029.6 13556.6  1029.4 13659.0  1030.3 13959.7
GR1030.6 14219.8  1031.3 14232.5  1030.5 14237.0  1030.7 14250.8  1029.1 14263.3
GR1030.4 14606.6  1030.6 14909.8  1032.2 15157.1  1031.1 15164.5  1035.3 15172.3
GR1035.2 15177.3
HD 9.885      10  9327.8   14500
NC  0.05    0.05   0.045
X110.345      78  9782.1 10288.8    2235    1535 2003.53
X3                      9750    1040   11416    1040
XL                      9750   11416
GR1043.6  5749.1  1044.2  5780.6  1038.7  5851.9  1039.0  6019.2  1039.2  6332.0
GR1039.2  6402.4  1036.8  6515.4  1039.7  6852.7  1039.1  7156.0  1038.6  7398.1
GR1040.0  7472.0  1039.8  7821.6  1039.2  8124.2  1040.1  8426.7  1038.4  8626.1
GR1035.8  8870.7  1039.2  8882.3  1030.0  8906.1  1030.0  9429.5  1031.6  9432.5
GR1033.6  9465.9  1034.3  9531.5  1031.4  9573.0  1031.9  9592.8  1036.7  9615.6
GR1031.8  9659.5  1031.4  9770.7  1032.9  9782.1  1029.4  9854.5  1031.9  9869.3
GR1029.4  9924.3  1030.7 10065.3  1026.7 10247.0  1035.2 10288.8  1036.1 10312.9
GR1035.6 10620.5  1034.8 10841.9  1034.0 10847.5  1034.8 10947.5  1033.8 10988.6
GR1034.1 11072.8  1033.2 11092.4  1035.7 11109.8  1035.9 11151.3  1037.1 11164.0
GR1035.8 11184.6  1036.7 11198.0  1035.1 11214.8  1036.3 11231.4  1034.8 11244.9
GR1035.6 11279.1  1034.4 11296.8  1035.7 11345.3  1033.4 11353.5  1033.1 11388.4
GR1035.0 11390.4  1037.4 11416.6  1035.1 11427.0  1033.9 11612.9  1035.2 11918.3
GR1033.7 12029.0  1035.4 12049.5  1035.0 12282.6  1033.3 12306.7  1034.1 12609.1
GR1035.1 12942.0  1034.8 13067.5  1036.1 13073.7  1034.5 13086.5  1035.2 13108.0
GR1033.0 13133.3  1032.5 13203.6  1034.5 13221.6  1035.3 13542.0  1036.5 13836.8
GR1039.9 13845.1  1040.0 13859.8  1035.3 13871.1
HD10.343      10  8882.3   13500
X110.538      87  9573.5 10478.1     925     985 1033.23

XL                      9514   11058
GR1044.3  5184.9  1041.9  5231.3  1040.7  5346.6  1042.0  5381.6  1039.6  5682.2
GR1040.9  5982.8  1040.5  6283.3  1041.2  6595.7  1041.2  6884.5  1041.0  7201.5
GR1041.2  7536.3  1043.3  7856.8  1042.5  7964.9  1043.8  7979.7  1040.8  8090.9
GR1038.3  8289.3  1041.4  8383.5  1047.4  8433.6  1045.1  8442.7  1042.2  8474.3
GR1036.6  8494.1  1039.0  8523.1  1039.3  8623.9  1039.5  8689.3  1037.5  8721.0
GR1032.6  8730.1  1032.6  9358.6  1030.7  9369.0  1031.1  9393.1  1032.6  9397.3
GR1034.7  9485.0  1034.7  9515.0  1032.4  9550.4  1035.0  9573.5  1032.3  9735.6
GR1033.1  9803.1  1031.7  9852.9  1033.8  9961.2  1034.1 10074.0  1033.2 10146.3
GR1034.8 10204.0  1032.3 10314.7  1031.2 10415.1  1033.6 10426.6  1035.0 10466.3
GR1037.9 10478.1  1037.0 10517.7  1038.0 10546.0  1036.8 10585.9  1037.3 10707.3
G[redacted]8.3 10796.1  1039.2 10804.0  1036.6 10849.8  1038.0 10898.1  1036.0 10910.1
G[redacted]7.4 10922.0  1039.0 11058.2  1038.2 11357.2  1035.9 11378.0  1036.5 11469.0
GR[redacted]5.7 11506.5  1038.3 11558.5  1039.7 11652.5  1041.5 11661.6  1037.8 11677.8
GR1039.3 11777.4  1037.9 11782.6  1039.3 11801.3  1038.9 11978.3  1036.8 12039.8
GR1038.1 12076.2  1037.0 12092.7  1038.3 12115.4  1037.3 12121.4  1037.7 12452.6
GR1037.2 12566.3  1038.0 12577.1  1035.0 12729.0  1036.0 12746.9  1034.0 12773.6
GR1038.3 12884.7  1038.0 13202.7  1037.9 13388.3  1042.7 13400.0  1042.9 13414.2
GR1037.2 13424.5  1036.8 13435.8
HD10.538      10    6000   13000
X110.752      90  9651.8 10329.8    1070    1140 1124.93

XL                      9335 10329.9
GR1048.3  4553.6  1042.4  4584.0  1043.1  4589.6  1041.1  4596.6  1043.2  4602.7
GR1041.0  4611.6  1043.0  4932.6  1042.0  4953.3  1043.8  5038.2  1043.0  5364.3
GR1043.0  5568.7  1040.6  5581.1  1040.8  5666.5  1043.3  5817.5  1042.3  6064.3
GR1043.7  6114.4  1041.7  6202.8  1041.3  6326.6  1043.9  6339.8  1043.0  6471.4
GR1044.3  6633.7  1043.6  6950.9  1044.4  7078.8  1042.6  7100.9  1044.6  7164.5
GR1043.0  7246.6  1044.8  7272.1  1043.2  7333.1  1043.6  7635.3  1048.5  7656.2
GR1044.1  7668.1  1044.0  7762.8  1047.4  7775.5  1044.2  7789.3  1041.2  8106.8
GR1041.3  8424.9  1040.7  8502.3  1042.7  8522.6  1040.8  8716.0  1042.7  8801.5
GR1040.7  8984.9  1041.3  9206.3  1038.2  9231.8  1038.2  9254.6  1042.6  9273.2
GR1042.7  9292.9  1045.3  9295.8  1047.0  9301.0  1044.9  9309.8  1046.2  9321.9
GR1038.5  9341.6  1038.6  9354.0  1040.3  9360.6  1041.0  9651.8  1038.4  9739.9
GR1037.1  9743.8  1031.3  9930.8  1036.5 10237.9  1033.2 10271.5  1033.7 10296.1
GR1042.8 10329.8  1040.5 10347.4  1042.1 10360.7  1041.9 10521.1  1041.1 10809.6
GR1039.3 10813.4  1041.9 10829.9  1040.2 10882.0  1041.2 10904.0  1039.9 10912.1
GR1040.7 11232.0  1041.0 11281.3  1039.6 11292.4  1041.3 11304.8  1041.8 11416.8
GR1040.6 11424.2  1041.6 11431.8  1039.4 11582.0  1040.9 11706.0  1039.1 11724.7
GR1041.6 11812.4  1038.4 11831.6  1041.1 11983.8  1038.8 12046.3  1040.4 12097.7
GR1036.6 12134.1  1036.8 12148.4  1041.2 12171.6  1039.9 12482.5  1042.7 12661.3
HD10.752      10    5000   12000
NC  0.05   0.095   0.045
X111.029      70  9513.1 10404.2    1545    1345 1463.98
    TAKE OUT X3 INEFF AREA AND ADD XL  TAKE OUT FIRST 20 GR POINTS
XL                      9513   10500
GR1047.0  5332.6  1047.1  5634.9  1048.1  5911.6  1047.2  5921.0  1048.0  6085.4
GR1047.2  6101.4  1049.2  6153.3  1050.8  6165.5  1048.2  6173.3  1048.1  6334.7
GR1049.8  6357.8  1048.8  6434.9  1048.0  6707.0  1046.9  6725.3  1048.8  6762.4
GR1048.9  6825.3  1053.4  6836.7  1045.6  6854.7  1045.3  6863.6  1047.4  6874.8
GR1047.9  6903.9  1046.3  6930.1  1053.0  6943.7  1046.6  6962.1  1047.4  7135.8
GR1046.0  7161.8  1045.7  7357.5  1047.9  7387.4  1048.1  7711.8  1048.2  7900.9
GR[redacted]6.2  7927.7  1046.5  8279.3  1045.2  8637.4  1043.4  8986.4  1044.2  9100.0
G[redacted]2.4  9115.1  1042.9  9152.3  1045.8  9188.3  1046.5  9353.7  1045.1  9513.1
G[redacted]1.5  9524.5  1042.0  9546.7  1040.2  9557.3  1039.7  9592.4  1035.5  9671.5
GR1036.6  9715.5  1034.7  9802.0  1036.2  9811.0  1040.6  9884.3  1037.7 10099.7
GR1039.2 10225.5  1036.1 10263.7  1036.1 10322.4  1037.2 10344.9  1036.4 10379.6
GR1042.3 10404.2  1042.2 10423.3  1043.5 10450.3  1046.4 10467.9  1046.3 10864.9
GR1044.9 10971.0  1042.5 11028.3  1043.2 11075.1  1041.2 11108.6  1042.3 11164.9
GR1045.9 11215.0  1045.1 11460.7  1046.9 11477.3  1046.5 11492.9  1043.5 11499.2
HD11.029      10    8700   11000
       -------GLENDALE AVENUE----------
X111.428      94  9814.2 10227.2    1960    2335    2160
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GR1053.9  6112.3  1053.8  6146.3  1053.1  6190.4  1052.6  6205.4  1053.1  6261.9
GR[illegible]3.5  6420.4  1054.0  6584.1  1053.8  6696.9  1054.0  6739.9  1054.9  6743.7
G[illegible]5.7  6751.3  1056.1  6785.1  1054.7  6802.7  1053.8  6851.1  1053.3  6955.0
GR1053.6  7084.9  1053.3  7307.9  1053.3  7364.2  1053.8  7369.9  1054.2  7435.4
GR1053.4  7516.6  1052.9  7610.6  1054.4  7621.3  1056.7  7630.6  1057.7  7643.1
GR1053.8  7652.2  1052.9  7716.2  1052.6  7792.8  1052.9  7815.9  1052.3  7822.9
GR1054.1  7846.5  1054.2  7872.5  1053.6  7883.0  1053.0  7921.1  1053.9  8007.5
GR1054.0  8166.3  1053.7  8198.4  1054.1  8224.5  1053.9  8254.5  1053.9  8299.6
GR1053.6  8314.2  1054.1  8483.6  1053.9  8536.8  1054.7  8651.9  1055.0  8808.0
GR1055.4  8840.7  1055.5  8882.6  1056.2  8968.2  1056.1  8995.0  1056.7  9025.9
GR1057.0  9076.1  1055.8  9081.4  1057.8  9120.0  1059.0  9222.0  1057.1  9241.3
GR1058.6  9270.3  1059.7  9320.2  1058.2  9361.0  1060.2  9374.9  1061.5  9379.8
GR1062.2  9431.7  1058.7  9446.3  1058.1  9460.4  1061.1  9473.0  1060.3  9587.0
GR1058.2  9587.8  1058.3  9604.0  1058.6  9607.0  1056.6  9613.1  1053.6  9620.2
GR1051.9  9625.0    1050  9632.2    1050  9640.6    1050  9714.2    1050  9725.0
GR  1050  9750.0    1050  9763.8    1050  9786.9    1050  9794.8  1049.8  9814.2
GR1048.4  9820.3  1045.1  9831.8  1044.5  9880.4  1044.2  9937.0  1043.7  9966.4
GR1042.2  9986.0  1042.6 10059.1  1041.8 10166.5  1050.7 10188.8  1056.7 10205.7
GR1057.7 10207.0  1059.3 10210.4  1060.1 10227.2  1060.7 10253.1
HD11.428      10    9500 10227.2
NC  0.15   0.055   0.035     0.3     0.5
X111.557      95  9881.6 10100.9     675     675  677.68

XL                          8970   10100
GR1049.8  5996.1  1049.4  6005.2  1050.0  6052.1  1051.1  6070.8  1057.1  6085.5
GR1049.3  6107.5  1050.7  6151.4  1051.3  6203.3  1051.5  6352.2  1051.1  6402.8
GR1051.2  6502.5  1050.4  6552.2  1051.6  6710.5  1051.5  6753.3  1050.9  6760.4
GR1051.5  6802.2  1051.7  6971.8  1049.9  6995.6  1050.4  7260.8  1050.8  7302.2
GR1050.1  7352.2  1050.0  7472.8  1049.1  7482.4  1049.0  7502.2  1050.4  7591.0
GR1051.9  7595.5  1052.2  7607.9  1050.4  7618.5  1050.2  7664.5  1051.2  7715.0
GR1051.2  7802.2  1052.4  7855.1  1052.8  7902.2  1052.2  7957.7  1051.8  7962.9
GR1052.4  7973.1  1056.4  7982.2  1023.7  8030.9  1023.9  8118.8  1022.8  8202.2
GR1026.1  8452.2  1026.3  8492.9  1038.0  8514.0  1041.3  8520.6  1044.5  8525.6
GR1051.8  8540.7  1051.9  8602.3  1052.7  8617.6  1046.2  8630.3  1036.0  8651.4
GR1035.2  8702.3  1037.2  8852.3  1037.2  8928.2    1050  8970.0    1050  9126.4
GR  1050  9259.7    1050  9271.6    1050  9282.5    1050  9301.2    1050  9317.2
GR  1050  9332.6    1050  9347.1    1050  9367.0    1050  9390.9    1050  9410.4
GR  1050  9433.5    1050  9440.9    1050  9463.7    1050  9490.9    1050  9521.8
GR  1050  9550.3    1050  9585.2    1050  9602.3    1050  9632.9    1050  9701.6
GR  1050  9717.3    1050  9742.1    1050  9774.0    1050  9782.9    1050  9799.3
GR  1050  9845.0    1050  9865.4    1050  9872.3  1051.2  9881.6  1044.5  9900.1
GR1043.9  9927.3  1042.7  9944.6  1041.8  9978.7  1041.7  9995.0  1045.5 10011.0
G[illegible]2.9 10052.3  1043.4 10070.4  1058.9 10100.9  1062.0 10119.6  1062.0 10122.1
H[illegible]557      10    6200 10100.9
X111.847      95  9914.3 10113.4    1530    1530 1531.67

XL                          9400   10173
GR1061.0  5959.4  1023.2  6001.3  1024.8  6150.7  1020.3  6166.8  1020.8  6222.1
GR1020.5  6241.4  1022.6  6391.4  1022.3  6441.4  1023.9  6541.4  1023.0  6666.3
GR1024.4  6841.4  1025.6  7020.0  1025.3  7091.4  1027.0  7172.7  1055.3  7215.7
GR  1056  7373.1    1056  7376.2    1056  7382.1    1056  7557.1    1056  7591.4
GR  1056  7626.5    1056  7656.1    1056  7691.4    1056  7741.4  1057.3  7778.0
GR1056.6  7819.6    1056  7856.7    1056  7874.0    1056  7885.8    1056  7916.5
GR  1056  7938.7    1056  7942.0    1056  7963.4    1056  7982.2  1058.9  7990.0
GR1059.3  7995.7    1056  8032.9    1056  8063.4  1058.2  8084.5  1060.8  8095.1
GR1058.8  8138.1  1058.8  8148.7  1060.5  8161.8  1059.4  8184.6  1057.4  8213.7
GR1057.6  8232.2  1056.1  8245.2  1057.5  8252.7  1057.9  8260.3  1057.6  8270.7
GR  1056  8284.7    1056  8301.9    1056  8333.1    1056  8356.2    1056  8408.0
GR  1056  8592.2    1056  8641.5    1056  8744.8    1056  8791.5    1056  8823.3
GR  1056  8852.4    1056  8880.5    1056  8892.9    1056  8902.5    1056  8917.3
GR  1056  8939.8    1056  8964.7    1056  8993.3    1056  9009.1  1055.5  9091.8
GR1057.3  9243.1  1058.7  9293.9  1059.9  9395.0  1057.4  9591.8  1058.5  9751.4
GR1056.6  9803.6  1056.2  9841.5  1057.1  9897.5  1057.1  9914.3  1055.7  9929.5
GR1048.3  9947.2  1047.8  9950.9  1048.1  9956.8  1047.6  9972.9  1045.0  9986.9
GR1044.6  9996.6  1045.0 10045.8  1046.9 10059.5  1047.3 10080.1  1050.8 10087.3
GR1050.4 10088.2  1050.5 10097.7  1052.1 10113.4  1056.2 10124.4    1066   10173
HD11.847      10    6000 10113.4
X112.359      73  9691.6 10061.0    2510    2730  2701.6
X3    10
XL                          9691.6   10300
GR1072.1  6582.4  1071.7  6589.2  1068.7  6615.2  1063.8  6638.2  1062.9  6640.3
GR1058.8  6683.5  1058.8  6693.3  1058.8  6743.3  1058.8  6784.1  1058.8  6786.4
GR1058.8  6798.0  1058.8  6805.8  1058.8  6856.6  1058.8  6876.8  1058.8  6887.6
GR1058.8  6916.6  1058.8  7003.6  1058.8  7043.4  1058.8  7092.0  1061.7  7133.0
GR1060.7  7161.1  1058.8  7186.6  1058.8  7193.4  1058.8  7243.4  1058.8  7342.0
GR1058.8  8874.6  1058.8  8883.8  1063.7  8902.0  1063.6  8943.6  1062.3  9001.3
GR1060.3  9003.5  1062.7  9011.5  1063.0  9014.6  1058.8  9033.5  1058.8  9047.4
GR1058.8  9057.0  1058.8  9178.7  1058.8  9192.4  1058.8  9203.0  1058.8  9217.6
GR1058.8  9232.5  1058.8  9258.5  1058.8  9260.9  1058.8  9340.5  1058.8  9357.9
GR1058.8  9379.0  1058.8  9416.1  1058.8  9443.7  1058.8  9519.0  1058.8  9540.8
GR1058.8  9563.4  1058.8  9581.8  1058.8  9594.7  1059.0  9613.1  1060.0  9670.0
GR1065.3  9691.6  1062.3  9701.0  1057.6  9724.4  1054.6  9741.9  1052.8  9749.1
GR1052.6  9781.4  1051.7  9793.1  1053.7  9873.9  1056.6  9885.0  1056.9  9922.2
GR[illegible]58.5  9932.6  1053.3  9954.7  1053.2 10049.9  1054.7 10061.0  1056.0 10070.1
G[illegible]066   10095    1068   10250  1070.1 10395.0
H[illegible].359      10    6700   10200
X1 12.42      90  9014.1 10111.3     380     270  302.47

XL                          9014.1 10111.3
GR1066.5  6488.3  1067.3  6516.9  1066.9  6538.8  1065.6  6544.1  1065.2  6555.4
GR  1063  6566.1    1063  6635.3    1064  6639.2  1064.4  6677.3  1066.7  6684.3
GR1062.8    6700  1064.1  6824.3  1065.4  6940.9  1065.8  7074.3  1065.5  7208.6
GR1065.1  7246.4  1061.2  7255.4  1059.8  7299.4  1062.1  7306.5    1062  7326.9
GR  1060  7334.7    1060  7337.3    1060  7452.7    1060  7563.2    1060  7606.2
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GR  1060  7611.8    1060  7724.4    1060  7751.7  1061.5  7790.8    1060  7802.3
GR  1060  7889.3    1060    7899    1062  7929.1  1062.3  7952.3    1063  7958.2
GR  1060  7993.2    1060  8021.8  1065.2  8037.7    1060  8056.6    1060  8147.7
G[redacted]3.7    8165  1063.1  8180.5    1060  8205.4    1060  8219.3    1060  8236.9
G[redacted]060  8289.4    1060  8387.8    1060  8438.5  1062.8  8461.2  1064.7  8478.4
GR1065.5  8502.4  1065.2  8610.1  1065.1  8710.9  1064.7  8824.7    1066  8893.4
GR1066.8  8915.4    1065  8931.2  1065.3  8957.3  1063.9  9002.6  1065.1  9014.1
GR1063.6  9124.6  1062.8  9159.9  1061.9  9172.6    1061  9175.8  1059.8  9224.7
GR1060.6    9260    1054  9283.3  1056.1  9324.5    1055  9423.2  1055.9  9446.7
GR  1055  9553.3  1055.4  9600.5  1054.8  9624.7  1055.6  9731.3  1056.7  9834.5
GR1057.4  9930.4  1054.5  9953.6  1054.3 10052.7  1065.2 10111.3  1066.3   10121
GR1061.6 10137.4    1063 10155.7  1061.7 10166.7  1065.6 10224.7  1067.9 10342.7
GR1069.3 10405.9    1070 10524.7    1071 10651.2  1071.3 10747.9  1072.1 10782.8
HD 12.42      10    7200   10150
NC  .045    .040    .035     0.1     0.3
X1 12.47      89  9382.2 10296.2     230     240     255

XL                        9382.2 10296.2
GR1064.5  4763.1  1062.7  4887.7  1063.3  5104.7  1063.3  5320.6  1063.5  5506.2
GR1063.6    5669  1063.7  5828.2  1064.1  5991.4  1064.1  6208.4  1064.2  6360.9
GR1064.7  6513.5    1065  6673.9  1065.1  6727.4  1065.1  7169.1  1064.7  7284.6
GR  1070  7298.5  1066.7  7309.6    1065  7420.7  1065.6    7496    1061  7510.2
GR  1061  7523.9    1061    7653    1061  7733.2  1064.2  7779.6    1064  7830.3
GR  1063  7841.4  1063.8  7920.8  1063.6  8025.7  1060.9    8058    1061  8135.2
GR1063.8  8147.9  1062.7  8155.3  1062.9    8177    1061  8187.9  1061.6  8220.1
GR  1061  8243.8    1061    8256    1061  8437.2    1061  8555.4  1061.5  8588.2
GR1065.1  8611.2  1065.9  8770.9  1066.2  8936.5  1066.3  9022.8  1068.5    9054
GR1066.9    9078  1066.2  9160.8  1067.7  9182.8  1066.7    9241  1065.2    9255
GR1067.1  9268.4    1064  9284.4  1063.2  9312.2    1062  9323.8  1062.3  9332.3
GR1064.2  9344.3    1064  9382.2  1054.9  9402.5  1055.7  9424.8  1056.6  9429.8
GR1062.3  9503.1  1057.5  9517.8  1055.6  9552.9  1063.1  9571.1  1057.9  9589.1
GR1057.7  9655.3    1059  9681.4    1062  9712.2  1062.6  9848.4  1058.3  9882.7
GR1054.9  9899.5  1056.2  9971.8  1055.1 10061.7  1059.4 10091.5    1059 10103.1
GR1062.3 10176.7  1056.2   10192  1057.4 10274.1    1064 10296.2  1065.6 10311.1
GR1065.2 10376.4  1069.1 10395.2  1069.1 10414.7  1068.1 10420.1  1069.3 10571.1
GR1071.1 10771.2  1072.9 10960.5    1074 11033.9  1073.3 11052.3
HD 12.47      10    7500 10296.2

X112.816      94  9781.2 10376.3    1780    1850 1859.04
X3                        8483.3    1068   10488    1068
XL                        9781.2 10376.3
GR1075.1  5376.4  1073.8  5383.0  1073.3  5407.1  1069.7  5426.0  1068.2  5450.3
GR1063.2  5475.1  1063.8  5505.8  1063.0  5525.5  1063.8  5574.3  1068.4  5600.9
GR1068.7  5669.0  1068.1  5684.2  1068.7  5925.6  1068.8  6158.0  1068.9  6375.7
G[redacted]9.0  6575.7  1069.3  6775.7  1069.4  7089.9  1069.3  7128.3  1071.2  7134.7
G[redacted]0.9  7141.6  1069.6  7147.9  1069.7  7160.0  1076.1  7174.5  1072.4  7181.4
GR[redacted]70.3  7187.9  1070.5  7204.1  1067.6  7294.7  1069.6  7366.1  1069.0  7425.9
GR1059.2  7505.0  1043.3  7519.3  1044.0  7557.8  1047.1  7574.2  1047.6  7580.6
GR1042.5  7607.2  1043.7  7626.5  1046.7  7845.4  1048.3  7875.9  1047.7  7976.4
GR1048.7  8001.8  1048.6  8034.0  1044.0  8176.0  1042.7  8325.6  1041.6  8348.3
GR1047.3  8362.1  1051.2  8369.7  1050.8  8385.9  1051.5  8406.9  1055.8  8419.1
GR1057.4  8426.0  1063.4  8440.8  1072.0  8474.4  1075.6  8483.3  1070.8  8492.7
GR1070.9  8528.7  1071.6  8531.0  1067.5  8544.5  1067.0  8570.2  1068.4  8582.8
GR1067.0  8591.3  1069.7  8655.9  1069.8  8698.9  1068.4  8714.3  1066.3  8926.1
GR1067.7  9026.1  1068.6  9199.1  1069.7  9276.2  1068.3  9457.4  1071.6  9464.5
GR1078.4  9483.4  1081.3  9496.1  1082.5  9506.6  1081.6  9523.5  1085.0  9568.3
GR1083.9  9577.9  1082.0  9585.3  1080.6  9605.0  1079.2  9666.0  1079.3  9714.8
GR1080.6  9730.0  1081.6  9733.9  1079.3  9751.5  1063.6  9781.2  1057.5  9795.1
GR1057.4  9833.2  1060.7  9976.3  1060.7 10113.1  1061.7 10130.5  1060.7 10176.3
GR1064.1 10376.3  1064.0 10426.4  1064.8 10464.1  1072.3 10488.4
HD12.816      10    7500   10375

   GR POINTS MODIFIED - BOTTOM OF GRAVEL MINE RAISED TO ELIMINATE NON-
   EFFECTIVE FLOW AREA BETWEEN SECTIONS 13.007 TO 13.296.
X113.007      94  9767.1 10186.1    1000    1030 1006.76
X3                        8750    1072   10239    1072
XL                        9150 10186.1
GR1074.1  6020.7  1073.2  6026.4  1073.0  6105.1  1073.0  6158.5  1073.0  6258.1
GR1073.0  6339.2  1073.1  6437.1  1073.1  6511.2  1073.1  6737.2  1073.2  6903.6
GR1073.2  6987.2  1073.2  7099.9  1073.2  7187.3  1072.9  7191.3  1074.4  7200.7
GR1074.2  7208.7  1073.2  7215.8  1073.3  7237.3  1073.3  7296.1  1073.3  7688.9
GR1073.3  7749.3  1073.4  7787.4  1073.2  7839.1  1073.1  7890.1  1072.8  7987.4
GR1072.8  8037.4  1072.8  8087.4  1073.1  8137.4  1073.1  8209.3  1071.8  8231.0
GR1070.5  8239.8  1070.1  8251.0  1071.6  8263.1  1073.4  8286.0  1075.8  8297.9
GR1076.9  8306.4  1077.1  8311.4  1074.6  8319.0  1074.8  8367.4  1072.2  8383.8
GR1072.3  8396.5  1070.5  8428.2  1071.5  8435.7  1072.6  8449.4  1072.5  8452.0
GR1070.7  8466.3  1071.6  8483.7  1072.0  8503.9  1071.7  8513.9  1072.3  8541.8
GR1072.5  8577.6  1072.4  8637.5  1073.3  8704.4  1073.5  8727.4  1074.8  8755.7
GR1074.2  8768.6  1073.1  8779.0  1072.6  8787.6  1071.3  8837.7  1070.1  8849.8
GR1071.8  8887.6  1073.2  8955.5  1073.6  8987.6  1073.2  9037.6  1071.8  9087.6
GR1072.2  9094.6  1073.3  9137.6  1072.9  9187.6  1073.3  9210.2  1070.3  9235.2
GR1070.4  9287.7  1070.6  9337.7  1070.6  9405.5  1070.9  9487.7  1071.4  9587.7
GR1071.1  9637.7  1070.9  9688.4  1072.3  9713.5  1072.3  9767.1  1066.3  9792.0
GR1064.8  9823.9  1064.1  9832.2  1063.4  9836.6  1063.0  9887.8  1062.6  9914.5
GR  1062  9937.8    1062  9987.8    1062 10043.2    1062 10087.8    1062 10137.9
G[redacted]1062 10160.9    1062 10186.1  1076.9 10237.7  1076.7 10239.1
H[redacted]007      10    8800   10186

NC  .045    .045    .035     0.3     0.5
    ----------UPSTREAM FACE OF OLIVE AVENUE----------
X113.467      89  8693.6 10286.7  2400.4  2425.4  2429.7

GR1090.1  6814.7  1089.3  6829.6  1088.5  6862.5  1087.9  6880.3  1086.6  6944.5
GR1085.6  6980.7  1084.8  7020.5  1083.9    7051  1083.6  7107.9  1082.9  7170.4
GR1082.9  7221.9  1083.5  7345.9  1083.6  7461.7  1083.4  7619.7  1082.9  7695.5
GR1082.9  7781.8  1082.6  7838.7  1083.3  7953.6  1084.4  8056.2  1085.1  8153.8
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GR1085.9  8175.2  1085.7  8190.4  1085.8  8226.6  1086.2  8237.2  1087.5     8382
GR  1088     8436  1089.3  8524.4    1090  8586.4  1090.6  8617.3  1090.9  8693.6
GR1090.7  8714.3  1089.7  8721.2    1089  8723.9  1083.7  8748.6  1075.9  8771.6
G[redacted]4.3  8844.3  1072.6  8880.1  1072.1  8900.4  1068.8     8915  1067.8  8921.2
G[redacted]7.7  8960.9    1067  8997.9    1067  9004.9  1068.1  9022.7  1068.6  9039.2
GR1069.3  9080.3  1069.2  9095.9  1070.5  9122.1    1071  9176.2  1070.8  9207.1
GR1071.2  9212.7    1071  9260.5  1071.2  9335.2  1071.7  9473.8  1071.7  9501.1
GR1070.6  9664.3  1070.6  9679.2  1071.3  9719.1  1069.8  9747.5  1069.7  9757.2
GR1070.5  9801.5  1070.3  9808.3  1070.7  9843.8  1071.4     9884  1070.3  9924.4
GR1070.1  9949.1  1069.2     9970  1068.2  9979.4  1065.5  9992.8  1065.5  9999.6
GR1065.1 10002.4  1064.5 10012.7  1064.5 10041.8  1064.1 10056.8  1065.5 10089.1
GR1066.5 10127.4  1066.7 10153.5  1067.9 10157.6  1068.2 10166.2  1069.2 10180.4
GR1069.1 10183.6  1082.4 10223.7  1088.6 10246.1  1090.3    10253  1090.6 10286.7
GR1090.5    10313  1089.4 10369.3  1089.6 10370.6  1090.4 10389.2
HD13.467       10  8693.6 10286.7
NC                                0.1       0.3
X113.952       93  9432.8 10076.3    2525      2585 2566.36

XL                               9000     10500
GR1090.0  6174.7  1087.4  6221.0  1085.0  6300.2  1084.1  6304.8  1084.5  6323.2
GR1084.2  6340.3  1086.5  6357.6  1084.2  6376.8  1083.8  6479.7  1084.8  6505.0
GR1083.1  6515.2  1085.2  6531.5  1084.4  6610.9  1083.8  6618.1  1084.3  6632.0
GR1082.8  6659.3  1083.0  6675.2  1084.9  6693.0  1085.6  6705.5  1085.9  6770.3
GR1084.5  6780.2  1086.2  6788.5  1087.5  6971.2  1086.1  7001.4  1083.7  7023.8
GR1084.8  7071.2  1083.8  7104.2  1085.3  7133.2  1081.0  7159.3  1086.4  7186.0
GR1086.4  7221.2  1085.4  7302.8  1085.2  7442.2  1086.3  7597.5  1086.3  7696.8
GR1085.7  7771.3  1085.8  7921.3  1085.1  8071.3  1085.1  8128.3  1083.8  8138.4
GR1083.8  8155.0  1084.6  8171.4  1084.1  8236.0  1083.7  8328.1  1085.8  8369.0
GR1087.3  8384.9  1087.2  8432.5  1086.3  8471.4  1085.8  8603.7  1084.8  8622.2
GR1082.3  8642.8  1085.3  8666.1  1087.3  8688.0  1087.5  8721.5  1086.6  8771.5
GR1086.5  8800.8  1087.3  8811.2  1086.7  8827.4  1086.7  8921.5  1086.3  8971.5
GR1087.3  9121.5  1086.6  9135.9  1082.9  9154.2  1082.3  9171.5  1083.0  9321.5
GR1083.0  9432.8  1077.1  9472.0  1076.6  9506.3  1078.1  9514.2  1077.9  9581.3
GR1078.4  9631.0  1077.9  9690.8  1081.2  9701.6  1078.6  9717.4  1078.6  9772.8
GR1080.6  9814.5  1079.6  9914.8  1076.7  9931.7  1075.5  9952.9  1073.3 10019.8
GR1076.2 10053.7  1081.4 10076.3  1080.8 10144.3  1081.0 10212.5  1080.1 10271.7
GR1080.2 10320.6  1082.3 10377.6  1085.9 10398.8  1085.6 10456.2  1086.6 10506.3
GR1086.5 10521.7  1088.3 10562.9  1090.1 10583.1
HD13.952       10     7200    10600
X114.430       93  9171.4 10301.1    2175      2625 2523.57

XL                               8200 10847.9
GR1093.1  6835.1  1092.2  6860.3  1091.7  6910.4  1092.2  6957.4  1091.9  7059.0
GR1092.3  7116.1  1092.3  7152.4  1090.9  7160.9  1090.8  7169.2  1092.8  7174.9
G[redacted]2.5  7260.4  1093.8  7374.4  1092.6  7386.9  1093.8  7410.4  1093.5  7460.4
G[redacted]3.9  7560.4  1093.3  7610.4  1093.7  7668.1  1093.0  7731.7  1093.5  7769.7
GR1094.7  7824.0  1093.7  7871.2  1093.1  7953.2  1093.2  7972.8  1092.9  8030.2
GR1092.3  8062.0  1092.5  8076.9  1090.8  8088.0  1089.8  8098.1  1091.5  8116.9
GR1092.0  8194.9  1091.5  8233.1  1092.1  8266.0  1092.1  8279.7  1088.9  8296.7
GR1087.9  8349.4  1088.0  8356.7  1090.6  8393.8  1090.6  8428.0  1092.7  8449.0
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GR1091.9  8760.6  1091.0  8810.6  1090.8  8860.6  1089.9  8937.3  1089.9  8990.6
GR1089.4  9009.0  1089.1  9040.5  1090.1  9061.5  1091.7  9112.8  1092.1  9171.4
GR1089.0  9184.9  1085.7  9213.3  1086.2  9236.5  1083.2  9251.1  1083.8  9327.2
GR1086.3  9348.5  1085.7  9383.3  1087.2  9425.3  1088.3  9477.5  1088.7  9561.3
GR1088.5  9633.6  1088.1  9691.5  1088.6  9737.7  1088.8  9773.2  1089.2  9789.8
GR1089.6  9843.8  1089.5  9884.1  1088.4  9985.5  1084.9 10126.0  1084.5 10166.4
GR1084.4 10207.6  1084.1 10261.8  1090.1 10301.1  1091.0 10347.0  1088.8 10352.7
GR1090.6 10361.5  1090.4 10414.8  1090.5 10466.9  1090.0 10556.3  1089.5 10568.8
GR1086.2 10593.2  1087.8 10622.9  1088.1 10675.2  1088.9 10720.5  1087.9 10808.1
GR1090.5 10831.2  1091.5 10847.9  1092.2 10912.7
HD14.430       10     8200    10900
X115.000       93  9346.3 10081.6    2700      3130  3009.7

XL                               9175.6     10550
GR1104.8  9175.6  1096.6  9188.0  1095.7  9234.8  1098.2  9245.7  1098.1  9269.8
GR1098.5  9309.1  1098.0  9346.3  1094.9  9360.3  1093.9  9370.2  1092.0  9405.3
GR1093.4  9484.6  1095.2  9558.7  1095.7  9601.6  1095.6  9621.8  1096.0  9660.1
GR1094.7  9835.6  1093.9  9875.1  1091.8  9911.5  1091.4  9946.6  1092.3  9974.0
GR1090.7  9998.3  1088.8 10005.6  1089.2 10038.0  1089.1 10059.8  1097.0 10081.6
GR1096.3 10186.6  1095.3 10240.5  1094.7 10362.1  1093.4 10456.6  1093.5 10476.4
GR1094.0 10495.3  1100.0 10526.1  1100.6 10561.4  1101.1 10679.6  1101.4 10895.6
GR1101.2 10958.4  1101.8 11017.3  1101.4 11192.8  1101.3 11274.2  1100.7 11355.6
GR1099.3 11392.9  1098.1 11400.2  1096.6 11405.2  1096.5 11410.1  1097.8 11419.6
GR1098.0 11427.6  1099.3 11434.3  1100.2 11446.3  1100.3 11453.6  1100.0 11457.0
GR1100.2 11466.1  1097.6 11479.7  1097.3 11498.8  1099.1 11540.6  1099.9 11574.4
GR1099.9 11593.7  1101.2 11685.2  1101.1 11736.6  1101.7 11756.7  1101.5 11782.1
GR1102.6 11787.3  1102.1 11802.9  1100.2 11815.5  1100.5 11836.4  1098.5 11890.8
GR1098.1 11942.1  1096.6 11993.5  1098.5 12029.4  1099.0 12044.9  1099.3 12096.3
GR1100.7 12125.7  1102.8 12147.6  1103.6 12163.7  1103.8 12179.4  1101.5 12212.6
GR1100.5 12250.4  1102.4 12357.6  1102.9 12367.0  1102.9 12400.4  1104.8 12422.9
GR1104.1 12475.6  1103.5 12492.4  1103.6 12504.2  1104.5 12515.0  1105.2 12558.7
GR1104.4 12624.8  1102.9 12637.3  1102.6 12663.8  1104.8 12712.9  1104.1 12745.6
GR1104.2 12758.9  1103.7 12782.7  1104.1 12821.1
HD15.000       10  9175.6    12000
X[redacted]094       93  9336.0 10125.1     495       495  496.49
X[redacted]                      9234.4    1102     11152    1102
X[redacted]                      9234.4   11000
GR1102.3  9230.9  1100.7  9234.4  1099.6  9253.3  1099.4  9273.1  1101.4  9293.4
GR1098.7  9317.6  1099.1  9336.0  1093.7  9355.8  1092.1  9366.0  1093.0  9426.0
GR1097.1  9590.7  1099.4  9609.4  1099.0  9653.4  1096.8  9670.4  1096.3  9694.4
GR1096.0  9881.3  1095.6  9930.6  1093.7  9945.8  1094.7  9959.7  1091.2  9976.5
GR1091.8 10019.8  1091.3 10056.5  1090.0 10076.6  1089.9 10097.2  1093.0 10112.9
GR1094.7 10125.1  1095.1 10135.1  1094.8 10150.0  1096.1 10160.0  1096.9 10171.4
GR1096.6 10189.8  1097.4 10207.6  1096.2 10234.1  1097.3 10263.0  1097.4 10348.5
GR1097.8 10420.4  1096.0 10524.2  1096.2 10548.3  1099.1 10566.9  1098.0 10582.9
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GR1096.7 10640.5  1096.6 10663.0  1099.1 10693.7  1098.7 10706.9  1099.1 10769.4
GR1100.1 10779.4  1100.1 10782.7  1098.1 10796.7  1097.2 10800.0  1096.8 10811.3
GR1095.5 10828.1  1099.2 10841.3  1099.7 10841.7  1098.3 10856.1  1097.2 10861.7
GR1096.4 10911.4  1097.7 10930.8  1100.9 10959.2  1100.7 10987.0  1102.5 11002.3
GR1102.3 11152.4  1101.1 11308.7  1100.6 11317.7  1099.8 11395.4  1100.0 11416.9
GR1098.4 11464.5  1099.1 11568.4  1102.2 11721.5  1103.2 11770.3  1102.9 11927.4
GR1102.6 12022.7  1102.6 12073.5  1099.0 12224.6  1098.4 12273.7  1099.4 12426.5
GR1100.1 12527.4  1100.9 12565.4  1103.1 12583.4  1103.4 12600.3  1102.8 12615.4
GR1104.7 12634.5  1103.3 12708.4  1104.2 12732.9  1104.9 12768.7  1103.0 12777.2
GR1102.2 12792.8  1103.9 12819.1  1100.5 12842.5  1100.6 12850.8  1098.7 12868.4
GR1098.7 13008.3  1100.2 13018.1  1102.3 13066.3
HD15.094      10    9336   13000
NC  .040    .045    .035
X115.374      92  9832.4 10085.5    1650    1260 1478.26
X3                    9822    1106   10770    1106
XL                    9825   10770
GR1109.9  9821.4  1108.7  9824.0  1101.3  9832.4  1101.3  9833.3  1099.8  9834.5
GR1095.1  9843.1  1095.6  9879.3  1094.8  9894.1  1094.0  9928.3  1093.8 10008.7
GR1096.2 10025.3  1098.6 10044.5  1101.9 10085.5  1103.7 10130.8  1100.9 10141.2
GR1101.2 10190.2  1101.1 10222.8  1100.0 10232.8  1100.4 10239.1  1100.6 10263.2
GR1101.1 10270.2  1102.0 10295.0  1101.4 10351.6  1103.1 10379.5  1103.6 10390.8
GR1103.1 10399.7  1102.6 10462.4  1100.8 10473.6  1100.6 10504.5  1101.1 10560.8
GR1101.0 10594.4  1104.7 10617.7  1101.7 10628.9  1101.6 10756.7  1102.1 10871.3
GR1101.8 10976.0  1102.9 11028.1  1102.6 11089.9  1100.6 11101.7  1100.7 11127.9
GR1101.0 11129.8  1100.9 11177.9  1102.1 11228.6  1101.8 11278.7  1102.1 11328.8
GR1102.9 11370.9  1100.3 11386.4  1103.0 11442.1  1102.9 11446.9  1099.0 11480.4
GR1099.7 11492.2  1101.4 11509.6  1104.0 11532.1  1101.0 11548.0  1101.0 11581.2
GR1103.5 11613.3  1104.1 11633.1  1104.6 11679.6  1104.4 11729.7  1104.3 11830.0
GR1104.7 11930.2  1105.1 12030.4  1105.1 12130.7  1105.8 12230.9  1106.4 12331.1
GR1106.7 12431.4  1107.1 12481.5  1107.2 12586.9  1107.4 12631.8  1106.9 12646.8
GR1107.6 12665.1  1105.3 12712.8  1104.0 12730.7  1104.7 12791.0  1104.2 12832.3
GR1104.6 12916.3  1106.3 12931.1  1107.6 12952.5  1107.7 12961.5  1107.2 12982.6
GR1106.1 13004.6  1106.2 13024.9  1105.7 13035.9  1105.2 13041.7  1105.2 13082.9
GR1104.4 13133.0  1104.2 13183.1  1104.8 13233.2  1105.2 13333.5  1107.1 13385.1
GR1107.3 13394.5  1111.0 13422.7
HD15.374      10  9832.4   11650
NC  .040    .040    .035
            ----------CACTUS ROAD--EL MIRAGE LANDFILL-----
X115.719      91  9885.3 10059.7    1950    1635 1824.01
X3                    9385.2    1111   10150    1111
GR1111.0  9385.2  1102.4  9398.9  1098.3  9405.4  1099.7  9508.2  1099.8  9558.7
GR1100.2  9593.1  1101.5  9631.5  1101.6  9640.0  1106.0  9674.1  1106.8  9713.1
GR1106.8  9755.4  1106.4  9770.7  1105.6  9781.8  1107.9  9798.9  1108.1  9802.8
GR1108.2  9818.3  1107.6  9843.6  1108.7  9852.4  1109.4  9885.3  1106.4  9899.1
GR1105.4  9942.2  1094.1  9965.8  1093.7 10015.7  1098.6 10029.2  1098.8 10039.4
GR1104.5 10059.7  1117.7 10065.0  1119.6 10075.2  1118.7 10102.4  1123.6 10109.0
GR1128.1 10116.8  1128.5 10122.8  1132.0 10150.4  1132.9 10155.3  1133.7 10161.2
GR1126.3 10172.4  1105.8 10205.0  1106.5 10225.8  1106.5 10232.4  1106.7 10237.1
GR1106.7 10249.4  1106.5 10256.5  1105.8 10268.0  1106.1 10274.7  1105.4 10291.1
GR1105.4 10315.9  1104.6 10354.3  1104.2 10382.4  1104.6 10419.6  1104.4 10422.2
GR1109.6 10439.6  1110.1 10467.3  1110.1 10568.3  1110.6 10669.0  1111.3 10769.1
GR1110.6 10858.6  1110.6 10878.9  1111.2 10919.4  1110.7 10964.7  1111.5 11019.5
GR1111.8 11069.6  1110.7 11128.0  1111.0 11170.1  1109.5 11178.2  1104.8 11207.6
GR1105.4 11219.8  1105.5 11230.8  1104.0 11261.0  1103.7 11271.4  1105.0 11297.5
GR1105.2 11318.8  1103.9 11330.4  1104.5 11370.1  1104.3 11412.5  1106.1 11429.7
GR1108.0 11445.6  1108.6 11487.5  1109.3 11520.3  1109.4 11670.6  1109.4 11779.9
GR1109.3 11920.9  1109.5 11971.0  1109.6 12071.2  1109.8 12171.3  1109.7 12321.6
GR1110.1 12348.9  1110.1 12397.0  1109.1 12471.8  1109.1 12572.0  1109.0 12822.3
GR1110.5 12884.5
HD15.719      10    9390   10055
X116.099      92  9804.0 10081.1    2010    2005 2002.13
X3                    9192    1178   10300    1178
XL                    9235   10081
GR1132.1  9191.9  1126.8  9200.4  1111.0  9233.0  1104.9  9259.9  1105.0  9274.3
GR1104.8  9282.4  1106.9  9313.0  1108.3  9366.1  1109.2  9418.0  1109.2  9466.8
GR1110.2  9517.2  1109.5  9549.3  1109.5  9567.6  1108.4  9606.1  1105.8  9624.0
GR1106.1  9629.4  1106.4  9668.4  1106.2  9694.8  1106.5  9705.3  1107.2  9716.8
GR1106.8  9725.8  1106.6  9752.8  1106.8  9768.3  1106.4  9769.3  1105.5  9804.0
GR1102.0  9815.8  1100.9  9929.6  1102.0  9942.0  1101.6 10021.2  1100.8 10043.9
GR1120.7 10081.1  1121.5 10083.0  1122.9 10120.9  1160.4 10222.8  1176.1 10273.2
GR1177.9 10295.5  1172.6 10323.6  1162.9 10344.4  1159.3 10352.7  1160.0 10368.4
GR1156.1 10377.4  1137.3 10424.4  1115.3 10474.8  1112.0 10486.0  1110.0 10491.9
GR1107.4 10518.8  1106.8 10547.6  1106.8 10562.5  1108.2 10573.5  1111.5 10624.5
GR1114.6 10670.3  1115.2 10686.0  1115.7 10720.9  1115.7 10798.4  1115.3 10820.9
GR1114.5 10834.1  1113.1 10879.9  1113.3 10936.2  1113.1 10978.8  1111.9 11028.4
GR1109.9 11050.0  1113.4 11069.5  1113.7 11079.3  1115.5 11104.9  1115.1 11109.6
GR1115.2 11134.0  1114.9 11177.8  1115.1 11219.4  1114.8 11370.9  1114.1 11429.1
GR1113.5 11456.5  1111.4 11479.4  1111.7 11481.5  1113.2 11504.1  1113.1 11516.6
GR1112.4 11531.3  1112.5 11549.4  1113.1 11567.8  1113.4 11729.2  1113.2 11911.4
GR1113.5 12079.2  1113.9 12179.2  1114.1 12304.0  1114.4 12329.3  1114.1 12501.3
GR1113.9 12675.5  1114.0 12727.4  1114.2 12746.8  1114.1 12929.3  1114.6 13041.6
GR1115.1 13090.7  1115.1 13122.1
HD16.099      10    9200   10200
NC                     0.3     0.5
X116.482      90  9781.9 10219.8    1980    2160 2026.23
X3                    9750  1127.5   10290  1127.5
XL                    9780   10220
GR1140.7  9305.3  1139.9  9363.5  1139.9  9370.4  1138.7  9446.0  1138.7  9449.5
GR1139.3  9451.2  1138.5  9456.3  1137.2  9528.1  1136.8  9537.1  1137.1  9563.8
GR1136.6  9616.0  1135.9  9622.7  1134.7  9645.4  1133.3  9704.0  1131.9  9731.2
GR1130.9  9750.4  1130.6  9765.2  1126.1  9774.7  1122.1  9781.9  1117.0  9795.4
GR1114.2  9802.5  1111.1  9816.2  1109.7  9859.8  1108.9  9880.3  1108.6  9915.4
GR1107.7  9931.8  1105.6  9947.6  1105.8  9985.2  1108.0 10015.1  1109.8 10086.8
GR1108.8 10140.7  1109.1 10210.9  1117.6 10219.8  1119.6 10222.0  1120.1 10266.0
GR1121.6 10270.4  1126.9 10287.0  1127.5 10289.6  1127.6 10293.3  1127.6 10326.1
GR1127.6 10334.5  1126.1 10443.1  1125.8 10450.5  1125.8 10455.8  1126.2 10510.5
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GR1124.9 10570.5  1124.9 10577.4  1124.2 10651.5  1124.5 10662.8  1124.1 10687.3
GR1123.9 10696.8  1123.4 10708.0  1123.0 10739.0  1122.7 10753.8  1122.2 10775.4
GR1121.9 10780.7  1121.5 10782.6  1119.5 10822.5  1119.4 10838.0  1119.6 10875.6
GR[redacted]8.8 10994.6  1118.6 11064.6  1118.2 11105.9  1117.3 11151.7  1116.3 11206.3
GR[redacted]6.2 11210.6  1117.1 11245.1  1116.8 11253.8  1117.1 11286.7  1118.3 11329.8
GR1118.3 11349.3  1118.5 11378.5  1118.7 11406.2  1119.3 11448.7  1119.7 11562.0
GR1120.2 11569.8  1120.5 11673.4  1120.6 11689.2  1120.7 11754.4  1121.0 11817.9
GR1121.1 11822.8  1122.0 11961.4  1122.4 11986.6  1122.8 12071.0  1123.0 12098.0
GR1123.1 12149.2  1123.1 12151.2  1123.2 12191.5  1124.0 12254.5  1124.0 12264.5
HD16.482       10  9781.9   10220
X116.506       72  9768.0 10245.4     125     125  126.72
X3     10
XL                          9500   10300
GR1143.1  9053.0  1142.5  9098.2  1142.5  9101.6  1141.4  9219.0  1139.9  9328.3
GR1140.0  9334.9  1139.6  9379.4  1139.0  9386.3  1138.3  9448.3  1138.4  9482.6
GR1138.0  9525.0  1137.9  9526.8  1136.5  9625.1  1135.2  9710.2  1135.3  9731.2
GR1126.2  9750.8  1124.5  9756.7  1122.2  9768.0  1113.9  9802.5  1112.2  9807.7
GR1110.1  9853.7  1109.1  9878.2  1107.6  9903.9  1106.7  9917.3  1105.4  9933.8
GR1105.6  9939.1  1105.9  9960.5  1105.8  9970.9  1106.6  9982.4  1108.1 10007.8
GR1109.2 10031.5  1110.0 10081.1  1110.5 10104.0  1110.0 10129.9  1110.1 10176.4
GR1110.7 10177.1  1113.8 10221.4  1122.4 10245.4  1122.5 10247.4  1123.5 10250.2
GR1128.1 10263.0  1128.4 10265.0  1128.4 10281.1  1128.5 10281.8  1127.8 10351.1
GR1126.6 10446.0  1125.5 10564.8  1124.7 10654.0  1124.1 10726.7  1123.8 10775.9
GR1123.5 10814.3  1123.6 10816.6  1123.3 10856.9  1123.3 10871.9  1123.0 10903.5
GR1122.9 10905.5  1122.6 10987.6  1122.4 11107.4  1122.0 11206.5  1118.3 11230.6
GR1117.6 11244.9  1118.5 11289.8  1118.6 11315.8  1119.5 11330.5  1119.6 11345.0
GR1120.1 11374.6  1120.1 11411.2  1122.2 11426.3  1121.8 11440.2  1121.8 11474.4
GR1121.9 11475.7  1121.8 11575.0
HD16.506       10    9700   10300
NC  0.05    0.05    0.04     0.1     0.3
X116.612       84  9808.2 10161.2     627     342     581

XL                          9794   10200
GR1127.9  9793.5  1112.1  9808.2  1108.8  9916.8  1109.3  9920.2  1109.8  9926.5
GR1108.3  9944.2  1108.7  9949.8  1108.9  9958.7  1110.3  9983.6  1109.9 10016.8
GR1111.6 10034.3  1111.7 10055.6  1112.1 10084.9  1111.7 10105.4  1109.1 10113.2
GR1109.0 10136.8  1115.6 10161.2  1117.3 10167.6  1122.9 10189.9  1122.9 10198.4
GR1123.1 10219.0  1123.9 10236.5  1124.5 10279.3  1124.5 10286.5  1124.1 10293.7
GR1123.5 10310.0  1120.1 10319.6  1117.6 10325.9  1118.3 10331.4  1118.6 10336.5
GR1117.7 10377.7  1117.6 10386.5  1116.6 10426.9  1116.5 10436.5  1116.9 10486.5
GR1116.6 10525.2  1116.5 10536.5  1116.4 10574.4  1116.2 10586.5  1115.6 10623.6
GR1115.7 10636.5  1115.6 10677.3  1122.1 10695.6  1121.1 10702.1  1121.4 10723.8
GR1121.7 10738.6  1121.7 10748.4  1121.8 10788.7  1125.6 10806.5  1125.6 10818.0
GR1121.5 10827.9  1122.7 10837.7  1120.9 10840.1  1121.4 10886.5  1121.6 10918.7
GR[redacted]21.7 10936.6  1121.3 10986.6  1121.4 11017.0  1121.0 11036.6  1120.3 11066.2
GR[redacted]9.8 11086.6  1120.5 11115.4  1119.7 11136.6  1119.7 11158.5  1119.2 11186.6
GR[redacted]19.4 11198.8  1118.5 11225.0  1118.2 11247.2  1117.9 11273.5  1118.1 11275.0
GR1118.5 11296.7  1118.3 11304.3  1118.4 11316.1  1118.5 11334.1  1118.7 11352.2
GR1118.5 11355.6  1116.1 11376.8  1117.1 11399.9  1117.9 11407.7  1120.2 11421.8
GR1120.6 11423.7  1122.6 11446.9  1125.2 11472.1  1126.3 11481.4
HD16.612       10  9808.2   11400
NC  0.05    0.05    0.04     0.1     0.3
X116.990       82  9810.0 10135.4    1990    1985    1993

XL                          9748   11000
GR1157.3  9725.4  1157.1  9748.5  1113.3  9810.0  1112.4  9829.0  1115.1  9867.1
GR1112.0  9880.5  1110.9  9928.1  1111.5  9994.8  1115.0 10039.8  1114.4 10097.1
GR1118.5 10108.0  1118.5 10118.8  1121.6 10128.1  1125.6 10135.4  1132.6 10146.3
GR1130.4 10170.5  1130.8 10182.4  1124.6 10201.0  1122.2 10231.9  1122.1 10282.5
GR1123.2 10329.7  1129.1 10340.5  1124.0 10350.5  1124.0 10382.8  1132.1 10397.2
GR1128.4 10411.7  1126.7 10420.9  1126.1 10573.0  1127.9 10648.2  1127.9 10866.8
GR1128.0 11032.5  1127.6 11073.1  1128.1 11082.5  1127.8 11137.2  1126.8 11609.9
GR1126.7 11843.9  1126.8 11988.7  1129.0 12041.8  1125.8 12048.3  1128.5 12056.1
GR1127.1 12097.2  1127.8 12170.8  1124.8 12180.6  1119.2 12188.4  1116.2 12191.6
GR1111.2 12195.4  1090.6 12206.1  1092.1 12285.4  1093.9 12332.8  1101.0 12334.5
GR1112.0 12337.1  1125.2 12341.0  1125.1 12367.4  1125.8 12393.1  1124.4 12431.4
GR1123.9 12507.9  1123.2 12529.8  1123.6 12585.8  1127.2 12630.0  1136.9 12660.9
GR1128.6 12676.3  1127.0 12692.1  1125.9 12746.2  1127.9 12795.1  1130.4 12813.6
GR1130.5 12826.3  1128.3 12904.8  1129.2 12916.6  1127.6 12934.8  1125.7 12966.4
GR1126.6 12979.5  1125.4 13179.1  1126.4 13287.4  1124.9 13341.6  1125.6 13503.0
GR1125.2 13561.0  1120.4 13574.0  1121.1 13632.4  1128.6 13654.8  1128.6 13664.2
GR1130.6 13675.3  1130.2 13709.1
HD16.990       10    9800   12400
X117.458       92  9370.6 10225.3    3035    1705 2468.67
X3                          8808    1132 11640.7    1134
XL                          9100   10400
GR1137.5  8689.6  1134.6  8719.5  1138.8  8738.2  1138.3  8746.5  1132.8  8765.0
GR1132.5  8786.3  1136.5  8797.0  1135.7  8812.4  1132.6  8846.8  1146.8  8948.8
GR1137.6  8976.0  1137.4  9003.3  1130.1  9014.1  1126.1  9023.7  1121.7  9049.0
GR1121.4  9062.9  1123.1  9069.1  1123.0  9091.0  1121.4  9095.5  1125.3  9174.2
GR1123.9  9242.4  1126.0  9291.7  1125.2  9300.9  1126.4  9370.6  1119.7  9388.4
GR1118.6  9489.5  1122.0  9525.5  1119.9  9829.2  1120.4  9840.3  1116.5  9847.2
GR1118.6  9925.1  1121.7  9935.7  1119.6  9939.4  1120.4  9962.7  1124.5  9978.6
GR1128.1 10094.0  1125.2 10109.8  1128.1 10171.2  1127.7 10217.9  1129.3 10225.3
GR1125.1 10246.2  1125.2 10254.6  1130.8 10271.4  1128.7 10284.2  1129.0 10345.0
GR[redacted]31.8 10357.4  1134.6 10442.8  1133.4 10459.5  1136.5 10467.5  1132.9 10480.5
[redacted]3.2 10589.7  1119.1 10603.6  1117.6 10659.7  1118.4 10675.0  1113.7 10691.1
G[redacted]13.3 10706.4  1117.4 10722.8  1113.5 10786.6  1110.8 10803.4  1107.4 10929.4
GR1112.4 11229.4  1111.8 11307.7  1095.5 11325.7  1094.8 11383.2  1096.6 11445.3
GR1091.5 11460.7  1091.2 11474.0  1092.6 11478.9  1091.4 11483.8  1092.6 11484.8
GR1095.0 11527.9  1092.8 11590.0  1134.9 11640.7  1147.3 11704.2  1131.9 11737.5
GR1130.9 12038.7  1131.0 12346.0  1131.0 12565.0  1130.1 12892.2  1130.7 13055.7
GR1127.3 13066.0  1127.5 13084.7  1131.6 13098.9  1128.5 13100.4  1126.8 13108.6
GR1129.6 13120.3  1131.2 13453.4  1131.0 13777.2  1130.4 14088.7  1129.6 14116.9
GR1133.3 14132.7  1133.3 14165.7
HD17.458       10    9000   11640
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X117.638       90  9197.8 10288.4      955     895  949.45
    DELETE X3 INEFF LIMIT   CHANGE LEFT BANK   CODED OUT HI GRND IN CHANNEL
    ADD XL
                            9197.8 10288.4
GR1139.1  8744.2  1138.7  8811.6  1135.9  8827.7  1135.6  8945.5  1136.7  8959.6
GR1137.0  9056.9  1139.6  9082.2  1137.1  9098.5  1132.9  9176.5  1132.9  9197.8
GR1130.0  9207.3  1130.0  9242.4  1130.0  9258.8  1130.3  9270.5  1130.0  9293.0
GR1130.0  9313.8  1130.0  9348.6  1130.0  9445.5  1130.0  9464.8  1130.0  9483.8
GR1130.0  9498.2  1130.0  9545.3  1130.0  9556.0  1130.0  9566.8  1130.0  9589.7
GR1130.0  9610.2  1130.0  9612.2  1130.0  9695.5  1130.0  9750.6  1130.0  9768.6
GR1130.8  9774.7  1130.0  9798.8  1130.0  9831.0  1130.0  9911.6  1131.0  9927.0
GR1130.0  9938.1  1130.0  9966.8  1131.7  9977.6  1130.0 10002.0  1130.0 10049.6
GR1130.0 10100.5  1132.1 10124.7  1130.1 10136.8  1132.3 10166.7  1133.3 10195.3
GR1133.7 10274.7  1134.6 10288.4  1133.2 10316.0  1134.7 10324.9  1136.3 10359.3
GR1135.6 10373.5  1139.6 10386.4  1134.4 10413.9  1126.8 10420.6  1111.3 10442.5
GR1110.6 10451.1  1108.6 10458.0  1106.8 10460.6  1107.9 10551.4  1110.5 10612.2
GR1108.3 10646.4  1107.1 10711.3  1107.3 10794.1  1106.4 10810.0  1108.4 11000.6
GR1123.6 11024.4  1136.5 11040.6  1134.4 11063.6  1138.3 11074.3  1132.3 11096.7
GR1133.8 11110.6  1133.4 11218.3  1134.9 11254.8  1134.2 11502.9  1134.1 11714.3
GR1133.7 11962.3  1134.9 12189.4  1135.0 12393.4  1135.0 12643.3  1134.4 12877.2
GR1134.2 13094.3  1134.1 13099.2  1129.9 13109.2  1130.4 13128.3  1133.2 13138.4
GR1131.3 13142.8  1132.2 13161.0  1134.1 13405.8  1135.7 13615.4  1137.5 13723.0
HD17.638       10    9000   11100
NC 0.045    0.05   0.035
X117.821       92  9764.8 10227.7      950     970  964.24
    CHANGE RT INEFF LIMIT  CODE OUT HI GRND AT 11086.7 AND ADD XL
X3                           8350    1140 10814.3    1140
XL                           8550 10227.7
GR1142.2  8181.7  1138.9  8323.3  1139.0  8357.4  1140.1  8379.7  1138.9  8433.5
GR1133.6  8448.4  1133.8  8481.3  1138.1  8495.5  1139.6  8524.0  1139.8  8553.7
GR  1137  8680.0    1137  8706.9    1137  8728.5    1137  8806.5    1137  8864.8
GR  1137  8885.8    1137  8935.3    1137  8954.3    1137  8999.6    1137  9015.8
GR  1137  9029.4    1137  9041.5    1137  9061.5    1137  9075.0    1137  9101.1
GR  1137  9121.6    1137  9152.6    1137  9190.6    1137  9205.7    1137  9239.3
GR  1137  9292.3    1137  9302.1    1137  9314.9    1137  9374.8    1137  9394.9
GR  1137  9478.4    1137  9520.7    1137  9615.2    1137  9666.0    1137  9703.0
GR  1137  9750.4    1137  9764.8  1130.0  9788.3  1130.0  9908.4  1133.2  9922.3
GR1130.0  9938.1  1130.0 10013.2  1130.0 10026.1  1130.0 10055.6  1130.0 10120.9
GR1130.9 10131.5  1131.9 10156.1  1136.0 10173.4  1137.0 10180.8  1130.4 10207.4
GR1138.7 10227.7  1137.2 10236.0  1136.3 10321.5  1134.1 10334.8  1133.3 10358.4
GR1132.5 10362.9  1132.2 10403.1  1133.6 10425.1  1133.8 10683.3  1133.9 10747.7
GR1132.3 10790.0  1138.8 10814.3  1137.7 10865.9  1137.8 11062.6  1138.0 11086.7
GR1138.6 11108.9  1138.1 11397.3  1138.1 11667.3  1138.6 11927.3  1138.9 12352.4
GR1138.2 12639.4  1137.5 12965.5  1137.1 13225.2  1137.0 13271.7  1134.3 13279.9
GR1134.1 13307.6  1137.0 13316.7  1135.6 13320.9  1136.5 13346.2  1138.0 13614.0
GR1141.1 13886.5  1140.1 14151.7  1139.5 14364.5  1142.8 14390.0  1143.4 14431.5
GR1146.2 14445.9  1146.2 14449.6
HD17.821       10    8600   10800
X118.275       92  9752.1 10210.5     2170    2440 2398.82
X3                                    10715    1144
XL                           8800   10700
GR1143.5  8008.5  1138.7  8023.5  1140.7  8037.9  1138.5  8046.9  1138.0  8261.2
GR1137.8  8312.7  1136.6  8325.4  1137.3  8372.6  1137.4  8512.4  1139.6  8516.3
GR1139.8  8520.2  1138.5  8524.5  1139.6  8555.1  1140.4  8562.2  1137.8  8568.8
GR1138.0  8602.0  1142.3  8636.5  1143.8  8662.1  1149.7  8694.9  1150.4  8704.1
GR1148.8  8717.2  1149.0  8724.0  1151.0  8737.9  1149.3  8749.1    1142  8787.2
GR  1142  8803.8    1142  8809.4    1142  8848.8    1142  8871.5    1142  8880.5
GR  1142  8891.0    1142  8999.9    1142  9010.1    1142  9015.7    1142  9188.4
GR  1142  9235.9    1142  9293.2    1142  9329.0    1142  9407.9    1142  9476.4
GR  1142  9483.7    1142  9502.0    1142  9506.1    1142  9515.3  1142.6  9521.5
GR1139.8  9534.5  1139.3  9579.9  1140.1  9637.4  1141.2  9662.8  1141.7  9699.4
GR1139.5  9752.1  1130.1  9787.5  1134.1  9819.9  1134.1  9834.1  1138.9  9863.8
GR1137.4  9948.0  1135.1  9965.1  1134.3 10061.6  1136.5 10084.7  1137.3 10108.8
GR1136.1 10140.2  1138.4 10151.1  1140.1 10210.5  1139.6 10414.7  1138.8 10516.9
GR1137.7 10554.5  1137.1 10611.8  1137.6 10622.8  1139.7 10635.4  1140.1 10643.9
GR1146.7 10661.8  1146.0 10695.0  1143.3 10731.8  1144.1 10758.2  1146.7 10782.6
GR1146.7 10889.1  1146.2 10898.5  1146.9 10915.6  1145.4 10956.8  1145.8 10994.8
GR1143.8 11004.1  1142.2 11023.1  1144.1 11057.2  1143.6 11063.0  1146.8 11096.6
GR1146.3 11118.3  1147.3 11366.8  1148.0 11580.8  1148.3 11795.4  1148.6 11993.8
GR1149.5 12044.0  1149.4 12073.0
HD18.275       10    8800   10700
NC                            0.3     0.5
             --------------BELL ROAD-----------
X118.962       74    9840 10223.7     3175    3885 3627.72
   CODE OUT LO SPOT IN LFT OVRBNK STA 8465.2 TO 8497.9 TO EL 1163.5
X3                            9391    1156   10535    1156
GR1162.0  7916.7  1162.2  7934.1  1162.0  7947.4  1162.3  7963.7  1162.3  8037.4
GR1162.5  8045.6  1162.1  8054.3  1162.2  8112.7  1162.3  8118.1  1162.7  8160.7
GR1162.6  8162.2  1162.8  8185.1  1163.0  8206.7  1163.0  8235.2  1163.4  8289.8
GR1163.4  8330.1  1163.8  8411.9  1163.8  8427.7  1163.5  8463.4  1163.5  8465.2
GR1163.5  8466.9  1163.5  8479.5  1163.5  8495.9  1163.5  8497.9  1163.6  8500.4
GR1163.5  8506.8  1163.7  8550.6  1163.7  8564.1  1163.4  8612.3  1163.2  8634.6
GR1163.1  8674.2  1162.7  8708.9  1163.1  8730.2  1162.7    8753  1162.3  8791.3
GR1162.1  8805.5  1162.3  8856.6  1162.1  8905.9  1161.9  8938.3  1162.0  8955.7
GR1162.2  8966.6  1162.3  9034.1  1162.0  9067.5  1162.5  9102.2  1162.6  9121.3
GR1162.9  9141.9  1165.0  9241.5  1165.6  9276.3  1165.9  9301.3  1165.8  9317.4
GR1165.8  9320.2  1168.2  9391.2  1160.1  9405.6  1149.0    9435  1150.4    9840
GR1147.3  9848.8  1147.4  9882.3  1149.1    9948  1148.1 10060.6  1149.8   10071
GR1150.1 10072.1  1149.1 10223.7  1148.5 10226.4  1146.2 10251.3  1146.8 10260.2
GR1148.4 10281.3  1148.5 10286.7  1147.0 10415.8  1148.2 10465.7  1170.7 10522.1
GR1170.9 10523.2  1170.1 10524.3  1169.5 10531.5  1169.5 10535.6
HD18.962       10    9440   10480
NC  .045    .045    .035
X119.066       93  9885.7 10349.1      485     580  551.29
X3    10
```

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GR1163.5  8083.9  1164.7  8087.8  1162.4  8094.0  1156.1  8106.9  1156.7  8154.1
GR1156.9  8196.9  1157.7  8246.2  1158.0  8347.1  1159.1  8361.4  1159.7  8398.1
GR1161.6  8466.8  1162.4  8504.6  1162.6  8548.1  1163.1  8598.3  1162.9  8698.6
G[redacted]3.1  8799.0  1162.5  8899.3  1161.5  9007.9  1159.8  9077.7  1159.1  9094.7
G[redacted]9.3  9118.3  1159.0  9128.2  1156.9  9150.2  1153.4  9222.0  1153.9  9233.7
GR1157.2  9242.5  1163.1  9259.9  1165.5  9268.0  1167.6  9277.0  1166.7  9289.7
GR1166.5  9297.0  1167.0  9302.8  1166.8  9310.8  1167.3  9320.5  1160.4  9342.3
GR1157.9  9349.5  1154.8  9366.9  1151.2  9379.2  1150.8  9401.6  1150.6  9451.2
GR1151.3  9476.5  1153.8  9520.5  1152.9  9546.9  1152.3  9554.2  1152.0  9579.5
GR1152.2  9649.0  1153.4  9673.0  1153.7  9700.5  1153.2  9744.0  1153.5  9777.6
GR1154.7  9817.4  1154.3  9830.0  1155.5  9870.1  1155.0  9885.7  1149.8  9901.2
GR1150.3  9953.8  1150.8  9978.4  1150.6  9989.3  1151.4 10002.8  1151.6 10058.7
GR1151.3 10080.0  1149.7 10105.8  1149.9 10115.9  1151.6 10129.9  1151.5 10161.9
GR1150.7 10188.8  1150.6 10203.9  1150.8 10206.7  1151.3 10246.3  1149.4 10261.9
GR1151.5 10282.4  1149.8 10327.8  1154.3 10349.1  1154.6 10379.5  1155.9 10398.0
GR1156.1 10456.1  1154.5 10497.0  1154.0 10504.9  1153.0 10536.3  1152.0 10555.2
GR1152.2 10557.5  1149.4 10595.4  1149.5 10626.8  1152.2 10633.3  1154.3 10637.1
GR1151.6 10657.6  1150.2 10684.7  1153.5 10704.5  1156.5 10711.0  1168.4 10729.4
GR1168.3 10747.9  1169.2 10755.7  1169.4 10778.8
HD19.066       10  9302.8   10398
NC 0.045   0.045   0.035     0.1     0.3
X119.446       91  9592.8 10078.6    1840    2400 2473.39

XL                          8890    10100
GR1169.9  8715.4  1169.9  8718.3  1171.0  8722.0  1169.3  8727.7  1164.2  8740.0
GR1163.7  8777.7  1164.7  8830.3  1165.4  8878.7  1164.8  8894.2  1159.3  8920.9
GR1159.0  8926.5  1159.4  8963.4  1159.6  8989.2  1160.9  9002.5  1161.2  9027.9
GR1162.1  9078.0  1162.2  9117.5  1162.2  9157.2  1160.1  9174.8  1159.7  9206.1
GR1161.0  9215.2  1160.7  9244.8  1160.8  9258.0  1161.2  9278.1  1161.2  9328.2
GR1161.1  9378.2  1160.9  9407.9  1161.7  9419.9  1160.6  9446.9  1160.0  9482.0
GR1160.5  9527.6  1161.3  9539.0  1162.7  9566.6  1162.8  9571.4  1161.1  9578.3
GR1160.3  9587.4  1159.0  9592.8  1155.9  9603.1  1156.0  9643.3  1156.2  9691.2
GR1157.5  9712.8  1158.0  9725.2  1157.8  9765.9  1157.9  9790.0  1158.4  9878.6
GR1158.7  9911.1  1159.4  9930.4  1158.7  9978.7  1159.4 10028.7  1159.0 10056.2
GR1162.8 10078.6  1163.7 10128.8  1164.2 10178.9  1164.0 10222.3  1163.9 10228.9
GR1163.8 10279.0  1163.8 10318.4  1163.8 10329.0  1163.3 10356.3  1161.4 10383.8
GR1163.0 10429.1  1162.8 10479.2  1162.5 10529.2  1163.1 10579.3  1163.2 10629.3
GR1163.6 10702.6  1163.1 10750.7  1163.2 10829.5  1163.3 10879.5  1163.0 10915.1
GR1162.7 10959.3  1162.4 10982.8  1159.7 11003.4  1159.3 11029.6  1159.3 11036.6
GR1159.7 11075.7  1159.2 11115.4  1156.7 11130.8  1156.9 11158.2  1159.1 11173.3
GR1159.4 11179.5  1158.2 11202.1  1157.6 11233.6  1157.2 11242.5  1157.9 11279.9
GR1157.7 11282.7  1155.7 11323.5  1157.1 11328.7  1175.6 11349.4  1179.6 11355.8
GR1180.1 11361.8
HD19.446       10    8890   10100
         ---------UNION HILLS--------
[redacted]920       92  9744.6 10129.1    2510    2450 2499.03

XL                          9700   11200
GR1178.8  8936.2  1171.6  8955.1  1171.3  8971.0  1171.5  8979.1  1170.6  9010.6
GR1166.2  9025.5  1165.5  9076.6  1165.2  9081.9  1164.0  9087.0  1164.6  9106.2
GR1165.7  9113.5  1166.0  9136.5  1167.7  9149.8  1167.2  9187.5  1169.4  9202.4
GR1169.9  9229.1  1169.5  9379.1  1170.5  9429.1  1170.2  9479.1  1170.7  9529.1
GR1170.3  9615.1  1169.1  9744.6  1164.4  9765.4  1164.0  9770.7  1164.4  9779.1
GR1166.0  9979.1  1166.0  9992.3  1168.1 10020.8  1168.4 10037.3  1168.1 10100.3
GR1168.3 10129.1  1167.2 10203.9  1169.4 10261.7  1171.0 10283.1  1169.9 10298.8
GR1169.5 10326.3  1168.8 10347.5  1169.2 10396.8  1167.9 10408.8  1166.6 10448.3
GR1166.5 10520.7  1168.2 10582.4  1168.0 10634.0  1167.0 10669.2  1167.2 10680.6
GR1165.8 10699.5  1167.0 10718.9  1167.8 10722.3  1165.2 10737.5  1166.9 10752.3
GR1166.4 10766.8  1164.3 10783.8  1164.0 10789.8  1165.0 10802.0  1165.1 10823.2
GR1163.8 10843.8  1164.3 10871.0  1163.9 10886.4  1163.1 10895.5  1162.6 10925.7
GR1163.9 10934.7  1164.0 10946.7  1165.5 10956.8  1168.4 10991.5  1166.2 11000.3
GR1164.6 11008.2  1163.7 11016.1  1165.2 11030.7  1165.2 11074.7  1166.8 11106.6
GR1172.2 11130.2  1172.1 11229.1  1171.1 11429.1  1171.0 11579.1  1170.6 11642.1
GR1166.0 11658.7  1167.9 11676.5  1168.3 11683.2  1167.3 11706.3  1167.8 11716.6
GR1168.9 11723.1  1168.6 11738.0  1167.8 11743.5  1168.4 11755.8  1169.8 11771.2
GR1171.2 11779.0  1172.8 11784.1  1172.7 11786.2  1176.5 11794.7  1177.7 11801.3
GR1187.7 11829.2  1188.1 11831.7
HD19.920       10    9000 11130.2
X120.579       90  9825.6 10324.2    3420    3400 3482.23

XL                          9100   10340
GR1187.1  8154.9  1187.7  8167.0  1186.3  8171.3  1181.5  8181.2  1180.5  8183.9
GR1181.5  8211.3  1182.1  8225.6  1180.3  8267.5  1180.0  8285.3  1180.1  8291.4
GR1181.6  8304.5  1180.1  8325.6  1180.2  8333.6  1181.1  8375.6  1180.9  8475.6
GR1180.8  8525.6  1180.8  8533.2  1180.7  8575.6  1180.6  8616.2  1180.7  8639.9
GR1179.3  8655.2  1180.4  8665.9  1180.7  8676.6  1180.9  8725.6  1181.0  8732.8
GR1181.0  8775.6  1180.9  8782.8  1180.8  8825.6  1181.2  8868.7  1181.2  8882.5
GR1180.2  8925.6  1179.0  8975.6  1178.6  8985.4  1180.8  9024.9  1181.1  9067.4
GR1181.2  9082.0  1182.2  9125.3  1182.1  9132.1  1180.2  9175.6  1179.4  9207.4
GR1179.4  9223.9  1179.0  9275.6  1178.1  9306.4  1177.8  9314.2  1178.8  9325.0
GR1179.0  9331.8  1178.4  9366.8  1178.6  9375.6  1178.1  9387.0  1178.3  9409.4
GR1178.2  9419.5  1178.3  9425.2  1177.9  9429.4  1176.8  9470.7  1177.2  9504.7
GR1179.5  9516.6  1180.9  9522.3  1181.2  9526.6  1181.0  9570.8  1181.3  9593.3
GR1181.6  9605.0  1181.1  9633.2  1180.5  9675.1  1180.8  9698.9  1180.9  9705.1
GR1179.3  9722.0  1179.4  9728.3  1178.3  9740.1  1177.1  9774.3  1178.1  9796.9
G[redacted]8.8  9823.3  1179.0  9825.6  1177.7  9860.0  1176.0  9920.5  1175.8  9925.6
[redacted]5.8  9930.5  1176.0  9975.6  1174.7 10003.0  1174.8 10030.3  1175.0 10078.6
G[redacted]4.6 10130.3  1174.1 10161.8  1172.7 10174.0  1172.6 10202.0  1172.4 10229.9
GR1171.9 10275.6  1172.4 10309.2  1176.7 10322.2  1177.8 10324.2  1194.8 10345.6
HD20.579       10    8200 10324.2
X120.958       90  9787.3 10383.8    1815    2044 2006.06
X3                                   10760    1188
XL                          8797   10760
GR1188.2  8125.7  1182.5  8139.8  1182.5  8144.8  1181.8  8169.4  1178.3  8186.1
GR1176.6  8194.6  1171.4  8234.1  1170.3  8245.5  1169.9  8289.9  1170.3  8302.9
GR1178.6  8350.6  1178.9  8364.3  1180.0  8398.1  1180.3  8401.0  1181.7  8450.2
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GR1182.2  8482.2  1186.0  8500.0  1185.8  8522.0  1185.9  8550.7  1187.0  8601.5
GR1187.1  8619.9  1186.5  8666.9  1186.0  8727.2  1185.5  8758.0  1188.4  8768.6
GR1190.7  8779.0  1190.0  8792.4  1188.7  8797.4  1187.1  8806.2  1185.4  8840.8
G[redacted]4.5  8854.0  1183.3  8880.1  1182.2  8898.2  1181.9  8914.9  1181.9  8958.1
[redacted]2.8  9008.4  1182.7  9012.1  1182.5  9059.2  1182.5  9073.3  1182.2  9129.6
GR1182.4  9137.1  1184.0  9146.5  1185.8  9160.2  1185.7  9165.1  1185.9  9206.8
GR1186.6  9262.7  1186.0  9306.7  1186.3  9348.8  1186.5  9364.4  1186.5  9413.0
GR1185.2  9429.8  1185.6  9446.7  1187.5  9458.7  1187.4  9462.9  1187.8  9482.2
GR1187.8  9489.3  1185.8  9500.6  1186.7  9505.2  1187.2  9516.8  1186.7  9567.8
GR1186.5  9606.1  1186.4  9649.0  1186.1  9693.3  1186.0  9707.0  1186.1  9716.3
GR1186.0  9754.4  1182.9  9766.6  1183.3  9775.2  1183.3  9787.3  1182.8  9819.2
GR1182.8  9830.2  1178.3  9844.3  1179.2  9873.0  1178.5  9923.9  1178.9  9977.2
GR1180.5  9987.5  1180.5 10018.6  1180.3 10034.9  1180.5 10076.4  1180.9 10127.3
GR1180.9 10135.8  1180.7 10177.0  1179.8 10229.0  1178.5 10262.0  1177.5 10292.1
GR1176.6 10363.7  1181.5 10383.8  1185.0 10392.4  1185.0 10742.4  1194.0 10760.0
HD20.958      10    8800   10750
          -----------BEARDSLEY----------
X121.061      91  9850.0 10325.4     340     655  542.53
X3                                          11069    1188
        ADD XL FOR CHANNEL FILLED WITH SEDIMENT
XL                          9800   11045
GR1192.3  8187.5  1193.6  8199.8  1189.5  8209.0  1183.9  8222.8  1181.3  8275.7
GR1180.7  8281.3  1176.2  8309.6  1172.9  8328.7  1170.6  8354.0  1169.6  8374.3
GR1170.2  8419.5  1173.2  8441.0  1178.8  8476.8  1179.2  8546.0  1181.2  8600.3
GR1182.7  8641.1  1183.9  8654.5  1184.0  8682.4  1183.3  8698.6  1186.2  8709.3
GR1184.9  8751.7  1184.6  8793.6  1184.6  8825.8  1183.8  8864.9  1181.9  8896.9
GR1181.2  8905.0  1182.6  8920.7  1181.9  8936.5  1184.6  8966.0  1186.2  9012.8
GR1186.5  9066.3  1186.8  9089.3  1186.6  9135.6  1187.9  9174.9  1187.5  9248.1
GR1187.1  9253.5  1186.3  9257.6  1188.6  9298.0  1188.2  9312.4  1188.6  9375.9
GR1188.2  9464.9  1188.1  9524.0  1187.6  9578.3  1187.4  9633.7  1187.6  9687.0
GR1187.0  9708.5  1187.3  9759.1  1188.0  9819.5  1186.6  9833.7  1184.5  9850.0
GR1180.3  9895.6  1178.2  9905.8  1176.5  9918.9  1177.1  9938.7  1178.4  9958.7
GR1177.4 10008.7  1177.7 10013.0  1177.6 10034.7  1179.6 10051.0  1180.8 10057.9
GR1180.9 10075.4  1180.8 10114.7  1180.4 10128.6  1177.3 10169.8  1179.1 10230.4
GR1179.5 10284.2  1179.6 10293.5  1183.4 10312.3  1186.3 10325.4  1185.8 10390.7
GR1185.5 10447.7  1184.9 10502.0  1183.2 10563.5  1184.4 10574.9  1186.2 10597.2
GR1185.0 10613.0  1186.9 10632.0  1186.2 10655.8  1186.2 10687.3  1184.2 10703.6
GR1186.2 10721.5  1187.1 10781.1  1186.9 10862.9  1186.7 10908.8  1186.4 10926.9
GR1186.7 10936.8  1187.1 10987.6  1186.1 11012.0  1185.1 11025.4  1187.9 11045.4
GR1201.2 11069.0
HD21.061      10    9850   11000
NC  .055    .055    .050
X121.157      90  9377.3 10376.3     340     630  509.07
   TAKE OUT LAST FOUR GR POINTS AND X3 DUE TO ARRAY CONSTRAINTS
X[redacted]                 9300   10500
[redacted]6.0  8182.2  1196.1  8184.4  1192.4  8197.1  1193.5  8208.0  1190.1  8223.3
GR1192.3  8246.0  1191.3  8258.3  1191.4  8264.6  1185.1  8308.7  1183.7  8336.5
GR1178.7  8387.1  1178.6  8397.0  1176.3  8432.1  1178.3  8441.8  1178.4  8451.5
GR1174.2  8500.1  1177.8  8540.9  1176.3  8561.5  1178.2  8580.0  1178.9  8639.9
GR1178.2  8716.7  1179.2  8747.3  1183.6  8782.5  1186.2  8836.0  1186.5  8874.3
GR1190.0  8897.8  1188.6  8906.8  1183.1  8932.9  1180.4  8972.1  1185.7  8984.7
GR1186.8  9024.0  1187.7  9034.5  1188.7  9146.7  1188.2  9196.4  1192.8  9211.2
GR1190.5  9217.8  1188.1  9230.5  1188.8  9257.6  1192.1  9266.8  1189.1  9277.5
GR1189.4  9367.8  1185.9  9377.3  1182.5  9384.7  1181.9  9399.5  1182.3  9456.5
GR1182.5  9511.2  1184.9  9522.6  1180.2  9540.1  1180.6  9541.0  1177.1  9550.4
GR1176.6  9577.6  1178.1  9602.3  1183.1  9638.6  1183.9  9649.3  1183.1  9683.8
GR1184.0  9765.7  1183.5  9878.7  1182.8  9910.1  1182.8  9964.5  1184.0 10008.6
GR1182.8 10105.5  1181.2 10118.2  1179.8 10219.2  1180.3 10232.0  1181.5 10240.1
GR1180.0 10253.7  1178.3 10263.7  1179.9 10279.0  1181.6 10309.5  1181.9 10376.3
GR1182.8 10398.0  1180.6 10404.6  1181.2 10411.2  1189.3 10440.4  1192.8 10455.2
GR1190.9 10477.1  1189.6 10532.3  1189.2 10587.0  1187.0 10615.5  1188.7 10633.4
GR1187.8 10655.0  1189.5 10676.2  1189.4 10771.4  1187.0 10831.3  1189.3 10874.0
GR1189.6 10891.0  1189.2 10950.8  1189.8 10981.9  1189.6 11039.8  1190.2 11134.4

HD21.157      10  9266.8 10398.0
X121.431      75  9467.9 10343.5    1205    1490 1443.17
X3                                          10343    1193
XL                        9667.9   10343
GR1195.9  7596.7  1191.5  7612.7  1191.4  7644.6  1196.1  7665.8  1189.9  7681.7
GR1191.3  7876.2  1193.0  7887.7  1192.5  8007.9  1185.7  8031.5  1185.9  8041.4
GR1192.9  8065.9  1190.8  8089.6  1191.6  8356.5  1193.7  8627.3  1195.3  8703.6
GR1196.7  8717.0  1195.1  8733.0  1205.5  8755.9  1205.1  8780.9  1199.7  8795.6
GR1196.6  8800.4  1196.9  8892.0  1202.5  8926.6  1201.4  8930.6  1203.4  8949.5
GR1199.5  8989.0  1195.1  9005.1  1191.3  9141.2  1193.3  9161.8  1194.7  9167.9
GR1193.7  9177.6  1190.6  9190.7  1190.4  9217.3  1191.3  9222.0  1189.3  9238.6
GR1190.4  9361.8  1187.8  9437.8  1191.1  9467.9  1181.0  9503.2  1181.0  9799.0
GR1189.0  9800.0  1189.0  9908.9  1189.0 10297.8  1193.9 10343.5  1192.1 10360.2
GR1187.6 10374.6  1186.6 10495.9  1187.6 10526.0  1191.0 10541.7  1193.0 10600.4
GR1189.2 10648.7  1190.5 10725.7  1189.2 10747.4  1192.0 10769.6  1193.8 10884.0
GR1191.3 10913.5  1192.6 10942.3  1193.3 10978.9  1191.6 11001.4  1193.8 11018.7
GR1194.8 11074.7  1193.2 11110.2  1193.9 11147.9  1192.9 11175.9  1194.9 11305.7
GR1193.2 11532.5  1194.0 11644.1  1192.2 11705.1  1194.0 12017.4  1193.5 12215.3
GR1194.4 12220.4  1195.6 12414.0  1197.2 12438.2  1206.9 12475.0  1211.6 12485.0
HD21.431      10  9190.7 10769.6
NC  .045    .055    .035
X[redacted].893      93  9558.8 10146.5    2525    2070 2442.15
[redacted]                    9546    1200   12117    1200

GR1200.4  9546.7  1199.5  9548.9  1201.2  9558.8  1194.2  9576.0  1195.0  9660.8
GR1193.5  9708.0  1193.3  9788.3  1192.3  9798.3  1193.8  9857.6  1193.6  9914.6
GR1189.8 10013.5  1187.4 10023.1  1187.6 10040.6  1191.5 10070.2  1191.0 10096.6
GR1195.0 10112.4  1196.7 10146.5  1197.2 10313.7  1197.6 10374.9  1194.0 10402.2
GR1196.6 10443.8  1195.8 10529.3  1192.0 10545.6  1192.0 10653.2  1193.6 10674.7
GR1194.4 10681.1  1193.8 10686.8  1195.3 10710.7  1195.3 10729.1  1201.1 10751.6
GR1200.1 10758.1  1202.1 10912.2  1202.4 11070.0  1202.6 11098.0  1197.7 11126.5
GR1198.0 11174.4  1197.1 11182.9  1199.7 11204.9  1201.2 11232.0  1201.0 11256.9
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GR1198.2 11281.1  1199.3 11293.4  1198.7 11313.6  1200.8 11397.0  1200.5 11454.0
GR1198.7 11486.0  1200.7 11625.1  1200.4 11796.9  1200.9 11913.0  1199.9 12012.6
GR1200.7 12055.2  1205.4 12105.2  1207.4 12120.2  1208.8 12124.9  1207.4 12130.3
GR[illegible]3.7 12134.7  1180.2 12172.8  1176.8 12177.0  1173.5 12223.1  1173.5 12236.4
GR[illegible]9.3 12248.6  1167.7 12263.0  1171.1 12283.8  1169.8 12295.3  1165.9 12311.2
GR1161.5 12326.4  1161.2 12423.3  1163.6 12524.8  1194.5 12550.3  1195.6 12574.7
GR1203.6 12589.8  1201.3 12595.1  1201.5 12701.2  1199.1 12771.4  1201.4 12782.6
GR1206.6 12820.3  1201.8 12861.9  1202.0 12938.0  1202.9 12958.4  1205.5 12964.5
GR1205.6 12967.9  1203.2 12974.5  1203.6 12980.5  1209.1 12994.1  1209.3 13024.5
GR1205.0 13043.5  1206.6 13126.4  1203.6 13135.0  1204.0 13306.5  1205.1 13378.9
GR1204.2 13388.4  1202.5 13397.1  1219.7 13455.6
HD21.893      10  9558.8 10758.1
       -------UPSTREAM OF DEER VALLEY ROAD--------
NC  .045    .045    .035
X122.462       77  9887.4 10318.9    2955    2920 3005.37


GR1214.1  9040.3  1204.2  9050.4  1200.9  9054.7  1201.9  9096.6  1203.8  9113.8
GR1203.8  9121.3  1202.8  9131.0  1202.7  9157.9  1205.0  9180.8  1203.4  9243.2
GR1205.9  9269.8  1205.1  9286.9  1206.8  9364.8  1206.9  9426.2  1208.3  9443.7
GR1208.8  9457.7  1208.0  9482.3  1206.3  9500.7  1206.7  9569.8  1208.1  9670.4
GR1208.0  9753.1  1206.3  9887.4  1203.2  9904.4  1200.3  9916.7  1202.4  9965.0
GR1202.2  9995.7  1203.8 10034.6  1204.6 10185.7  1204.1 10207.9  1202.3 10213.2
GR1203.0 10277.6  1202.5 10298.1  1208.7 10318.9  1209.5 10430.6  1208.5 10528.4
GR1207.3 10553.7  1206.1 10567.0  1203.7 10578.9  1203.5 10588.1  1206.1 10597.7
GR1205.5 10693.6  1206.9 10714.4  1206.8 10754.0  1205.9 10778.0  1210.3 10789.3
GR1203.0 10806.5  1203.0 11063.7  1203.1 11084.2  1203.5 11091.6  1203.0 11108.3
GR1205.2 11122.0  1205.4 11127.3  1204.6 11132.0  1205.1 11135.9  1203.0 11141.3
GR1203.0 11143.1  1203.0 11674.7  1203.1 11712.6  1203.2 11750.2  1205.2 11762.2
GR1205.6 11785.7  1205.5 11850.5  1210.5 11868.3  1210.3 11895.4  1211.2 12107.3
GR1211.4 12348.4  1212.1 12564.8  1212.3 12672.9  1213.1 12727.6  1213.3 12937.8
GR1213.2 12969.2  1214.0 12976.0  1214.8 13009.5  1218.7 13078.4  1218.7 13121.7
GR1217.8 13132.1  1225.6 13192.8
HD22.462      10  9050.4   11800
X122.935       94  9530.2 10351.6    2480    2125 2490.47

GR1220.0  8478.1  1216.5  8483.9  1209.0  8492.7  1209.0  8541.4  1209.8  8593.0
GR1209.5  8623.7  1211.8  8638.1  1212.2  8644.8  1211.3  8746.3  1212.4  8772.4
GR1212.5  8782.3  1210.6  8800.5  1210.0  8839.6  1211.6  8869.5  1213.5  8894.6
GR1214.2  8936.6  1212.6  8962.1  1212.4  8974.7  1214.6  8991.9  1213.7  9001.1
GR1213.4  9012.1  1215.7  9027.2  1216.0  9058.6  1214.9  9162.0  1214.4  9213.7
GR1215.0  9265.5  1215.1  9317.2  1215.4  9331.4  1214.8  9372.3  1216.3  9413.3
GR1216.3  9472.4  1214.8  9530.2  1210.6  9542.3  1212.1  9575.8  1211.3  9622.6
GR1211.4  9679.2  1211.9  9699.5  1212.1  9730.9  1213.2  9773.4  1212.1  9822.2
GR[illegible]13.0  9886.1  1213.3  9937.8  1211.6 10017.5  1211.9 10118.3  1211.9 10145.4
GR[illegible]2.2 10156.3  1209.5 10173.6  1210.0 10241.7  1211.4 10250.1  1214.0 10262.0
GR1214.4 10351.6  1214.2 10403.3  1215.4 10454.7  1215.2 10558.7  1215.2 10662.0
GR1215.1 10721.9  1215.5 10762.8  1214.4 10819.8  1215.1 10857.4  1214.7 10865.3
GR1215.6 10897.6  1209.0 10913.6  1209.1 10955.1  1211.9 10967.7  1211.9 10984.9
GR1209.7 11072.3  1209.9 11083.9  1213.0 11096.7  1213.5 11191.9  1212.7 11282.6
GR1213.0 11356.1  1214.2 11458.1  1214.1 11547.1  1213.0 11596.6  1213.2 11605.7
GR1212.0 11613.2  1211.7 11626.3  1214.6 11638.0  1213.8 11653.6  1216.3 11683.4
GR1213.8 11741.8  1214.3 11745.7  1214.6 11761.9  1215.8 11785.2  1216.8 11831.6
GR1217.0 11855.2  1217.7 11866.3  1217.2 11872.6  1218.8 11915.0  1223.5 11955.0
GR1225.3 11975.5  1225.9 12008.2  1227.6 12033.7  1228.2 12069.7
HD22.935      10  8492.7   11750
        ----------PINNACLE PEAK ROAD----------
NC  .045    .045    .035
X123.409       90  9675.2 10060.2    2450    2360 2505.26
    TAKE OUT LAST 5 GR POINTS DUE TO ARRAY CONSTRAINTS
X3                                  12265.5    1226
XL                          9550   11600
GR1256.3  7735.9  1256.2  7750.9  1230.4  7791.4    1231  7799.5  1230.7  7813.6
GR1228.9  7829.9  1228.9    7848  1227.5  7854.5  1225.7  7858.5  1225.8  7874.5
GR1224.7  7925.3  1224.9  8004.6  1224.3  8121.4  1222.9  8128.6  1222.9  8137.8
GR1224.3  8143.3  1224.4    8147  1218.3  8173.3  1218.8  8283.2  1218.5  8305.9
GR1221.1  8338.7  1221.5  8349.7  1221.2  8385.4    1222  8419.6  1221.6  8441.4
GR1221.8  8470.7    1220  8485.1  1220.9  8589.8  1219.3  8692.6  1218.8  8702.3
GR1218.6  8794.3  1218.2  8808.7    1223  8830.7  1223.6  8845.4  1222.8    8907
GR  1223  8947.6    1222  8977.9    1222  9031.1  1222.9  9049.9  1222.2    9101
GR  1221  9152.2  1221.5  9197.7  1222.5    9217  1223.4  9354.4  1223.7  9356.6
GR  1223  9522.1  1223.7  9561.1  1223.6  9675.2  1220.5  9686.2  1219.3  9713.7
GR1221.7  9811.5  1222.1  9867.8  1220.9  9918.9  1218.8  9939.5  1222.2 10021.2
GR  1222 10030.4  1225.4 10060.2  1225.1 10154.4  1225.6 10174.6  1221.8   10379
GR1221.9 10407.3  1222.8 10449.5  1222.4 10582.3  1221.4 10615.1  1222.4 10660.2
GR  1222 10702.4  1221.1 10736.8  1221.1   10769  1217.6 10787.7  1216.7   10796
GR1218.5 10890.2  1217.9 10919.7    1224 10945.4  1224.1 11043.5  1223.4 11145.8
GR1222.1 11192.4  1223.1 11350.2  1222.8 11395.3    1220 11409.7  1220.7 11440.1
GR1218.9 11453.4  1219.4   11481  1223.9 11496.7  1225.8 11510.2  1225.6 11629.8
GR1226.2 11671.9  1225.8 11708.1    1226 11811.1  1226.4 11983.3  1225.7 11990.8


HD23.409      10    8000   11600
X123.692       92  9869.5 10339.2    1460    1455 1492.88
X3                          9650    1230 11533.8    1230
XL                          9670   11450
G[illegible]263  7983.5  1249.2  8010.6    1232  8040.7    1217  8064.8  1206.1  8092.9
G[illegible]1206  8096.9  1201.9  8135.1  1201.4  8210.8  1202.5  8214.5  1212.3  8236.5
GR1219.1    8249  1223.8    8259  1223.6  8273.3  1208.2  8305.9  1207.7  8359.5
GR1199.7  8383.2  1198.6  8394.4  1197.8    8409    1198  8412.1  1195.3  8460.9
GR1194.7  8478.5    1195  8488.3  1193.4  8524.5  1192.8  8550.6  1192.9  8601.8
GR1192.3  8644.7    1191  8850.7  1190.7  8940.5  1191.1  8982.8  1190.8  9001.7
GR1191.4    9051    1191    9241  1190.3  9294.9  1190.5  9312.2  1188.8  9461.1
GR1187.9  9512.2  1187.1  9533.1  1186.7  9600.8    1194  9614.7  1195.8  9616.7
GR1229.7  9648.2  1229.5  9660.7    1229  9668.2  1229.3  9671.3  1226.8  9681.7
GR1226.3  9720.8  1229.5  9733.8  1229.9  9767.4  1229.5  9787.1  1229.5  9869.5
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GR1223.9  9897.3  1223.8  9971.6  1224.3 10044.9  1225.7   10077    1227 10124.7
GR  1227 10187.8  1227.5 10194.4  1225.6 10203.5  1226.4 10319.8  1227.4 10339.2
GR1226.9 10382.2  1226.4 10393.6  1227.6 10444.7  1228.2 10514.5  1228.2 10549.6
GR1226.1 10559.9    1226   10583  1227.6 10607.5  1227.9 10621.6  1224.3 10637.9
GR1224.5 10675.4  1228.1 10690.3  1228.8 10839.5  1228.3 10890.4  1228.9 10941.6
GR1228.3 10992.6    1229 11043.6  1228.1 11095.7  1229.6 11162.5  1229.7 11186.1
GR1228.9 11247.8  1228.8 11285.6  1227.1 11315.5  1225.5 11324.7  1225.3 11356.5
GR1226.3 11384.6  1227.1 11396.5  1227.2 11429.5  1225.4 11433.6  1240.7 11468.5
GR  1238 11521.1  1237.8 11533.8
HD23.692      10    8048   11450
NC  .055    .055    .050
X123.974      89  9716.2 10115.2    1420    1470 1489.37
   TAKE OUT FIRST 5 GR POINTS DUE TO ARRAY CONSTRAINTS
X3                                      11205    1238
XL                          9716   11185

GR1264.4  7562.0  1264.2  7576.0  1262.7  7576.8  1263.1  7578.2  1257.8  7586.6
GR1254.6  7593.3  1249.1  7602.5  1231.9  7627.3  1231.1  7774.9  1230.1  7821.5
GR1231.4  7829.1  1230.4  7941.6  1231.4  8024.4  1231.6  8198.2  1235.4  8254.0
GR1235.5  8318.5  1232.8  8351.1  1234.8  8370.8  1235.9  8403.1  1234.6  8420.3
GR1229.9  8445.4  1228.7  8464.9  1229.5  8485.0  1234.3  8506.0  1234.8  8543.1
GR1234.1  8546.0  1234.5  8550.1  1229.2  8565.6  1230.7  8648.0  1230.9  8814.3
GR1232.0  8898.5  1229.8  9001.5  1229.1  9008.3  1227.9  9102.9  1226.9  9118.2
GR1222.9  9132.2  1223.3  9177.1  1222.3  9200.2  1226.6  9218.9  1226.0  9358.3
GR1225.0  9399.9  1226.0  9433.7  1225.4  9465.1  1230.3  9506.7  1230.8  9563.1
GR1236.6  9583.0  1235.2  9586.4  1228.1  9595.9  1231.8  9621.4  1234.4  9693.0
GR1238.6  9716.2  1229.1  9729.9  1227.8  9772.7  1227.5  9833.4  1231.8  9891.3
GR1230.5  9916.5  1230.4  9964.1  1232.0  9977.2  1236.5  9992.0  1232.6 10005.8
GR1231.9 10010.7  1232.5 10019.0  1234.9 10030.1  1231.9 10036.8  1230.0 10073.5
GR1230.7 10110.9  1233.1 10115.2  1234.8 10128.6  1232.8 10151.6  1232.2 10212.3
GR1229.6 10239.8  1230.2 10354.5  1229.1 10371.5  1232.4 10388.9  1232.5 10439.1
GR1233.5 10490.5  1231.8 10554.8  1233.5 10644.6  1232.4 10714.7  1232.8 10747.3
GR1231.6 10828.7  1233.7 10842.9  1231.4 10994.6  1230.5 11034.8  1235.7 11058.4
GR1236.3 11109.1  1237.7 11139.4  1254.2 11185.4  1253.5 11204.9
HD23.974      10    7700   11000
    ------DOWNSTREAM OF HAPPY VALLEY ROAD-------
NC  .045    .045    .035
X124.449      92  9496.2 10169.3    2380    2560 2506.65

XL                          9300   11340
GR1263.1  7480.4  1261.5  7489.1  1250.1  7529.5  1249.2  7543.3  1248.2  7549.9
GR1245.9  7555.7  1247.2  7582.8  1248.9  7594.4  1246.2  7645.6  1245.2  7718.8
GR1247.2  7752.2  1248.1  7786.1  1247.8  7811.3  1245.8  7857.9  1245.7  7875.1
GR1245.3  7884.4  1244.3  7893.4  1244.1  7898.5  1240.3  7915.9  1239.3  8016.4
GR1239.1  8069.2  1239.5  8122.0  1240.1  8156.4  1239.5  8235.2  1239.5  8280.5
GR1238.4  8322.6  1239.6  8343.5  1239.5  8355.6  1240.2  8439.1  1240.2  8510.9
GR1239.5  8550.3  1239.9  8597.6  1239.9  8650.4  1239.3  8695.0  1240.0  8709.4
GR1240.9  8750.2  1240.5  8756.1  1242.0  8876.0  1242.1  9030.7  1241.9  9090.1
GR1240.3  9161.6  1241.1  9181.1  1241.1  9192.2  1242.2  9231.6  1241.9  9337.3
GR1240.9  9390.1  1240.2  9496.2  1239.0  9538.6  1237.6  9557.0  1236.8  9573.9
GR1236.9  9602.7  1238.3  9656.4  1238.3  9678.3  1239.9  9694.6  1238.4  9856.2
GR1237.8  9864.3  1238.2  9890.0  1236.9  9916.2  1235.0  9982.5  1236.4 10034.9
GR1238.0 10047.2  1238.4 10084.9  1237.6 10101.9  1236.8 10111.0  1237.1 10131.9
GR1242.7 10169.3  1243.4 10182.6  1243.3 10247.2  1242.7 10272.2  1239.6 10285.3
GR1240.2 10341.1  1240.2 10392.7  1239.0 10423.1  1237.8 10552.5  1238.2 10627.8
GR1238.7 10658.1  1238.7 10763.8  1240.1 10846.9  1239.6 10873.0  1240.3 10904.3
GR1240.2 10920.1  1240.7 10924.8  1239.7 10968.5  1239.8 10975.1  1237.8 11100.8
GR1236.8 11143.3  1236.9 11292.1  1236.6 11313.1  1256.8 11340.0  1262.3 11347.9
GR1266.4 11355.0  1266.2 11372.5
HD24.449      10  7898.5 11143.3
         ----------UPSTREAM OF HAPPY VALLEY ROAD----
X124.543      91  9646.7 10243.6     495     495  500.50

XL                          9200   11435
GR1263.5  7211.0  1252.7  7236.5  1251.5  7278.4  1251.6  7286.8  1254.4  7313.5
GR1253.6  7369.3  1252.4  7377.4  1251.9  7386.5  1249.9  7404.2  1248.7  7467.2
GR1249.7  7472.7  1252.9  7484.9  1255.5  7497.4  1254.7  7502.0  1254.6  7528.3
GR1256.3  7533.7  1254.5  7542.2  1252.6  7637.5  1252.0  7691.0  1250.6  7746.3
GR1249.7  7812.2  1247.4  7826.0  1243.4  7844.8  1242.1  8008.2  1241.3  8113.9
GR1241.9  8182.1  1241.8  8219.6  1242.3  8252.1  1239.4  8262.4  1242.2  8277.0
GR1241.9  8339.5  1242.2  8490.8  1242.5  8589.6  1241.9  8649.4  1243.0  8695.3
GR1243.0  8853.8  1244.5  9012.4  1243.7  9118.1  1244.1  9223.8  1243.7  9281.4
GR1242.1  9297.8  1242.1  9329.5  1243.0  9358.2  1240.9  9382.8  1240.8  9435.3
GR1236.3  9582.1  1235.6  9594.4  1243.3  9622.9  1243.5  9646.7  1241.9  9709.0
GR1242.3  9742.6  1244.0  9751.8  1245.4  9766.1  1244.5  9793.5  1243.5  9796.0
GR1242.9  9806.8  1240.2  9821.0  1239.6  9874.8  1240.3  9923.3  1239.0  9952.8
GR1240.5  9966.8  1240.8 10077.7  1237.6 10212.4  1237.8 10229.1  1243.2 10243.6
GR1243.4 10280.9  1242.6 10333.8  1242.5 10386.8  1243.4 10439.4  1241.6 10550.6
GR1239.4 10565.8  1239.2 10598.0  1238.6 10619.5  1240.4 10703.7  1240.8 10780.2
GR1239.9 10859.1  1240.9 10869.5  1240.8 10915.2  1241.7 11080.7  1239.4 11105.3
GR1241.4 11119.9  1239.4 11166.5  1239.8 11241.2  1239.5 11244.2  1238.3 11247.1
GR1238.7 11285.1  1238.3 11331.3  1238.6 11360.1  1236.8 11366.3  1237.7 11413.5
GR1259.5 11435.6
HD24.543      10    8000 11413.5
NC   .05     .05    .035
X124.996      96  9774.0 10632.3    2320    2330 2388.18

XL                          8560   11750
GR1254.4  7668.6  1255.6  7682.4  1253.3  7774.4  1252.5  7785.0  1252.9  7828.8
GR1250.8  7840.2  1249.6  7995.9  1250.5  8047.8  1250.3  8099.7  1248.3  8201.7
GR1251.3  8255.4  1250.9  8411.0  1250.4  8444.6  1251.5  8463.0  1253.0  8566.7
GR1250.8  8652.6  1252.5  8696.2  1251.2  8717.9  1252.0  8746.9  1253.0  8753.4
GR1253.3  8948.2  1252.1  9141.0  1251.8  9301.7  1249.0  9319.2  1250.0  9345.0
GR1249.7  9404.1  1251.9  9428.2  1253.9  9461.8  1251.9  9472.2  1253.0  9564.4
GR1252.2  9619.0  1251.5  9625.6  1253.1  9632.6  1253.1  9774.0  1249.9  9791.3
GR1251.3  9888.4  1248.8  9906.8  1246.5  9913.9  1246.3  9992.8  1251.7 10012.2
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GR1251.9 10171.5  1251.6 10198.7  1250.5 10222.4  1251.0 10358.3  1249.9 10397.4
GR1247.8 10423.0  1247.9 10562.7  1251.0 10632.3  1251.3 10742.4  1250.8 10781.7
GR1248.5 10834.6  1246.8 10901.3  1246.9 10937.6  1249.6 10961.7  1249.1 11048.3
GR[illegible]46.4 11064.6  1246.4 11141.1  1250.7 11165.4  1250.6 11205.1  1251.4 11268.0
[illegible]8.9 11363.8  1250.7 11381.9  1251.5 11417.3  1250.3 11433.5  1252.5 11592.2
GR1252.6 11754.2  1251.3 11837.5  1252.5 11924.5  1247.9 11950.2  1249.3 12001.8
GR1251.6 12125.4  1248.6 12142.4  1248.2 12162.5  1249.1 12171.5  1248.7 12200.8
GR1248.0 12211.3  1249.8 12369.4  1250.4 12415.7  1248.6 12477.3  1248.6 12557.6
GR1247.9 12565.5  1251.2 12585.7  1252.4 12638.3  1251.9 12653.4  1252.8 12687.0
GR1251.6 12800.2  1253.2 12843.0  1252.7 12865.4  1251.6 12881.9  1252.7 12938.1
GR1250.9 12975.2  1250.9 13009.4  1248.8 13019.0  1250.7 13059.6  1254.0 13074.1
GR1270.0 13110.8
HD24.996      10    7900   13000
          ----------DOWNSTREAM OF JOMAX ROAD------
NC  0.05    0.05    0.03
X125.478      93  9750.7 10127.1    2600    2485 2546.34

XL                          9600   10700
GR1266.4  9454.8  1266.3  9462.5  1266.6  9467.0  1264.1  9480.2  1262.3  9493.0
GR1267.1  9518.7  1262.5  9537.0  1262.0  9559.9  1262.1  9574.0  1258.4  9603.5
GR1258.9  9613.7  1260.9  9630.3  1261.6  9638.5  1261.9  9668.7  1262.0  9731.0
GR1261.9  9750.7  1256.0  9783.0  1254.8  9809.7  1255.0  9818.3  1254.8  9843.9
GR1257.0  9867.9  1256.9  9871.4  1256.5  9925.9  1256.2  9967.1  1256.2  9978.3
GR1255.4 10002.9  1254.7 10024.1  1254.5 10043.4  1254.3 10083.1  1253.9 10104.4
GR1253.9 10108.1  1257.7 10127.1  1257.7 10134.0  1258.0 10169.9  1258.2 10187.9
GR1258.4 10223.6  1258.5 10240.3  1258.5 10263.4  1258.3 10292.7  1257.0 10332.0
GR1257.6 10345.1  1257.5 10395.5  1257.1 10411.4  1258.2 10417.9  1258.1 10431.7
GR1257.6 10450.0  1257.5 10504.6  1257.4 10539.4  1257.1 10566.7  1260.3 10593.4
GR1260.2 10598.2  1261.0 10622.4  1261.1 10659.6  1261.4 10711.1  1261.4 10711.9
GR1261.0 10764.3  1260.7 10821.9  1260.8 10869.1  1260.7 10883.2  1260.8 10921.5
GR1260.5 10959.6  1260.3 10981.5  1260.2 11026.3  1260.0 11078.8  1259.8 11101.1
GR1259.5 11131.2  1259.5 11141.0  1259.8 11183.6  1259.6 11234.0  1260.8 11248.0
GR1260.6 11288.4  1260.1 11313.0  1259.7 11329.7  1260.3 11340.8  1260.1 11369.5
GR1260.0 11382.3  1260.0 11422.5  1260.8 11433.9  1260.5 11477.6  1259.8 11498.0
GR1260.0 11506.6  1260.8 11539.1  1260.8 11551.3  1260.5 11589.5  1260.4 11591.7
GR1261.0 11612.2  1259.6 11628.8  1258.8 11665.3  1258.9 11666.4  1259.7 11701.5
GR1260.5 11739.0  1260.7 11748.7  1270.5 11764.3
HD25.478      10  9750.7   11700
          ----------UPSTREAM OF JOMAX ----------
X125.666      66  9842.4 10115.1    1035     975  995.18

XL                          9732   10610
GR1275.1  9731.1  1266.5  9742.2  1262.3  9747.3  1268.1  9765.6  1265.6  9789.2
GR1263.2  9809.0  1261.8  9820.4  1259.6  9837.2  1259.8  9842.4  1255.4  9854.2
GR[illegible]55.5  9869.6  1256.6  9907.7  1256.6  9916.6  1257.0  9929.5  1256.6  9945.6
[illegible]6.5  9949.5  1256.5  9960.5  1256.4  9998.6  1256.7 10050.9  1256.2 10095.0
GR[illegible]58.3 10115.1  1259.3 10155.5  1259.4 10170.1  1259.4 10210.2  1259.6 10250.2
GR1259.6 10260.2  1259.8 10279.0  1260.0 10312.4  1260.4 10354.5  1260.6 10364.7
GR1260.6 10388.0  1260.6 10430.0  1260.6 10469.4  1260.5 10490.3  1260.6 10521.7
GR1261.1 10577.4  1261.3 10588.1  1264.4 10607.2  1264.4 10610.8  1263.8 10643.8
GR1263.5 10654.2  1264.6 10672.1  1264.3 10700.6  1263.5 10714.3  1263.1 10727.6
GR1263.3 10732.9  1263.9 10738.0  1264.3 10744.6  1264.1 10757.9  1263.9 10783.2
GR1263.4 10835.5  1262.7 10890.4  1261.4 10940.1  1260.7 10986.7  1260.2 11013.2
GR1259.9 11020.1  1260.3 11048.1  1260.3 11069.2  1260.8 11097.6  1260.9 11102.2
GR1262.5 11108.2  1269.9 11136.7  1272.2 11149.3  1277.0 11186.8  1277.3 11190.7
GR1278.3 11195.3
HD25.666      10  9854.2   11500
X1 25.86      25    9940   10200    1575    1565    1585

XL                          9052   10250
GR  1300    7650    1280    7740    1276    7750    1272    8220    1268    8300
GR1267.5    8340    1268    8395  1270.8    8500    1268    8615  1267.6    8690
GR  1268    8795    1268    8960    1269    9060    1268    9190  1265.6    9335
GR  1266    9600    1268    9740    1268    9820    1264    9940    1260    9950
GR  1260   10055    1264   10200    1280   10215    1280   10300    1284   10340
HD 25.86      10    8300   10200
NC  0.06   0.065   0.035
X1 26.29    26.0    9696   10120    2090    2295    2240

GR1307.9  8275.0  1279.3  8338.0  1278.4  8722.0  1275.7  8754.0  1276.5  8962.0
GR1277.4  9349.0  1273.2  9372.0  1276.7  9696.0  1274.9  9925.0  1271.6  9943.0
GR1271.6 10000.0  1273.7 10084.0  1278.8 10120.0  1278.2 10393.0  1278.4 10757.0
GR1275.0 11021.0  1273.9 11201.0  1279.2 11227.0  1276.8 11724.0  1278.8 11784.0
GR1280.5 12462.0  1281.9 12794.0  1279.6 12804.0  1312.6 12882.0  1311.4 13079.0
GR1312.6 13190.0
HD 26.29      10    8200   12800
NC  0.06    0.07   0.035
X1 26.73    31.0    9898   10125    2320    2310    2330

XL                          9355   11252
GR1312.2  9355.0  1313.9  9457.0  1289.8  9540.0  1287.5  9720.0  1282.4  9755.0
GR1285.6  9834.0  1280.7  9898.0  1279.8 10000.0  1279.9 10125.0  1279.9 10364.0
GR1283.4 10385.0  1283.4 10521.0  1280.9 10543.0  1283.2 10628.0  1285.7 11057.0
GR1287.2 11263.0  1286.8 11621.0  1286.8 13292.0  1287.3 13590.0  1290.5 13648.0
GR1286.3 13673.0  1302.5 13759.0  1293.3 13811.0  1295.0 13870.0  1317.7 13944.0
GR[illegible]10.7 13981.0  1332.7 14126.0  1350.7 14161.0  1350.7 14176.0  1346.0 14188.0
[illegible]6.0 14190.0
H[illegible]6.73      10    9400   13500
X1 27.03    23.0    9922   10079    1660    1020    1590

XL                          9679   10755
GR1307.8  9627.0  1301.5  9679.0  1283.2  9723.0  1281.2  9814.0  1282.6  9900.0
GR1287.2  9922.0  1283.5  9949.0  1283.4 10000.0  1283.4 10054.0  1286.2 10079.0
GR1288.9 10450.0  1290.7 10553.0  1288.0 10732.0  1291.0 10749.0  1291.0 11081.0
GR1291.4 12573.0  1293.7 12649.0  1291.4 12657.0  1301.2 12783.0  1303.3 12821.0
GR1300.5 12889.0  1319.6 12961.0  1330.8 13050.0
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HD 27.03      10    9700   12500
NC 0.055   0.055   0.035
X1 27.68    35.0    9853   10120    4120    3200    3430
     CHANGE RT BANK STATION
GR1310.1  7060.0 1305.9  7509.0 1301.3  7550.0 1302.2  7781.0 1301.9  8224.0
GR1297.0  8243.0 1298.6  8317.0 1299.3  8587.0 1302.4  8679.0 1298.7  8774.0
GR1301.1  8870.0 1300.8  8938.0 1297.9  8961.0 1301.1  8999.0 1301.3  9184.0
GR1297.6  9230.0 1300.8  9293.0 1298.8  9379.0 1300.1  9459.0 1299.0  9624.0
GR1295.3  9640.0 1295.4  9695.0 1301.1  9738.0 1301.6  9853.0 1295.7 10000.0
GR1294.7 10078.0 1310.2 10125.0 1310.7 10428.0 1311.8 10663.0 1305.9 10703.0
GR1312.1 10728.0 1309.4 10746.0 1311.0 10884.0 1330.0 10991.0 1330.2 11145.0
HD 27.68      10    7400   10200
X1 27.94    24.0    9944   10187    1370    1415    1405

XL                          8670   10212
GR1360.4  7500.0 1356.7  7704.0 1305.1  7886.0 1307.7  8084.0 1306.0  8202.0
GR1307.3  8314.0 1308.0  8514.0 1308.2  8676.0 1304.3  8729.0 1304.4  8806.0
GR1308.0  9057.0 1304.2  9174.0 1306.7  9260.0 1302.0  9309.0 1301.5  9374.0
GR1303.4  9391.0 1304.1  9657.0 1304.1  9944.0 1299.1 10000.0 1303.6 10035.0
GR1303.5 10187.0 1309.6 10212.0 1323.7 10246.0 1327.4 10339.0
HD 27.94      10    7850   10200
X1 28.12    27.0    9524   10107     990     960     950

XL                          9409   11000
GR1357.3  8340.0 1355.3  8384.0 1323.5  8506.0 1320.1  8630.0 1313.6  8697.0
GR1309.5  8719.0 1311.3  8878.0 1311.1  9108.0 1307.8  9129.0 1307.5  9182.0
GR1310.6  9258.0 1308.2  9300.0 1310.5  9411.0 1308.6  9524.0 1306.6  9675.0
GR1304.9  9906.0 1304.6 10000.0 1304.6 10076.0 1310.3 10107.0 1310.7 10411.0
GR1306.3 10527.0 1307.3 10680.0 1308.6 10781.0 1308.5 10866.0 1310.8 10916.0
GR1312.7 11051.0 1314.2 11435.0
HD 28.12      10    8750   11300
X1 28.67    37.0    9950   10514    2785    2925    2885

XL                          9409   11203
GR1372.7  9450.0 1371.0  9866.0 1319.8  9950.0 1311.5  9964.0 1312.2 10000.0
GR1312.2 10192.0 1319.8 10514.0 1316.1 10819.0 1318.6 10989.0 1315.2 11044.0
GR1320.5 11203.0 1321.6 11445.0 1322.3 11634.0 1319.8 11968.0 1318.7 12107.0
GR1322.5 12170.0 1321.3 12228.0 1325.2 12397.0 1326.4 12792.0 1328.9 12823.0
GR1324.8 12860.0 1327.4 12972.0 1345.8 13057.0 1345.8 13259.0 1339.7 13321.0
GR1341.1 13419.0 1352.8 13484.0 1356.1 13572.0 1358.7 13589.0 1358.8 13606.0
GR1348.0 13629.0 1348.2 13655.0 1363.9 13681.0 1363.8 13698.0 1355.7 13713.0
GR1356.7 13851.0 1373.9 13912.0
HD 28.67      10    9900   12000
X1 28.95    34.0    9946   10353    1550     940    1465

XL                          9784   10699
GR1376.3  9615.0 1376.6  9784.0 1371.6  9871.0 1325.0  9946.0 1314.8  9962.0
GR1312.3 10000.0 1317.7 10112.0 1321.6 10138.0 1324.5 10353.0 1322.2 10383.0
GR1322.5 10551.0 1318.3 10659.0 1325.0 10702.0 1324.6 11069.0 1325.8 11366.0
GR1324.5 11583.0 1322.1 11633.0 1324.9 11727.0 1323.6 12024.0 1329.7 12138.0
GR1326.2 12496.0 1330.1 12888.0 1335.9 13349.0 1348.0 13760.0 1355.7 13815.0
GR1355.7 13835.0 1345.5 13852.0 1345.5 13879.0 1354.8 13895.0 1352.9 13945.0
GR1360.9 14104.0 1364.9 14118.0 1364.9 14138.0 1376.2 14210.0
HD 28.95      10    9946   12000
X1 29.04    34.0    9808   10239     550     330     510

XL                          9808   10626
GR1360.0  9770.0 1326.7  9808.0 1320.3  9815.0 1317.3  9828.0 1317.2  9859.0
GR1319.6  9940.0 1317.2 10000.0 1317.2 10048.0 1322.9 10073.0 1324.3 10239.0
GR1324.4 10414.0 1321.2 10499.0 1319.4 10584.0 1326.7 10638.0 1326.0 10868.0
GR1326.7 11104.0 1325.3 11444.0 1322.9 11472.0 1324.3 11521.0 1323.1 11750.0
GR1330.4 11802.0 1330.3 12323.0 1331.2 12554.0 1336.4 12706.0 1332.2 12882.0
GR1335.8 13217.0 1343.9 13578.0 1351.5 13599.0 1352.4 13621.0 1344.3 13633.0
GR1344.4 13654.0 1357.1 13668.0 1357.5 13697.0 1379.5 13780.0
HD 29.04      10    9800   11700
X1 29.54    30.0    9846   10150    2750    2235    2640

XL                          9782   10150
GR1378.7  9025.0 1375.5  9068.0 1350.7  9135.0 1348.6  9179.0 1340.7  9198.0
GR1332.4  9217.0 1333.5  9321.0 1333.9  9460.0 1331.2  9697.0 1328.7  9726.0
GR1328.4  9758.0 1332.9  9782.0 1332.2  9846.0 1327.0  9882.0 1326.7 10000.0
GR1326.7 10116.0 1340.7 10150.0 1343.0 10343.0 1346.5 10482.0 1348.3 10927.0
GR1347.8 11457.0 1349.2 11687.0 1354.2 11697.0 1354.2 11723.0 1345.8 11737.0
GR1345.8 11763.0 1355.3 11783.0 1355.4 11812.0 1352.6 11829.0 1378.3 11981.0
HD 29.54      10    9210   10200
X129.611    31.0    9791   10094     315     315     375

GR1377.8  8825.0 1353.2  9052.0 1337.2  9136.0 1336.3  9285.0 1332.4  9541.0
GR1332.9  9713.0 1334.0  9791.0 1328.9  9812.0 1328.9  9849.0 1331.6 10000.0
GR1331.6 10094.0 1342.3 10133.0 1351.2 10244.0 1345.5 10331.0 1349.1 10528.0
GR1349.1 10688.0 1349.9 10923.0 1353.4 10966.0 1353.4 11037.0 1345.1 11072.0
GR1345.1 11124.0 1352.5 11156.0 1352.5 11163.0 1345.4 11178.0 1345.5 11204.0
GR1353.7 11221.0 1353.4 11251.0 1351.1 11259.0 1353.1 11405.0 1358.4 11533.0
GR1378.5 11635.0
HD29.611      10    9000   10200
NC 0.055   0.055   0.040
X1 29.80    16.0    9882   10205     980    1025    1025

XL                          9882   10600
GR1378.4  9270.0 1373.4  9347.0 1338.8  9419.0 1335.4  9475.0 1340.8  9512.0
GR1342.7  9656.0 1338.9  9882.0 1331.2  9924.0 1331.4 10000.0 1332.7 10180.0
GR1337.6 10205.0 1337.6 10215.0 1327.7 10335.0 1336.3 10521.0 1344.4 10610.0
GR1349.2 10676.0
HD 29.80      10    9882   10600
X1 30.07    17.0    9925   10098    1425    1440    1420
```

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GR1369.4  9325.0  1363.9  9463.0  1360.9  9604.0  1341.5  9665.0  1343.1  9728.0
GR1340.8  9781.0  1340.4  9910.0  1344.6  9925.0  1334.4  9986.0  1334.4 10000.0
GR[illegible]5.0 10060.0  1344.5 10098.0  1343.6 10114.0  1336.6 10132.0  1334.0 10261.0
G[illegible]5.9 10306.0  1365.0 10356.0
HD 30.07      10    9600   10300
X1 30.26    12.0    9711   10338     870    1090    1005

XL                          9700   10330
GR1357.2  9625.0  1361.9  9711.0  1342.1  9749.0  1338.9 10000.0  1339.3 10135.0
GR1341.7 10314.0  1347.9 10338.0  1348.7 10444.0  1341.6 10545.0  1341.7 10604.0
GR1363.6 10643.0  1389.4 10743.0
HD 30.26      10    9700   10600
X1 30.73    14.0    9839   10148    2455    2470    2460
X3                                  10951  1356.4

GR1369.9  9710.0  1369.1  9839.0  1345.2  9881.0  1345.6 10000.0  1345.6 10075.0
GR1352.6 10148.0  1349.9 10202.0  1355.7 10242.0  1355.7 10397.0  1354.4 10481.0
GR1357.6 10623.0  1356.4 10951.0  1351.7 11023.0  1394.0 11123.0
HD 30.73      10    9850   10250
X1 30.82    12.0    9865   10398     500     370     500

GR1378.3  9630.0  1379.5  9833.0  1375.4  9865.0  1345.2  9924.0  1346.7 10000.0
GR1352.0 10201.0  1347.0 10358.0  1353.5 10398.0  1358.1 10582.0  1357.9 10879.0
GR1354.5 11132.0  1399.1 11244.0
HD 30.82      10    9900   10400
X1 31.39    17.0    9792   10242    2900    3165    2970
GR1397.8  9290.0  1386.7  9342.0  1392.7  9386.0  1393.4  9470.0  1356.5  9526.0
GR1354.7  9561.0  1361.2  9643.0  1363.1  9792.0  1359.4  9942.0  1356.8  9978.0
GR1356.9 10000.0  1357.4 10080.0  1361.5 10242.0  1360.1 10387.0  1368.0 10456.0
GR1368.6 10528.0  1407.9 10633.0
HD 31.39      10    9550   10400
X1 31.86    10.0    9490   10321    2550    2485    2505

GR1411.1  8955.0  1408.4  9155.0  1407.3  9490.0  1362.0  9604.0  1364.9  9727.0
GR1366.7  9894.0  1366.7 10000.0  1365.3 10261.0  1394.3 10321.0  1420.6 10419.0
HD 31.86      10    9500   10300
NC 0.045   0.050   0.045
X1 32.43    14.0    9438   10112    2885    2970    2980

GR1424.1  9340.0  1415.1  9438.0  1371.3  9508.0  1372.3  9554.0  1363.8  9607.0
GR1372.6  9692.0  1375.5  9852.0  1373.4  9965.0  1370.7 10000.0  1372.7 10073.0
GR1383.1 10112.0  1388.9 10373.0  1403.2 10437.0  1436.0 10487.0
HD 32.43      10    9450   10200
X[illegible].72    28.0    9879   10150    1725    1145    1535

GR[illegible]34.8  9435.0  1432.6  9475.0  1394.5  9555.0  1393.9  9576.0  1380.1  9626.0
GR1383.9  9726.0  1399.6  9817.0  1396.5  9879.0  1372.0  9942.0  1369.9  9977.0
GR1365.7 10000.0  1364.0 10009.0  1363.8 10024.0  1383.9 10045.0  1406.8 10150.0
GR1409.3 10188.0  1395.8 10272.0  1401.6 10321.0  1372.1 10380.0  1373.6 10439.0
GR1397.0 10476.0  1408.2 10524.0  1404.1 10567.0  1380.2 10630.0  1379.6 10680.0
GR1389.5 10710.0  1390.0 10780.0  1442.6 10849.0
HD 32.72      10    9600   10800
X1 32.86    12.0    9928   10079     680     990     760

GR1423.4  9670.0  1424.3  9719.0  1386.4  9797.0  1381.2  9855.0  1380.4  9928.0
GR1374.9 10000.0  1380.6 10079.0  1386.5 10155.0  1382.6 10239.0  1386.6 10279.0
GR1385.4 10331.0  1421.4 10564.0
HD 32.86      10    9800   10200
X1 32.92     9.0    9891   10143     290     370     310

XL                          9800   10250
GR1433.1  9680.0  1429.0  9769.0  1382.7  9891.0  1381.0 10000.0  1383.1 10143.0
GR1390.8 10230.0  1387.5 10331.0  1411.9 10412.0  1427.5 10507.0
HD 32.92      10    9890   10180
      ------------STATE ROUTE 74---------
X132.984      33    9962   10053     338     358     343

GR1427.7  9750.0  1425.2  9750.1  1391.6    9820  1391.6    9823  1391.6  9823.1
GR1389.7    9833  1389.7  9833.1  1389.7    9837  1385.5    9851    1384    9900
GR1385.8    9904  1385.8    9909  1385.8  9909.1  1386.6    9919  1386.6  9919.1
GR1386.6    9962  1380.0    9985  1380.0  9985.1  1380.0    9995    1380  9995.1
GR1378.4    9997  1380.2   10011  1382.2   10018  1384.2   10050  1386.8   10053
GR1387.9   10065  1387.9 10065.1  1390.7   10075  1390.7 10075.1  1392.3   10091
GR1423.8 10149.9  1426.0 10150.0  1427.0 10150.1
HD32.984       0    9962   10011
X132.998     9.0    9851   10108      72      72      72
      -------------**********************-------------

GR1434.1  9610.0  1433.1  9762.0  1389.0  9851.0  1386.3  9920.0  1381.4 10000.0
GR1393.1 10108.0  1413.1 10164.0  1417.9 10358.0  1440.7 10405.0
HD32.998      10    9851   10108
NC 0.045   0.045   0.050
       ------------DOWNSTREAM OF MORGAN CITY, WASH---------
X1 33.41    12.0    9944   10366    1880    2270    2170

G[illegible]8.1  9750.0  1426.7  9864.0  1408.3  9944.0  1386.9 10000.0  1389.1 10157.0
G[illegible]6.8 10366.0  1404.5 10483.0  1409.5 10576.0  1422.7 10626.0  1423.4 10668.0
GR1433.5 10685.0  1437.7 10687.0
HD 33.41      10    9900   10400
X1 33.82    20.0    9861   10068    2165    2220    2175

GR1454.2  9465.0  1454.2  9506.0  1434.5  9527.0  1434.5  9538.0  1450.5  9565.0
GR1408.8  9662.0  1402.1  9714.0  1409.2  9795.0  1417.1  9861.0  1387.4  9966.0
GR1387.4 10000.0  1387.4 10023.0  1405.9 10068.0  1408.6 10117.0  1426.7 10204.0
GR1425.4 10292.0  1433.9 10347.0  1428.1 10416.0  1427.2 10466.0  1450.9 10600.0
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HD 33.82      10    9600   10200
EJ
T4    AGUA FRIA RIVER SEDIMENT TREND ANALYSIS  FCD 99-24
T[redacted]   NEW WADDELL DAM TO GILA RIVER  KIMLEY-HORN AND ASSOCIATES
      BED GRADATIONS FROM FIELD SAMPLES
T7    FULL RANGE OF SANDS AND GRAVELS
T8    SEDIMENT TRANSPORT FUNTION:YANG'S STREAM POWER
I1             1       0
I4             4       1      10
LQ          5000    7000   17000   55000
LT         12913   21760   66948  293920
LF   VFS 0.02563 0.03675 0.01795 0.00716
LF    FS 0.13772 0.16853 0.13200 0.10199
LF    MS 0.21035 0.22940 0.21429 0.21542
LF    CS 0.23112 0.22521 0.22541 0.25124
LF   VCS 0.36207 0.32486 0.38978 0.39271
LF   VFG 0.00367 0.00255 0.00203 0.00119
LF    FG 0.00683 0.00452 0.00379 0.00284
LF    MG 0.01083 0.00681 0.00677 0.00652
LF    CG 0.00587 0.00134 0.00686 0.01048
LF   VCG 0.00073 0.00000 0.00108 0.01041
PF          .160       1      19    12.5      99     9.5      98     6.3      97
PFC 4.75      96    2.36      94       2      94    1.18      90     0.6      71
PFC0.425      44     0.3      19    0.15       2   0.075       1
PF          .440       1     9.5     6.3      99     4.8      99     2.4      98
PFC    2      97    1.18      94     0.6      83   0.425      68     0.3      47
PFC 0.15      15   0.075       4
PF          .730       1      19     9.5      99     6.3      98    4.75      96
PFC 2.36      93       2      91    1.18      81     0.6      56    .425      34
PFC  0.3      15    0.15       2   0.075       1
PF         1.330       1     9.5    2.36      99       2      98    1.18      94
PFC  0.6      68   0.425      40     0.3      16    0.15       5   0.075       4
PF         2.600       1      25      19      99    12.5      99     9.5      99
PFC  6.3      98    4.75      98    2.36      96       2      95    1.18      92
PFC  0.6      79   0.425      65     0.3      47    0.15      16   0.075       8
PF         3.767       1    37.5      25      98      19      97    12.5      96
PFC  9.5      94     6.3      92    4.75      91    2.36      87       2      86
PFC 1.18      78     0.6      62   0.425      50     0.3      36    0.15      19
PFC0.075      13
PF         4.790       1    37.5      25      98      19      96    12.5      92
PFC  9.5      89     6.3      85    4.75      82    2.36      80       2      79
PFC 1.18      69     0.6      45   0.425      28     0.3      15    0.15       5
PFC0.075       3
PF         5.380       1      19    4.75      99    2.36      98       2      98
P[redacted]1.18      93     0.6      64   0.425      36     0.3      14    0.15       2
[redacted]075       2
P[redacted]        5.689       1      19     6.3      98    4.75      96    2.36      89
PFC    2      86    1.18      71     0.6      45   0.425      27     0.3      12
PFC 0.15       2   0.075       2
PF         6.990       1    12.5    4.75      99    2.36      96       2      94
PFC 1.18      82     0.6      49   0.425      26     0.3      10    0.15       2
PFC0.075       1
PF         8.000       1      19    12.5      99     9.5      98     6.3      96
PFC 4.75      95    2.36      91       2      90    1.18      79     0.6      54
PFC0.425      37     0.3      22    0.15       5   0.075       3
PF         8.992       1      50    37.5      98      25      97      19      95
PFC 12.5      94     9.5      91     6.3      88    4.75      85    2.36      80
PFC    2      78    1.18      67     0.6      44   0.425      29     0.3      18
PFC 0.15       8   0.075       5
PF         9.885       1      50    37.5      99      25      94      19      92
PFC 12.5      90     9.5      89     6.3      87    4.75      86    2.36      82
PFC    2      79    1.18      65     0.6      30   0.425      16     0.3      11
PFC 0.15       7   0.075       5
PF        11.029       1      50    37.5      99      25      96      19      93
PFC 12.5      88     9.5      83     6.3      77    4.75      73    2.36      66
PFC    2      62    1.18      46     0.6      18   0.425       9     0.3       6
PFC 0.15       2   0.075       0
PF        11.428       1    37.5      25      98      19      93    12.5      86
PFC  9.5      81     6.3      73    4.75      67    2.36      61       2      59
PFC 1.18      48     0.6      33   0.425      27     0.3      24    0.15      20
PFC0.075      18
PF        12.470       1      50    37.5      95      25      88      19      82
PFC 12.5      75     9.5      70     6.3      64    4.75      61    2.36      48
PFC    2      46    1.18      35     0.6      18   0.425       9     0.3       4
PFC 0.15       1   0.075       0
PF        13.467       1    37.5      25      99      19    98.5    12.5      98
PFC  9.5      97     6.3    96.5    4.75    96.2    2.36    96.1       2      96
PFC 1.18      93     0.6      79   0.425      58     0.3      33    0.15       7
PFC0.075       1
PF        14.430       1    37.5      25      99      19      99    12.5      99
PFC  9.5      99     6.3      99    4.75      98    2.36      95       2      93
PFC 1.18      80     0.6      46   0.425      25     0.3      13    0.15       4
PFC0.075       2
PF        15.719       1    62.5    37.5      88      25      85      19      80
PFC 12.5      76     9.5      73     6.3      69    4.75      66    2.36      62
P[redacted]    2      59    1.18      45     0.6      28   0.425      23     0.3      21
[redacted].15      13   0.075       5
P[redacted]        16.482       1      25      19      99    12.5      97     9.5      96
PFC  6.3      92    4.75      90    2.36      85       2      81    1.18      62
PFC  0.6      24   0.425       9     0.3       4    0.15       1   0.075       0
PF        16.612       1      75    37.5      92      25      85      19      80
PFC 12.5      73     9.5      70     6.3      65    4.75      62    2.36      49
PFC    2      44    1.18      29     0.6      16   0.425      11     0.3       6
PFC 0.15       2   0.075       1
PF        16.990       1      50    37.5      98      25      95      19      93
PFC 12.5      91     9.5      90     6.3      88    4.75      87    2.36      84
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PFC     2       82     1.18       75      0.6       58    0.425       41      0.3       22
PFC 0.15        5    0.075        2
PF         17.821        1       50     37.5       92       25       85       19       73
P  12.5       60      9.5       53      6.3       47     4.75       44     2.36       36
P       2     34     1.18       25      0.6       12    0.425        6      0.3        3
PFC 0.15        1    0.075        0
PF         18.275        1       50     37.5       94       25       83       19       76
PFC 12.5       66      9.5       59      6.3       50     4.75       45     2.36       39
PFC     2       36     1.18       27      0.6       19    0.425       15      0.3       13
PFC 0.15       11    0.075        9
PF         18.962        1     62.5     37.5       87       25       75       19       70
PFC 12.5       63      9.5       59      6.3       54     4.75       50     2.36       45
PFC     2       43     1.18       34      0.6       19    0.425       11      0.3        5
PFC 0.15        1    0.075        0
PF         19.920        1       50     37.5       96       25       87       19       82
PFC 12.5       75      9.5       70      6.3       65     4.75       61     2.36       53
PFC     2       50     1.18       35      0.6       14    0.425        7      0.3        5
PFC 0.15        2    0.075        1
PF         21.061        1     62.5     37.5       85       25       76       19       69
PFC 12.5       59      9.5       53      6.3       45     4.75       40     2.36       34
PFC     2       32     1.18       25      0.6       15    0.425       11      0.3        9
PFC 0.15        6    0.075        5
PF         21.893        1       50     37.5       98       25       98       19       92
PFC 12.5       83      9.5       77      6.3       68     4.75       63     2.36       51
PFC     2       46     1.18       27      0.6       10    0.425        5      0.3        3
PFC 0.15        1    0.075        1
PF         22.462        1     62.5     37.5       91       25       83       19       78
PFC 12.5       73      9.5       68      6.3       62     4.75       58     2.36       48
PFC     2       45     1.18       32      0.6       15    0.425        7      0.3        3
PFC 0.15        0    0.075        0
PF         23.409        1     62.5     37.5       91       25       83       19       75
PFC 12.5       66      9.5       61      6.3       54     4.75       51     2.36       44
PFC     2       42     1.18       32      1.6       18    0.425       11      0.3        6
PFC 0.15        2    0.075        2
PF         24.543        1     62.5     37.5       84       25       76       19       70
PFC 12.5       64      9.5       60      6.3       54     4.75       52     2.36       47
PFC     2       45     1.18       36      0.6       21    0.425       13      0.3        9
PFC 0.15        4    0.075        2
PF         25.666        1       50     37.5       97       25       88       19       81
PFC 12.5       74      9.5       69      6.3       64     4.75       61     2.36       54
PFC     2       52     1.18       43      0.6       21    0.425        8      0.3        3
PFC 0.15        2    0.075        1
PF         25.860        1     37.5       25       98       19       96     12.5       91
PFC  9.5       87      6.3       80     4.75       74     2.36       56        2       46
P    1.18      27      0.6        7    0.425        3      0.3        2     0.15        2
P       075     1
PF         26.290        1       19      9.5       98      6.3       97     4.75       92
PFC 2.36       84        2       80     1.18       22      0.6       18    0.425        6
PFC   0.3       3     0.15        2    0.075        2
PF         26.730        1       50     37.5       96       25       93       19       92
PFC 12.5       88      9.5       84      6.3       80     4.75       77     2.36       67
PFC     2       62     1.18       39      0.6       14    0.425        9      0.3        7
PFC 0.15        6    0.075        6
PF         27.680        1       50     37.5       99       25       97       19       92
PFC 12.5       88      9.5       85      6.3       78     4.75       73     2.36       61
PFC     2       56     1.18       34      0.6       10    0.425        5      0.3        3
PFC 0.15        3    0.075        3
PF         30.070        1       50     37.5       97       25       88       19       84
PFC 12.5       73      9.5       67      6.3       55     4.75       53     2.36       43
PFC     2       40     1.18       31      0.6       21    0.425       17      0.3       14
PFC 0.15       11    0.075        9
PF         30.820        1     37.5       25       99       19       97     12.5       95
PFC  9.5       94      6.3       90     4.75       89     2.36       86        2       85
PFC 1.18       76      0.6       61    0.425       50      0.3       35     0.15       11
PFC0.075        4
PF         31.860        1     37.5       25       94       19       92     12.5       91
PFC  8.5       90      6.3       89     4.75       88     2.36       88        2       88
PFC 1.18       86      0.6       74    0.425       60      0.3       43     0.15       17
PFC0.075        8
PF         32.430        1    32.64     2.36       99        2       98     1.18       95
PFC  0.6       84    0.425       69      0.3       52     0.15       25    0.075       12
PF         32.998        1     62.5     37.5       97       25       91       19       84
PFC 12.5       74      9.5       67      6.3       57     4.75       51     2.36       40
PFC     2       37     1.18       27      0.6       18    0.425       14      0.3       12
PFC 0.15       10    0.075        7
$LOCAL
LQL           0.1     1000     5000    10000    25000
LTL           0.1     1094     6855    16015    51300
LF    VFS 0.28256 0.28256 0.25945 0.28352 0.27310
LFL    FS 0.43291 0.43291 0.40442 0.37836 0.39708
LFL    MS 0.14372 0.14372 0.16223 0.16477 0.16029
LFL    CS 0.10623 0.10623 0.11610 0.11564 0.11399
LFL   VCS 0.03200 0.03200 0.04974 0.04723 0.34616
LFL   VFG 0.00126 0.00126 0.00559 0.00589 0.00464
LFL    FG 0.00076 0.00076 0.00197 0.00380 0.00293
LFL    MG 0.00056 0.00056 0.00028 0.00067 0.00050
L      CG 0.00000 0.00000 0.00022 0.00012 0.00011
L     VCG 0.00000 0.00000 0.00000 0.00000 0.00000
$HYD
$RATING
RC             12     5000     5000           912.55  913.39   913.9  914.53   914.9
RC         915.38   915.8  916.05    916.3  916.70   917.0  917.24
*   AB  TIME STEP NO 1  RUN 30 DAYS OF 9,000 CFS TO AVERAGE CHANNEL
Q    9000
T      60
X             0.1        1
```

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*   AB  TIME STEP NO 2
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 3
Q   9000
T     60
X         0.005       1
*       TIME STEP NO 4
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 5
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 6
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 7
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 8
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 9
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 10
Q   9000
T     60
X         0.005       1
*       TIME STEP NO 11
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 12
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 13
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 14
Q   9000
T     60
X          0.01       1
*   AB  TIME STEP NO 15
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 16
Q   9000
T     60
X          0.01       1
*       TIME STEP NO  17
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 18
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 19
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 20
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 21
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 22
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 23
Q   9000
T     60
X          0.01       1
*       TIM STEP NO  24
Q   9000
T     60
X          0.01       1
*       TIME STEP NO 25
Q   9000
T     60
X         0.005       1
```

```
*       TIME STEP NO 26
Q   9000
T     60
X           0.01       1
*       TIME STEP NO 27
Q   9000
T     60
X          0.005       1
*       TIME STEP NO 28
Q   9000
T     60
X          0.005       1
*   AB  TIME STEP NO 29
Q   9000
T     60
X           0.01       1
*   AB  TIME STEP NO 30
Q   9000
T     60
X           0.01       1
      -----100-YEAR HYDROGRAPH------
*   AB  TIME STEP NO 31
Q   5100      100
T     60       60
X           0.01    0.06
*       TIME STEP NO 32
Q   5100      100
W   0.01
*   AB  TIME STEP NO 33
Q   5800      800
X           0.01    0.08
*       TIME STEP NO 34
Q   5800      800
W   0.01
*   AB  TIME STEP NO 35
Q  18000     7000
X           0.01    0.04
*       TIME STEP NO 36
Q  18000     7000
W   0.01
*   AB  TIME STEP NO 37
Q  36000    17000
X           0.01    0.06
*       TIME STEP NO 38
Q  36000    17000
W   0.01
*   AB  TIME STEP NO 39
Q  44000    20000
X           0.01    0.04
*       TIME STEP NO 40
Q  44000    20000
W   0.01
*   AB  TIME STEP NO 41
Q  54000    24000
X           0.01    0.04
*       TIME STEP NO 42
Q  54000    24000
W   0.01
*   AB  TIME STEP NO 43
Q  52000    22000
X           0.01    0.04
*       TIME STEP NO 44
Q  52000    22000
W   0.01
*   AB  TIME STEP NO 45
Q  44000    18000
X           0.01    0.04
*       TIME STEP NO 46
Q  44000    18000
W   0.01
*   AB  TIME STEP NO 47
Q  30000    12000
X           0.01    0.06
*       TIME STEP NO 48
Q  30000    12000
W   0.01
*   AB  TIME STEP NO 49
Q  20000     8000
X           0.01    0.06
*       TIME STEP NO 50
Q  20000     8000
W   0.01
*   AB  TIME STEP NO 51
Q   9000     4000
X           0.01    0.13
*       TIME STEP NO 52
Q   9000     4000
W   0.01
*   AB  TIME STEP NO 53
Q   5500      500
X           0.01    0.33
*       TIME STEP NO 54
Q   5500      500
W   0.01
$$END
```