AYRES ASSOCIATES

TECHNICAL MEMORANDUM

To: Kathryn Gross, Valerie Swick – Flood Control District of Maricopa County, AZ

From: William J. Spitz, R.G.

Date: November 24, 2004

Re: **Technical Memorandum 2-6-4 (FCD 2002C027-T2.6.4)**
Buckeye/Sun Valley ADMS Existing Conditions Assessment of Primary Washes (Subtask 2.6.4)

This Technical Memorandum (TM) is submitted by Ayres Associates in support of Subtask 2.6.4 of the Buckeye/Sun Valley Area Drainage Master Study (ADMS) Scope of Work (Contract FCD 2002C027).

The Buckeye/Sun Valley ADMS is being performed for the Flood Control District of Maricopa County (District) and the Town of Buckeye. The purpose of the Buckeye/Sun Valley ADMS is to quantify the extent of drainage, flooding, and erosion problems, sources, and hazards in the Buckeye/Sun Valley area, and develop preliminary solutions to mitigate the identified concerns. Arizona Revised Statutes Title 48, Chapter 21, requires the Board of Directors to identify flood control problems and prepare plans that, when implemented, will eliminate or minimize flooding problems.

Task 2.6 represents the Geomorphic Evaluation and Landform Stability Assessment portion of the Scope of Work (SOW). The purpose of Task 2.6 is to provide a qualitative assessment of potential erosion and sedimentation hazards of primary washes, lateral and vertical stream instability, and piedmont landform stability within the drainage networks of Area 3 (Buckeye Structures) and Area 4 (North Sun Valley) of the Buckeye/Sun Valley ADMS watershed.

1. OBJECTIVE

This TM documents the qualitative assessment of the existing conditions for 46 primary washes within Areas 3 and 4. The primary washes assessed under this subtask are defined as those intermittent streams and washes delineated by a combination dot and dash blue line on the USGS 7.5-minute topographic quadrangle maps for the study area. All primary washes including White Tank Wash and its primary tributaries are included in the assessment. The washes covered under the White Tank Fan (Wood, Patel & Associates, 2001) and the Skyline Fan (DEI and Hoskins, 1997) studies, Wagner Wash and its right bank (northern) tributaries, and the primary streams north of the Granite Reef Aqueduct are not included in the assessment. The total length of the primary washes that were assessed is approximately one hundred and sixty one (161) miles. The assessment was conducted using field investigations, aerial photographs, maps, and existing studies and reports. Detailed subsurface or geotechnical analyses are not part of this subtask. Preliminary maps (original scale = 1:18,000) delineating the stable and unstable landforms were submitted as Plates 1 through 5 in TM 2.6.3 and included the unstable channel reaches identified in Areas 3 and 4.

2. INTRODUCTION

The primary washes are located on and part of a piedmont, which is the broad, gently sloping and low relief plain that is located between mountains (White Tank Mountains) and an axial drainage (Hassayampa River). There is a three-stage process in defining and assessing piedmont landforms provided by the Piedmont Flood Hazard Assessment Manual (PFHAM) (Hjalmarson, 2003):

- Stage 1 - Recognizing and characterizing the kind and extent of piedmont landforms and showing these landforms on a map. The four main landforms on piedmonts of Maricopa County requiring identification and delineation are pediments, relict fans, alluvial fans and alluvial plains (see Plates 1 through 5 of TM2.6.2). Procedures for identifying piedmont landforms are described in Chapter 2 of the PFHAM.
- Stage 2 - Defining the nature of the piedmont landform environment, identifying unstable and stable components of the piedmont, and showing those areas subject to various flood hazards on a map (see Plates 1 through 5 of TM2.6.3). For example, flood hazards of alluvial fan landforms in Maricopa County consist of fans with stable flow paths and fans with unstable flow paths. Procedures for identifying unstable and stable components of the piedmont are described in Chapter 3 of the PFHAM.
- Stage 3 - Identifying and applying methods for defining and characterizing areas affected by the 100-year flood and showing these areas on a map. Realistic methods for definition of 100-year flood hazards are discussed in Chapter 4 of the PFHAM.

For the purposes of Task 2.6 of the SOW, only Stage 1 and Stage 2 analyses were performed. The assessment of the existing conditions of the primary washes was conducted in conjunction with the Stage 1 and Stage 2 analyses. Discussions for both the Stage 1 and Stage 2 analyses in the PFHAM provide some general information and guidance for assessing the stability of the primary washes that drain these landforms. However, an extensive knowledge of fluvial geomorphology and of the geomorphic characteristics of desert washes, specifically, is necessary for accurately conducting this type of task.

The PFHAM defines *Stable Areas* as those in which "the relative state of the location, geometry and roughness of a channel, network of channels, or landform where any changes of flow path, geometry, and roughness during floods are likely to be minor and can be set aside in realistic assessments of flood risk." Common stable areas are hillsides, relict fans, pediment areas, and inactive alluvial fans.

The PFHAM defines *Unstable Areas* as those in which "the relative state of the location, geometry and roughness of a channel, network of channels, or landform where major changes of flow path, geometry, and roughness are possible during floods and cannot be set aside in realistic assessments of flood risk." Common unstable areas are active alluvial fans, some multi-channel (distributary) areas below active alluvial fans, alluvial plains with active sedimentation, split flow channels where flow is wide and shallow, and areas of recent sediment deposition and erosion.

3. METHODS

3.1. Existing Conditions Assessment of Primary Washes

During an extensive field investigation, Ayres Associates documented the existing geomorphic characteristics and identified stream reaches that could be problematic with regard to lateral and vertical instability under existing and future developed conditions. The existing conditions assessment identified and focused on, but was not limited to, the following:

- Identify and delineate stream reaches that have undergone historic and/or recent degradation or aggradation.
- Identify and delineate stream reaches that have undergone historic and/or recent lateral instability.
- Identify and delineate stream reaches at bridges, dip crossings, and existing hydraulic structures that have existing sedimentation problems.
- Identify and delineate historic and recent stream responses to development in the watershed and along the primary watercourses.
- Identify and delineate points of natural grade control.
- Identify and delineate existing sediment sources in the watershed.

This Technical Memorandum documents the existing geomorphic conditions, the methodology used to identify and delineate vertically and laterally unstable stream reaches, and describes the existing system constraints for flood control planning with respect to potential problems associated with lateral and vertical instability. All figures described in the following text are located in **Appendix A** at the end of this TM.

3.2. Field Reconnaissance

All Terrain Vehicles (ATVs) with utility racks (**Figure 3.1**) were the main mode of transportation used in the field reconnaissance and assessment of the existing conditions of each of the primary washes. The ATVs were used because of the large extent and relative inaccessibility of the study area, and allowed for quick and efficient movement along the primary washes to identify and delineate unstable areas and other features in a short amount of time.

The Trimble GeoXT, which is shown mounted on an ATV in **Figure 3.2**, is part of the Trimble GeoExplorer CE Series, a handheld Windows CE device with an integrated Trimble GPS receiver. The GPS system uses the Wide Area Augmentation System (WAAS) for free real-time connections. The WAAS was created by the Federal Aviation Administration (FAA) as a free-to-air differential correction service. With Windows CE, the device is capable of incorporating mobile GIS field software. For this project, ESRI's ArcPad 6.0, which is the mobile form of ArcGIS with GPSCorrect, was used.

Using ArcPad with the georeferenced aerial orthophotography and the pre-defined landforms GIS files, the Trimble GeoXT enabled quick navigation along the primary washes and the identification and delineation of unstable features and reaches of the washes. The Trimble GeoXT provides the accuracy of a survey grade GPS with the portability of a fully editable mobile GIS database.

The portability of the Trimble GeoXT for use with the ATVs was accomplished using a GPS mount placed on the front utility rack of the ATV. The mounted GPS was readily visible and allowed for easy tracking of the current location and navigation to a specific site. Real-time identification and delineation of areas of instability and other features along a wash was accomplished by recording the track log of the travel path and recording waypoints in the Trimble handheld GPS at specific features or boundaries. Each waypoint record included a feature designation, identifying notation, and photo record that are included in the GIS database.

3.3 Caliche (Calcic Soils)

Caliche is exposed along most of the washes in the study area and, as such, requires some discussion of its development and occurrence within the landscape. The term 'caliche' has been broadly applied to deposits of secondary calcium carbonate ($CaCO_3$) of various origins, but is generally associated with soil carbonate. Soils having significant accumulations of secondary calcium carbonate are defined as calcic soils. For the purposes of this report, caliche will be considered synonymous with calcic soils.

Calcic soils form widely in unconsolidated sediments over periods of a few thousand years to as much as several million years. Calcic soils are commonly developed in sediments throughout the arid and semiarid parts of the southwestern United States and vary regionally in their content of secondary calcium carbonate. The formation of calcic soils is believed to occur mainly by subaerial precipitation of carbonate that is derived from Ca^{++} dissolved in rainwater and that is leached from airborne carbonate (Machette, 1985; Birkeland 1984). Calcium carbonate is leached from the ground surface and upper soil horizons and subsequently precipitates and accumulates in lower soil horizons at a depth controlled by soil moisture and texture (McFadden and Tinsley, 1985).

Calcic soil horizons generally increase in degree of $CaCO_3$ morphology, concentration of $CaCO_3$, and thickness with age and are strongly influenced by the character of the soil's parent material. As carbonate accumulates in the soil, recognizable morphological stages progressively develop that are reflected in enriched carbonate content, increased bulk density, and calcic horizon thickening. Soil studies in the southwest by Gile et al. (1966) and Bachman and Machette (1977) have led to the recognition of 6 stages of carbonate morphology (**Table 3.1**).

Table 3.1. Stages of Calcium Carbonate Morphology in Calcic Soils (from Birkeland 1984).

STAGE	GRAVELLY PARENT MATERIAL	NON-GRAVELLY PARENT MATERIAL
I	Thin discontinuous clast coatings; some filaments; matrix can be calcareous next to stones; about 4% $CaCO_3$	Few filaments or coatings on sand grains; <10% $CaCO_3$
I+	Many or all clast coatings are thin and continuous	Filaments are common
II	Continuous clast coatings; local cementation of few to several clasts; matrix is loose and calcareous enough to give somewhat whitened appearance	Few to common nodules; matrix between nodules is slightly whitened by carbonate (15-50% by area), and the latter occurs in veinlets and as filaments; some matrix can be noncalcareous; about 10-15% $CaCO_3$ in whole sample, 15-75% in nodules
II+	Same as Stage II, except carbonate in matrix is more pervasive	Common nodules; 50-90% of matrix is whitened; about 15% $CaCO_3$ in whole sample
Continuity of fabric high in carbonate		
III	Horizon has 50-90% K fabric with carbonate forming an essentially continuous medium; color mostly white; carbonate-rich layers more common in upper part; about 20-25% $CaCO_3$	Many nodules, and carbonate coats so many grains that over 90% of horizon is white; carbonate-rich layers more common in upper part; about 20% $CaCO_3$
III+	Most clasts have thick carbonate coats; matrix particles continuously coated with carbonate or pores plugged by carbonate; cementation more or less continuous; >40% $CaCO_3$	Most grains coated with carbonate; most pores plugged; >40% $CaCO_3$
Partly or entirely cemented		
IV	Upper part of K horizon is nearly pure cemented carbonate (75-90% $CaCO_3$) and has a weak platy structure due to the weakly expressed laminar depositional layers of carbonate; the rest of the horizon is plugged with carbonate (50-75% $CaCO_3$)	
V	Laminar layer and platy structure are strongly expressed; incipient brecciation and pisolith (thin, multiple layers of carbonate surrounding particles) formation	
VI	Brecciation and recementation, as well as pisoliths, are common	

Initially, carbonate coats the undersides of coarse particles or occurs as thin filaments in fine-grained materials. Over time, carbonate deposition fills the pore spaces and voids in the soil horizon and greatly

restricts the percolation of water through the horizon. The laminated part of the upper calcic soil horizon forms as a result of solution and re-precipitation induced by the periodic collection of water over the plugged portion of the horizon. Over time, the calcic horizon builds upward and so is younger in that direction. However, the highest stage attained is usually near the top of the carbonate-enriched horizon and changes to progressively lesser stages with depth (Birkeland, 1984).

The buildup of calcium carbonate is more rapid in coarse-grained sediments than in non-gravelly material because coarse sands and gravels have less pore space and surface area to coat with carbonate than do silts and clays. Thus, a calcic horizon in silt and another in gravel of the same age and locale can have different stages of carbonate morphology, different concentrations, and different thicknesses, and may appear quite dissimilar (Machette, 1985). For this reason, coarse-grained calcic soils appear stronger in outcrop than fine-grained calcic soils. In addition, the difference in texture between gravelly and non-gravelly parent materials significantly influences the time required to form Stage I, II, III, and IV morphologies (Table 4.5). Field investigations of the primary washes in the study area reveal that the morphology of the caliche along these channels is no greater than about Stage III. In most areas, the caliche appears to have Stage II morphology.

Extensive streambed and bank cementation can occur through the process of case hardening. Lattman (1973, 1977) suggests that case hardening results from surface water flowing over vertical or steeply sloping alluvial and colluvial deposits, causing solution of calcareous fines and redeposition as cement. Case hardening can occur rapidly and is most strongly developed at the surface and decreases in development inward from the surface (Lattman and Simonberg, 1971). However, the studies of case hardening and gully-bed cementation by Lattman and Simonberg (1971) and Lattman (1973, 1977) were conducted in areas that are rich in limestone (rock composed entirely of calcium carbonate) alluvium and colluvium, and where groundwater calcretes (highly cemented calcic soils formed by laterally flowing $CaCO_3$-rich groundwater) have been pedogenically modified (Machette, 1985). Since the Buckeye/Sun Valley study area does not contain any significant sources of limestone or groundwater calcrete, case hardening is not considered to be a factor in the stability of the primary washes in this area.

4. EXISITING CONDITIONS ASSESSMENT OF PRIMARY WASHES

The locations of each of the primary washes examined as part of Task 2.6.4 are shown on **Plate 1** attached to the end of this report. Two primary methods were used to assess current conditions on the primary washes. One method required the comparison of historic and contemporary aerial photography to identify reaches and areas of potential and existing stream instability. The other method was to conduct an on-site field reconnaissance of each of the primary washes whereby unstable reaches could be identified and delineated in real-time in the field using the portable GPS unit. Both methods were used to identify, delineate, and verify stability problems along the primary washes. Since caliche can contribute to the bed and bank stability of a channel and because caliche is found along many of the primary washes in the study area, a brief discussion on the formation and competence of caliche is provided at the end of this section.

4.1 Aerial Photography Comparison

A comparison of sequential aerial photography can identify stream reaches that are stable or unstable or that have changed significantly in planform due to aggradation, degradation, or migration as a result of major events, especially if a major event has occurred sometime between subsequent photos or immediately prior to a photo date. In the case of the Buckeye/Sun Valley area, a major storm event that occurred in 1951 created significant changes in the landscape and to reaches of some of the primary washes within the project area.
The 1951 storm event is identified in precipitation records for the Buckeye weather gage (NCDC COOP station number 021026), which is located in the town of Buckeye to the south and has been in operation since 1893. The largest single day precipitation recorded at the gage since 1907 occurred on August 28, 1951. The total volume on that day was 2.6 inches and the total recorded precipitation from August 27 to the August 30, 1951, was more than 4.6 inches. Although 1951 was not an unusually wet year, the monthly total for August of that year was 6.89 inches, which is the wettest August on record (**Figure 4.1**). In comparison, the mean monthly precipitation for August is only 1.13 inches. Thus, aerial photographic coverage that encompasses this date or was taken immediately after that year will be valuable in assessing changes that occurred then and subsequently.

There are no aerial photos taken of the study area prior to 1949 that were available for examination. With regard to the 1951 event, black and white aerial photography taken in 1949 is available for areas a short distance north of the Buckeye Flood Retarding Structures (FRS), but coverage for most of the project area north of the structures is not available in the 1949 aerial photography. However, black and white 1953 aerial photographic coverage is available for the entire study area. In addition, 1973, 1992, 1997, 1999, and 2003 aerial photographic coverage is available. The digital versions of the 1973 aerial photos are of poor quality and the 1997 and 1999 aerial photos show no major changes compared to the 1992 and 2003 aerial photos. Only the 1949, 1953, and 2003 aerial photographs are used in this TM for comparative purposes considering there have been no storm events that have produced any identifiable changes in the study area after 1951.

Stable areas are those areas containing channels, channel margin areas (terraces and floodplains), and interfluves that show no major instability or contain features characteristic of instability. Areas that were identified as unstable are defined under two categories: conditionally unstable areas and active alluvial fan areas. Conditionally unstable areas include, but are not limited to, braided reaches of throughflow channels, extensive distributary flow paths with multiple splits and joins on throughflow channels, confined split flow channels where flow is wide and shallow, areas of low relief where minor development can divert floodwater and cause significant erosion in areas otherwise not susceptible to flood hazards, reaches with active or potential avulsions and stream piracy, areas of recent erosion and sedimentation of significance, and most notably, those areas immediately downstream of actively influenced by active alluvial fans. The conditionally unstable areas and active alluvial fan areas that were identified using the aerial photo comparison are included in the GIS database, mapping, and plates submitted to the District with TM 2.6.3.

A number of sites were identified as being conditionally unstable in the comparison of historic aerial photos. For the purposes of the following discussion, several sites of conditional instability were identified as being a moderate hazard (yellow), a high hazard (orange), or and extreme hazards (red). Throughflow channels, flow paths, and floodways with well defined boundaries that were not mapped as conditionally unstable are still considered a fluvial hazard because the areas within their boundaries are still susceptible to common fluvial process such as bank erosion, localized sedimentation or bar development, and meander bend migration. **Table 4.1** provides a description of the factors that define the degree of hazard for conditionally unstable areas. The moderate and high hazard areas described below are located in areas of low, intermediate, and high flood potential as mapped by Field and Pearthree (1992).

A comparison of the 1953 and 2003 aerial photographs for a portion of Primary Wash #3 (**Figure 4.2**) shows an area of high hazard due to the presence of multiple shallow, but relatively well-defined, distributary channels. The interfluve areas between the distributary channels may be subject to flooding during major storm events. Another portion of Primary Wash #3 and the associated distributary flow paths downstream of the BSV Site #1 active alluvial fan is shown in **Figure 4.3**. Most of the areas shown in Figures 4.2 and 4.3 are mapped by Field and Pearthree (1992) as having a high flood potential.

Areas of moderate and high hazard on portions of Primary Washes 6 and 7 just south of Sun Valley Parkway are shown in **Figure 4.4**. The areas of moderate hazard are associated with either a narrow, confined area of land encompassing the channels that is probably subject to flooding or areas of split flow, where the split flow channels are well defined and separated by interfluves that may be subject to potential flooding. Primary Wash 6 is located in a high flood hazard area (BSV Site #2) whereas Primary Wash 7 is in a low flood hazard area as mapped by Field and Pearthree (1992).

Table 4.1. Factors Associated with Degree of Hazard for Conditionally Unstable Areas.

MODERATE HAZARD (Yellow)	HIGH HAZARD (Orange)	EXTREME HAZARD (Red)
Instability primarily associated with fluvial processes such as erosion, sedimentation, and meander migration. Primarily composed of well defined flow splits and distributary channels, and minor braided reaches where flow paths confined in narrow, short segment of throughflow channel.	Instability associated with numerous shallow distributary channels; generally confined areas with poorly defined flow paths; areas of significant braiding of throughflow channel; reaches of throughflow channel with characteristics of inset alluvial fan; and areas exhibiting significant out-of-bank flow or avulsions. Includes inactive fan areas downstream of active alluvial fans.	Primarily associated with active alluvial fans.

The area to the north of BSV Site #3 (**Figure 4.5**) that encompasses Primary Washes 9 and 10 and a major undefined wash and several smaller undefined washes is composed of both moderate and high hazard areas and the active alluvial fans of BSV Sites 13 East and West. The soils, geologic mapping, topography, and field reconnaissance indicate that this area contains multiple poorly defined flow paths and overbank flow in places in conjunction with active alluvial fans. The intersection of Primary Washes 9 and 10 is defined by the hydrographic apex of the active alluvial fan at BSV Site 13 West. This area may be a youthful stream capture or avulsion site. The abrupt change in flow direction due to the flow split results in a loss of transport capacity, deposition of sediment at the split, and ramping of flow and sediment into the intervening downstream area between the split flow channels. Downstream, most of the overbank flow quickly returns to the main throughflow channels bounding the zone as seen in Figure 4.5. In addition, another active alluvial fan, BSV Site 13 East, intersects the north arm of the BSV Site 13 West fan along Primary Wash 9. There are small portions within the boundaries of both fans that are well above the fan surfaces that are identified as relict fan surfaces. The remaining areas of moderate hazard to the north of BSV Sites 13 East and West are associated with confined zones of fairly well defined split flow channels and interfluve areas that could potentially be subject to flooding.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 13 and 14 showing unstable areas of moderate (yellow) hazard is provided in **Figure 4.6**. The moderate hazard areas are associated with confined flow splits in the throughflow channels and potential flooding of the interfluves. The orange arrow in the figure shows the location of a channel avulsion that occurred after 1953. The entire area in the figure is mapped as having an intermediate to low flood potential by Field and Pearthree (1992).

Figure 4.7 provides a comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 16 and 17 showing unstable areas of moderate (yellow) and high (orange) hazard. The moderate hazard areas are associated with distributary flow splits and joins. The high hazard areas are composed of multiple flow splits and joins as well as braided reaches and there is a high potential for flooding of the interfluve areas and potential avulsions. The dotted red line and arrow in Figure 4.7 represent significant bank retreat at the confluence of Primary Wash 16 with Wagner Wash after 1953.

Primary Wash 16 and other nearby washes east of Sun Valley Parkway are shown in **Figure 4.8**. The main unstable areas are of moderate hazard associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Also shown in the figure is a wing dam that was installed after 1953. The area is mapped by Field and Pearthree (1992) as having a very low flood potential.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 16 just south of BSV Site #3 is provided in **Figure 4.9**, which shows unstable areas of moderate (yellow) and high (orange) hazard. The moderate hazard areas are associated with distributary flow splits and joins. The high hazard area is composed of multiple flow splits and joins as well as unconfined and poorly defined flow path areas indicative of a possible alluvial fan. However, the unconfined and poorly defined flow path areas are relatively small because unconfined flow is rapidly captured by fairly well defined channels a short distance downvalley from the breakout point. There is a high potential for flooding of the interfluve areas and avulsions within the high hazard zone. In contrast, Field and Pearthree (1992) mapped this area as having a very low flood potential. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 17 just east of Sun Valley Parkway is provided in **Figure 4.10**, which shows unstable areas of moderate (yellow) and high (orange) hazard. The moderate hazard areas are associated with distributary flow splits and joins. The high hazard area is composed of multiple flow splits and joins as well as a small area of unconfined and poorly defined flow. However, flow from the unconfined and poorly defined flow path areas is rapidly captured by fairly well defined channels a short distance downvalley from the breakout point. There is a high potential for flooding of the interfluve areas and avulsions within the high hazard zone. In contrast, Field and Pearthree (1992) mapped this area as having a very low flood potential. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels.

Figure 4.11 provides a comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 18 and 19 and other intervening washes between the Hassayampa River and Sun Valley Parkway showing unstable areas of moderate (yellow) hazard and the small area of extreme (red) hazard associated with an active alluvial fan. The small alluvial fan has developed in an area where Primary Wash 18 has breached a high ridge of relict fan deposits and spread out onto the alluvial plain of a wash to the north. The moderate hazard areas are associated with distributary flow splits and joins and wider, shallow flow zones of the confined throughflow channels.

Figure 4.12 provides a comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 18 and 19 and other intervening washes east of Sun Valley Parkway showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard. The areas of extreme (red) hazard are associated with the active alluvial fans at BSV Sites #4 and #5. The high hazard areas are composed of multiple flow splits and joins, braided reaches, and unconfined and poorly defined flow path areas indicative of possible inset alluvial fans. However, the unconfined and poorly defined flow path areas are relatively small because unconfined flow is rapidly captured by fairly well defined channels a short distance downvalley from the breakout point. There is a high potential for flooding of the interfluve areas and avulsions within the high hazard zone. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Field and Pearthree (1992) mapped the areas north and south of Primary Wash 18, including the BSV Site #4 active alluvial fan, as having a very low flood potential, whereas the area including and bordering Primary Wash 18 and BSV Site #5 are mapped as having a very high flood potential.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Wash 19 just east of the Hassayampa River is provided in **Figure 4.13**, which shows unstable areas of moderate (yellow) and high (orange) hazard. The moderate hazard areas are associated with distributary flow splits and joins. The high hazard area is composed of multiple flow splits and joins as well as braided reaches and there is a high potential for flooding of the interfluve areas and potential avulsions. A comparison of the 1949 and 1953 aerial photos for this area indicates that an avulsion and new channel developed during this period at the downstream end of Primary Wash 19. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Field and Pearthree (1992) mapped these moderate and high hazard areas as having a very high flood potential.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Wash 21 and White Tank Wash just west of Sun Valley parkway is provided in **Figure 4.14**, which shows the unstable area of extreme (red) hazard on Primary Wash 21 in the 1953 aerial photo as being a high (orange) hazard in the 2003 aerial photo. This is a function of construction of Sun Valley Parkway. The extreme hazard area in 1953 was the result of active alluvial fan flow path development associated with the USGS Site 39 alluvial fan. Once the highway was constructed, the culvert and highway embankment cut off unconfined alluvial fan flooding and associated processes downstream of the highway. With the construction of the highway culverts, downstream flow is now forced into channels and the supply of sediment from upstream is trapped upstream of the culverts and is slowly released to the downstream reaches, thus causing some downstream channel degradation. The previously extreme hazard area is now classified as a high hazard area since unconfined flooding of the interfluves is still possible. The unstable area of high hazard is composed of multiple flow splits and joins, as well as braided reaches, with a high potential for flooding of the interfluve areas and potential avulsions. The unstable areas of moderate (yellow) hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Field and Pearthree (1992) mapped these moderate and high hazard areas as having a high flood potential.

Figure 4.15 provides a comparison of the 1953 and 2003 aerial photos for parts of Primary Wash 22 and other intervening washes just west of Sun Valley Parkway showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard. The areas of extreme (red) hazard are associated with the active alluvial fans at BSV Sites #14, #15, and #16. The high hazard areas are composed of multiple flow splits and joins, braided reaches, and unconfined and poorly defined flow path areas immediately upstream and downstream of the extreme hazard areas associated with the active alluvial fans. There is a high potential for flooding of the interfluve areas and avulsions within the high hazard zone areas. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Field and Pearthree (1992) mapped most of these unstable areas, including the BSV Sites #14, #15, and #16 active alluvial fans, as having a very high flood potential.

A comparison of the 1953 and 2003 aerial photos for parts of Primary Washes 23, 24, and 25 just west of Sun Valley parkway is provided in **Figure 4.16**, which shows the unstable areas of extreme (red) hazard in the 1953 aerial photo as being moderate (yellow) and high (orange) hazards in the 2003 aerial photo. This is also a function of construction of Sun Valley Parkway. The extreme hazard areas in 1953 were the result of active alluvial fan flow path development associated with USGS Sites 37 and 38 alluvial fans. As discussed above, once the highway was constructed, the culverts and highway embankment cut off unconfined alluvial fan flooding and associated processes downstream of the highway. The previously extreme hazard areas are now primarily moderate and high hazard areas. The unstable areas of high hazard are composed of multiple flow splits and joins, as well as braided reaches, with a high potential for flooding of the interfluve areas and potential avulsions. The unstable areas of moderate hazard are associated primarily with flow splits and wider, shallow flow zones of the confined throughflow channels. Field and Pearthree (1992) mapped these moderate and high hazard areas as having a high flood potential.

A comparison of historic photos for White Tank Wash, also denoted as Primary Wash 20, shows significant changes occurring between 1949 and 1953, coincident with the 1951 storm event. **Figures 4.17** through **4.20** show comparisons for sections of the wash, from upstream at the confluence with Primary Wash 22 to downstream where it intersects Buckeye Flood Retarding Structure (FRS) #1. Figures 4.17 and 4.18 show a comparison of the 1953 and the 2003 aerial photos. The 1953 aerial photos show fairly fresh erosion and sedimentation and out-of-bank flow indicative of the impacts of the 1951 storm event. Of particular interest is the comparison of the 1949 and 1953 aerial photos shown in Figures 4.19 and 4.20. The 1949 photos show a fairly narrow channel bound by trees and other vegetation. However, the 1953 photos show the much wider flow path that resulted from flooding induced by the 1951 storm event. In many places, flood flows were well outside the boundaries of the 1949 channel and in some places a new flow path was created (see Figure 4.18). In all of the figures, the 2003 channel has reestablished vegetation along its margins and developed a narrower flow path comparable to the width of the 1949 channel. As will be described in TM 2.6.5 (Delineation of Erosion Hazard Setbacks), the flooding and changes that occurred during the 1951storm event are well within the boundaries of the mapped 100-yr floodplain.

In addition to the changes that occurred naturally as a result of the 1951 storm event, there have also been significant changes associated with development in the area, especially north of Buckeye FRS #1 and west of Sun Valley Parkway. **Figure 4.21** provides a comparison of the 1949, 1953, 1992, and 2003 aerial photos for the area bound by Sun Valley Parkway to the east, the West Tonopah-Salome Highway to the north, White Tank Wash to the west, and Buckeye FRS #1 to the south. As seen in Figure 4.21, there are numerous first and second order drainages and primary channels that dissect the area from north to south. As identified in the 1973 aerial photos, roads were being constructed in the area, and by 1992 homes and other buildings was being constructed. By 2003, many of the first and second order drainages were obliterated by ongoing development and many of the primary and secondary washes had been modified, rerouted, or built-over by landowners and developers.

As seen in **Figure 4.22**, Primary Wash 24, where it once traversed the developed area, has been rerouted at least twice. The first rerouting was a short distance to the east probably to allow for construction of N. 305th Ave. The channel actually crosses over W. Bellview St. and W. Latham St. and has deposited sediment on the pavement. At the intersection of W. Latham St. and N. 305th Ave. the flow follows the roadway for a short distance to the south were it then drops back into its old channel. The most recent rerouting of the channel occurs at the back of a property just north of W. Lynwood St. The current position of the channel runs from east to west along the back of a residential property and intersects another wash several hundred feet to the west. The owner of the property just west of the previous course appears to have diverted the channel to the west by constructing a low sediment berm along the back of his property, capturing flows and diverting them to the west. It should be noted that this wash is a primary drainage that carries flow and sediment from portions of the USGS Site 37 and 38 active alluvial fans. Although the culverts and embankment of Sun Valley Parkway may control the flow of water and sediment to this area, it is highly likely that the highway could be overtopped during a major event, especially if sediment from the alluvial fans blocks the highway culverts. This could result in significant flooding of the properties along Primary Wash 24 downstream of the highway.

Similar conditions exist along Primary Wash 25 west of Sun Valley Parkway. As seen in **Figure 4.23**, the wash is obstructed and obliterated by a large dairy farm. Development to the south of the farm has also significantly modified or destroyed what remained of the wash. Major flood flows from the wash will likely become unconfined at the farm structures to the north of the main dairy and flow will be diverted around or through the dairy farm. Serious flooding of the farm and the properties to the south could occur as a result. As discussed above, Sun Valley Parkway could capture and control much of the flow of water and sediment coming from the White Tank (USGS Site 36) alluvial fan, but obstruction of the culverts could result in overtopping of the highway and unpredictable flood flow routes downstream.

4.2 Field Reconnaissance

A field reconnaissance was also conducted of each of the primary washes by traversing the entire length of the wash on ATVs until a point was reached where travel along the wash was no longer possible because it was completely obstructed by bedrock or some other feature, there was a loss of capacity or flow confinement as the wash disappeared, or the wash joined with another primary wash. It should be noted that the reconnaissance attempted to follow the path defined by the designated stream location on the USGS topographic maps. However, in a few cases, the primary flow path was not the one defined on the USGS topographic maps. Since the SOW called for conducting a field assessment of those channels defined by the USGS mapping, the assessed stream reaches were primarily those specifically defined on the USGS topographic maps. Nonetheless, the final maps submitted under this contract do include unstable reaches of non-primary washes that are identified in the aerial photo comparison (Section 4.1) above.

During the field assessment of the primary washes, a track log was maintained as the ATVs were driven along the bed of the wash. The track log included not only the coordinates of track points recorded at 5 to 10 second intervals, but also the approximate elevation of those points. Since the Trimble GPS unit was maintained at a constant height on the ATVs while traversing the washes, it was intended that the final track log could be used to produce a general or rough channel profile. However, in a number of instances, the ATV had to be driven out of the channel because of obstructions, they became too narrow, or because the banks were too high to exit from the wash. The vertical accuracy of the Trimble GPS unit is generally ±3m (±10 feet). Discrepancies were noted when comparing the track log elevations and the elevations of the contour mapping and it was determined that the track log elevations were unreliable for use in developing the channel profiles of the primary washes. Therefore, the channel profiles provided under this TM are compiled from the 10-foot contour mapping provided by the District. In many cases, knickzones, headcuts, or bedrock falls were noted in the field, but are not be defined on the profiles because the large contour interval is not conducive to delineating anything less than 20 feet high. Therefore, these features were identified on the profiles and an approximate elevation change is included.

In addition to maintaining a track log and assessing the channel conditions, field data sheets were filled out at various locations along the wash. The field data sheets included a cartoon sketch of the channel cross section, the waypoint and location of the cross section, a record of the presence, absence, and dimensions of various geomorphic features, vegetation types and density, the proximity to headcuts and knickzones where present, the presence or absence of caliche (described in Section 4.3 below) in the channel bed, bedrock control, and a photograph log at each site. Where the washes were crossed by Sun Valley Parkway, culvert data sheets with similar information were also filled out. The streambed profiles, field data sheets, culvert data sheets, and the appropriate photos taken at each cross section for each of the primary washes are compiled in **Appendix B**.

As part of Task 2.6.4 of the Scope of Work, knickzones, headcuts, natural and man made grade controls, sources of sediment, and areas of significant erosion along the washes were to be identified. These sites were identified by recording a waypoint in the field at each location and documenting the feature and its characteristics. These features are identified on the channel profiles and on the field data sheets in Appendix B. **Table 4.2** lists the locations and approximate dimensions of knickzones identified in the field. The locations and approximate dimensions of headcuts (developed either in caliche or as bedrock falls) that were identified in the field are provided in **Table 4.3**.

The principle stability issues on most of the primary washes are associated with the processes of active alluvial fans where they traverse the fan or immediately downstream of the fan, headcutting and gullying where the primary washes intersect the FRSs, and sediment blockage at culvert crossings that could result in overtopping of the highway with concomitant downstream flooding and channel degradation. The stability issues of the primary washes where they traverse active alluvial fans have been addressed in TM 2.6.3. The headcutting (**Figure 4.24**) and gullying (**Figure 4.25**) at the FRSs is associated with a significant grade change from the natural bed elevation of the wash to the base elevation of the FRS over a very short distance. The gullying and headcutting is migrating upstream and could pose a potential threat to any property in close proximity to the FRSs. Headcuts and gullying are common at all the washes that do not have a smooth grade transition from their bed to the base level of the FRSs. In many cases, the headcutting and gullying has created a small alluvial fan within the FRS basin immediately downstream of the confluence of the wash.

As discussed above, the culvert crossings of Sun Valley Parkway on the Primary Washes were examined in detail as well. Primary Washes 1 through 8 were intercepted by a concrete and grouted riprap lined channel on the south side of and parallel to the east-west portion of the highway at the north end of the study area. The engineered channel also contained low drop grade control structures. The channel drained flow from these and other washes to the south into Wagner Wash where the highway turns to the southwest. There is a large rock drop structure on Wagner Wash immediately downstream of the confluence of the engineered channel. The rock grade control structure appears to have intercepted about 4 to 5 feet of degradation on Wagner Wash. The degradation downstream of the structure is causing 3 to 4 feet of incision at the lower end of Primary Wash 9.

Table 4.2. Knickzones on Primary Washes.

Primary Wash	Upstream Easting (ft)	Upstream Northing (ft)	Downstream Easting (ft)	Downstream Northing (ft)	End Waypoints	Length (ft)	Comments
34	504843	895155	504889	895051	6-7	114	upstream of headcut
33	---	---	502659	894453	12	100	
33	501400	891818	501374	891664	14-15	156	in zone of multiple flow paths
32	500032	889508	500048	889399	17-18	110	
32	499822	890592	499963	890202	20-21	415	
32	499279	891318	499449	890972	24-25	385	in caliche
27	479134	889874	478627	889180	79-80	859	in caliche
25	476739	914331	476596	914201	100-101	193	in caliche
25	475885	913520	475695	913380	102-103	236	in caliche
25	465956	901828	---	---	109	50	in caliche, 3 ft drop
22	467648	921536	467415	921535	171-172	233	in caliche
22	466985	921390	466947	921363	174-175	47	in caliche
21	461559	923019	461410	922984	189-190	153	in caliche
20	468615	929816	468418	929851	216-217	200	in caliche
20	470201	930258	470071	930189	219-220	147	in caliche
20 North	467278	932124	467247	932006	239-240	122	
18	471909	940537	471789	940573	272-273	125	in caliche
16	464526	950304	464476	950296	329-330	51	in caliche
13	476956	958606	476878	958671	362-363	101	in caliche
9	471668	967092	471476	967066	366-367	195	4 ft drop to confluence
9	472457	966478	---	---	369	40	1.5 ft drop
7	476550	967324	476408	967321	393-394	142	in caliche
7 East	480320	964060	480250	964480	398-399	426	in caliche, downstream of headcut
6	486489	964903	486408	965019	406-407	142	in caliche
3	488831	962828	488604	963285	412-413	510	in caliche
3	486529	968115	486408	968232	416-417	168	

Table 4.3. Headcuts on Primary Washes.

Primary Wash	Easting (ft)	Northing (ft)	Waypoint	Height (ft)	Comments
36	479944	940722	261	10-12	bedrock falls
34	504890	895052	2	4	in caliche
30	489932	893255	48	10-12	bedrock falls
25	488146	921546	92	10-12	bedrock falls
25	467298	904897	107	1-2	in caliche
25	462827	890907	428	3	in caliche
24	461691	903225	119	1.5	in caliche, downstream of sheet flow
20	467626	932363	238	2-3	in caliche
17	477959	947683	297	3-4	bedrock falls
14	485647	953168	342	12	bedrock falls
7 East	480320	964060	398	3	in caliche

Primary Washes 9 through 14 drain directly to Wagner Wash where it flows to the southwest along the east side of the highway. Once the highway turns southward, the primary washes south of Primary Wash 15 and north of Primary Wash 20 must pass through culverts under the highway before emptying into the Hassayampa River. Primary Washes 20 through 25 and those washes just south of Primary Wash 25 pass through culverts under the highway and then drain to Buckeye FRS #1. The culverts for the primary washes that pass under the highway and were examined in detail are on Primary Washes 15 through 25.

Several culverts were examined on primary washes that drain from active alluvial fans. As a result, many of these culverts are experiencing severe blockage from sediments derived from the fans and areas below the fans. **Table 4.4** provides a listing of the primary wash culverts that were examined, their size, skew, and slope, the degree of blockage, sediment depth, and design flow associated with each. At least 2 of the primary washes examined had culverts that were more than half full of sediment and four others had culverts that were nearly half full of sediment. Continued sediment deposition at the partially blocked culverts, especially during major flow events, could lead to complete blockage of the culverts, backwater flooding upstream of the road embankment, overtopping of the roadway embankment, and uncontrolled and unconfined downstream flooding.

Table 4.4. Sun Valley Parkway Bridge Culvert Data (Upstream Side).

Primary Wash	SVP Highway Sta.	RCBC Dimensions	Skew (deg.)	Slope (%)	Max. Sed. Depth in Barrel (ft)	% Obstruction of Upstream Barrels	Design 100-yr Q (cfs)	Downstream Headcut Height (ft)	Comments
25	161+67	6 - 10'x3'	23.00	0.37	0	0	1,067	0	Downstream of USGS Site 37 Active Alluvial Fan
25 North	172+93	2 - 8'x3'	39.00	0.36	---	---	369	---	Downstream of USGS Site 37 Active Alluvial Fan
24	227+85	2 - 10'x3'	30.00	0.36	0.3	5	200	0	Downstream of USGS Sites 37 & 38 Active Alluvial Fans (on borders)
24 North	230+27	2 - 10'x3'	40.00	0.24	0.5	17	280	0	Downstream of USGS Site 38 Active Alluvial Fan (on north border)
23	266+49	6 - 10'x4'	25.50	0.24	2.5	50	1,575	0	Downstream of USGS Site 38 Active Alluvial Fan
22	333+84	3 - 10'x4'	8.50	0.39	1.75	42	739	0	Downstream of USGS Site 39 Active Alluvial Fan
21	360+44	4 - 10'x4'	15.50	0.32	2.5	55	1,031	0	Downstream of USGS Site 39 Active Alluvial Fan
20	415+81	6 - 10'x3'	39.55	0.35	1.75	44	1,080	1.5	Downstream of BSV Site #6 Active Alluvial Fan
20 North	443+33	1 - 8'x4'	37.13	1.72	0	0	232	0.75	
19	480+10	6 - 10'x5'	0.00	0.35	2.4*	43*	6,723 Total	3	*South bridge downstream of BSV Site #5 Active Alluvial Fan (on north border)
	481+03	6 - 10'x5'	6.03	0.35	0	0			
	482+43	3 - 12'x5'	30.00	0.30	0	0			
18	518+50	6 - 12'x5'	19.42	0.40	1	1	2,449	2.5	
17 Trib	577+40	3 - 10'x5'	22.62	0.70	0.3	3	1,123	2.5	
17	580+28	3 - 12'x6'	32.52	0.91	0.2	3	1,538	0	
16	630+89	4 - 10'x3'	30.58	0.58	1.75	44	910 Each	0	1.1 miles downstream of wing dam
	632+08	3 - 12'x5'	6.48	0.30	1.75	32			
15	718+02	3 - 10'x4'	10.52	0.35	0	0	unknown	0	

(Sun Valley Parkway constructed 1988-1991)

Bank erosion and bank failures can also be significant hazards that can affect future development. Major areas of bank erosion and bank failure are found primarily along the lower reaches of washes where channel capacity is greater (**Figure 4.26**) or in the entrenched relict fan areas near the mountain front where channel depth or entrenchment is sufficient to produce conditions conducive to large mass failures of the banks and valley walls (**Figure 4.27**). Channel incision (**Figure 4.28**) and abrupt changes in flow path (**Figure 4.29**) can also induce bank erosion and bank failure. There are also locations where the channel is constricted or where an obstruction occurs such that sediment deposition may occur within the channel and flow is diverted around the sedimentary deposit. In these cases, flow may impinge on the toe of a high bank or valley wall producing undercutting of the bank and subsequent gravity failure of the bank. Large blocks of failed material may exacerbate or enhance the further undercutting and failure of the bank and adding the deposition in the channel (**Figure 4.30**). At these locations, channel widening occurs at and upstream of the obstruction and oversteepening of the channel occurs downstream until the obstruction and sedimentary deposits are either bypassed or eroded away. Major floods that pass through these locations can erode the sediment deposits at the obstruction and can produce a significant wedge of sediment that is transported downstream into the lower reaches where it can create additional obstructions at road crossings or induce further bank erosion.

4.2.1. General Descriptions of Primary Washes

The following descriptions of the existing conditions of the primary washes are based on the field reconnaissance and the aerial photo analysis. The location of each primary wash is shown on Plate 1. Profile plots, annotated cross sections, and cross section photos for each of the channels are provided in Appendix B and should be referred to during the following discussions. Additional ground photos were taken at strategic locations along the washes and are linked to georeferenced points delineated in the ArcGIS mapping database that was provided to the district. The primary washes are numbered in ascending order from north to south, with Primary Wash #1 at the northeast end and Primary Wash 34 at the southeast end of the study area.

Primary Wash #1 – Approximately 2.5 miles of this wash were examined in the field. Upstream (south) of Sun Valley Parkway, the wash is a small, stable channel that passes under the roadway via a culvert. Downstream of the roadway, channel capacity decreases and the channel becomes undefined on the inactive fan surface.

Primary Wash #2 – A total of about 1.34 miles of this wash were examined in the field. This wash is located entirely north of Sun Valley Parkway. The channel is poorly defined or nonexistent until approximately 200 feet upstream of the confluence with Wagner Wash where it becomes one of many small gullies feeding the upstream end of Wagner Wash.

Primary Wash #3 – A total of about 4.62 miles of this wash were examined in the field, 2.65 miles of which are south of the Sun Valley Parkway. The wash begins at the northern end of the White Tank Mountains and is intercepted by an engineered drainage channel along Sun Valley Parkway. The remains of the cutoff lower portion of the wash are present between the roadway and Wagner Wash. As discussed in the previous section, the wash upstream of the parkway is an area of high hazard due to the presence of multiple shallow, but relatively well-defined, distributary channels (see Figures 4.2 and 4.3). The interfluve areas between the distributary channels may be subject to flooding during major storm events. The channel just upstream of the confluence with the parkway drainage channel is incised and is actively widening. The ongoing incision and widening are producing sedimentation at the energy dissipation structure at the confluence with the parkway drainage channel.

Primary Wash #4 – A total of about 1.86 miles of this wash were examined in the field, 0.63 miles of which are south of the Sun Valley Parkway. The wash begins just south of Sun Valley Parkway and ends at

Wagner Wash. However, the upper part of the wash is captured by the drainage channel that runs along the south side of the parkway. Downstream of the parkway, there is no well-defined channel until about 200 feet downstream. Flows from the parkway feed the channel downstream of the roadway. At about 700 feet downstream of the parkway, there is bedrock control in the channel bed. Caliche is present in the bed between 3,000 and 4,500 feet upstream of the confluence with Wagner Wash. The channel eventually peters out at a point about 2,300 feet upstream of the confluence and downstream flow becomes primarily unconfined sheet flow. The channel does not redevelop until several hundred feet upstream of the confluence with Wagner Wash where it becomes one of many small gullies feeding the upstream end of Wagner Wash.

Primary Wash #5 – A total of about 0.54 miles of this wash, which is north of the Sun Valley Parkway, were examined in the field. This wash is deeply incised at its confluence with Wagner Wash. Wagner Wash is also deeply incised at this location. Much of the area around the confluence of this wash with Wagner Wash is heavily dissected with gullies and may represent one of the larger, well-defined gullies.

Primary Wash #6 – A total of about 3.11 miles of this wash were examined in the field. This wash begins in the northern end of the White Tank Mountains and flows from south to north until the northern end of the mountains, at which point it turns due west. The wash drains the active alluvial fan at BSV Site #2 over much of its north-south route (see Figure 4.3). The downstream end of the fan is marked by localized bedrock control and a short knickzone in the channel bed. Once the channel turns to the west, it becomes confined and well defined. At a point about 2 miles downstream of where it turns to the west, the wash is intercepted by the Primary Wash #7. The wash passes between inselbergs about 3,000 feet upstream of the confluence. Just downstream of the inselbergs, the channel is intercepted by a large tank with an earthen wing dam (see Figure 4.4). The wash is intercepted by Primary Wash #7 with the confluence marked by a knickzone in caliche in the bed. The channel at and upstream of the confluence is deeply incised with active bank erosion. The reach here and downstream along Primary Wash #7 appears to have undergone about 3 to 4 feet of recent incision, probably in response to construction of the parkway drainage channel.

Primary Wash #7 – A total of about 2.46 miles of this wash were examined in the field, 2.04 miles of which are upstream if the Sun Valley Parkway. This wash begins in the northwestern part of the White Tank Mountains and is intercepted by the constructed drainage channel along the south side of Sun Valley Parkway (see Figure 4.4). The abandoned reach north of the parkway, including the confluence with Wagner Wash, provides drainage to Wagner Wash only for part of the north side of the parkway and a small area of land in between. The confluences of Primary Wash #7 East and Primary Wash #6 are located at about 2,600 feet upstream of the parkway. Caliche in the bed of the channel from about 6,000 to 7,200 feet upstream of the parkway is controlling the grade of the channel at that location and may be the cause of the distributary flow paths located at the upstream end of the reach. The same situation exists at about 5,000 feet upstream of the parkway. A short reach just upstream of the parkway drainage channel is also defined by a knickzone.

Primary Wash #7 East – A total of about 0.79 miles of this wash were examined in the field. This wash begins in the northwestern part of the White Tank Mountains and is intercepted by Primary Wash #7 near the confluence with Primary Wash #6 (see Figure 4.4). Caliche outcrops in the bed of the channel provide some temporary grade control at about 2,450 and 2,900 feet upstream of the confluence. A knickzone is present at about 3,200 feet upstream and ends at a 3-foot headcut in caliche at about 3,600 feet upstream of the confluence.

Primary Wash #8 – A total of about 1.72 miles of this wash were examined in the field, 1.28 miles of which are upstream of the Sun Valley Parkway. This wash begins on the relict fan area south and west of Primary Wash #7 and is intercepted by the constructed drainage channel along the south side of Sun Valley Parkway. The abandoned reach north of the parkway, including the confluence with the abandoned portion of Primary Wash #7, provides drainage to Primary Wash #7 only for part of the north side of the parkway and a small area of land in between. Some incision (approximately 1.0-1.5 feet) is readily apparent upstream of the parkway with sediment eroded from the upstream channel deposited at the confluence with the parkway drainage channel.

Primary Wash #9 – A total of about 2.95 miles of this wash were examined in the field. This wash begins in the northwestern part of the White Tank Mountains and drains to Wagner Wash. The confluence lies just downstream of the Sun Valley Parkway crossing of Wagner Wash. The confluence area of the wash is deeply incised (up to 4 feet) as a result of active degradation on Wagner Wash. The wash for more than 200 feet upstream is actively incising and widening as indicated by the active bank erosion and knickzone in caliche along this reach. There are a number of locations along the remaining upstream channel where caliche outcrops in the bed of the channel. There are also several reaches of distributary flow along the wash. The confluence of Primary Wash #9 South is located about 1,700 feet upstream and the confluence of Primary Wash #9 East is located about 12,500 feet upstream.

Primary Wash #9 East – A total of about 0.53 miles of this wash were examined in the field. The wash begins in the northwestern part of the White Tank Mountains and drains to the upper end of Primary Wash #9. Only about the lower half mile of this channel was examined in detail since much of the wash is bedrock controlled.

Primary Wash #9 South – A total of about 0.59 miles of this wash were examined in the field. This wash is relatively small with loss of flow confinement about 1,300 feet upstream of the confluence with Primary Wash #9. Sheet flow and multiple, poorly defined distributary flow paths occur for several hundred feet downstream of this point. Bedrock control is present in the channel about 2,500 feet upstream of the confluence.

Primary Wash #10 – A total of about 3.48 miles of this wash were examined in the field. This wash begins in the White Tank Mountains and drains to Wagner Wash about midway between the 2 crossings of Sun Valley Parkway over Wagner Wash. The wash is the principal supply to the active fan at BSV Site #13 West. The active fan is located between 11,000 and 14,000 feet upstream of the confluence. The active fan and wash pass between several inselbergs. In addition to the inselbergs, outcrops in the bed of the channel between 9,600 and 10,500 feet upstream represent intermittent bedrock control of the channel.

Primary Wash #11 – A total of about 1.23 miles of this wash were examined in the field. This wash drains to Wagner Wash about midway between the 2 crossings of Sun Valley Parkway over Wagner Wash. Distributary flow from Primary Wash #10 contributes to the flow on this wash.

Primary Wash #12 – A total of about 1.08 miles of this wash were examined in the field. This short wash drains to Wagner Wash about midway between the 2 crossings of Sun Valley Parkway over Wagner Wash. A major flow split into 2 well-defined, entrenched channels occurs between about 1,500 and 2,500 feet upstream of the confluence.

Primary Wash #13 – A total of about 2.46 miles of this wash were examined in the field. The wash drains to Wagner Wash and its confluence is located about 2,000 feet upstream of the lower Sun Valley Parkway crossing over Wagner Wash. The confluence of Primary Wash #13 North is located about a mile upstream of the confluence. A large inselberg is also located just south of the Primary Wash #13 North confluence area. Caliche is present in the channel bed around 4,500 feet upstream. Another long reach with caliche present in the bed is located between 11,500 and 12,100 feet upstream and the reach also contains a 100-foot long knickzone. Localized caliche is present in the bed at the upper end of the channel as well. Some distributary flow is present in the lower reach of the channel just upstream of Wagner Wash.

Primary Wash #13 North – A total of about 0.44 miles of this wash were examined in the field. Although this wash was defined on the USGS topographic maps for this short distance, the well-defined upstream reaches of the wash continues for another mile to the east and intersects the northern arm of the active alluvial fan at BSV Site #3. This wash appears to be a major distributary channel of the fan.

Primary Wash #14 – A total of about 4.73 miles of this wash were examined in the field. The wash drains from the White Tank Mountains and empties into Wagner Wash just upstream of the lower Sun Valley Parkway crossing of Wagner Wash. The wash is the principal drainage through the BSV Site #3 active alluvial fan, both of which pass between a number of inselbergs. The downstream end of the active portion of the fan is located about 13,400 feet upstream and the hydrographic apex is located about 20,200 feet upstream. The channel upstream of the hydrographic apex is bedrock controlled with a short bedrock drop at about 21,600 feet upstream and a 12-foot high bedrock falls within the mountains at about 24,800 feet upstream of the confluence.

Primary Wash #15 – A total of about 1.04 miles of this wash were examined in the field. The confluence with Wagner Wash is located on the downstream side of at the lower Sun Valley Parkway crossing of Wagner Wash. This wash is predominantly composed of distributary flow paths with poorly defined channels that are generally less than 1 foot deep and 1-2 feet wide.

Primary Wash #16 – A total of about 5.0 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes between several large inselbergs surrounded by pediment surfaces, crosses under the Sun Valley Parkway, and merges with Wagner Wash about 1.3 miles west of the parkway. The bed and or banks of the upper 2.2 miles of the channel are partially or completely controlled by bedrock associated with the inselbergs and pediment (see Figure 4.9). A large wing dam and stock tank are located on the channel about 1.1 miles upstream (east) of the parkway crossing (see Figure 4.8). Major distributary flow zones are located at about 8,600 and 20,300 feet upstream of the confluence. The reach between the parkway and the confluence is defined by several major flow splits and some distributary flow (see Figure 4.7).

Primary Wash #17 – A total of about 5.51 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes between several large inselbergs surrounded by pediment surfaces, crosses under the Sun Valley Parkway, and merges with Wagner Wash about 1.6 miles west of the parkway. The bed and or banks of the upper 2.2 miles of the channel are partially or completely controlled by bedrock associated with the inselbergs and pediment. A 4-foot high bedrock fall in the channel provides grade control at about 22,100 feet upstream of the confluence. The wash upstream of the parkway is defined by a single, well-defined entrenched channel except between 11,900 and 12,600 feet upstream, which marks a distributary flow zone. The reach between the parkway and the confluence is defined by minor flow splits and some distributary flow (see Figure 4.7).

Primary Wash #17 Trib – A total of about 1.91 miles of this wash were examined in the field. The wash drains from the pediment area west side of the White Tank Mountains and merges with Primary Wash #17 at Sun Valley Parkway. The bed and or banks of the upper 1,800 feet of the channel are partially or completely controlled by bedrock associated with the inselbergs and pediment. Small, well-confined distributary flow zones are present for a short distance upstream of the parkway.

Primary Wash #18 – A total of about 6.44 miles of this wash were examined in the field. The wash drains from the pediment area west side of the White Tank Mountains, passes between several large inselbergs surrounded by pediment surfaces, crosses under the Sun Valley Parkway, and merges with a non-primary wash tributary to the Hassayampa River about 2.8 miles west of the parkway. The confluence is located along an alluvial plain surface associated with the tributary and the river. The bed and or banks of the upper 3,000 feet of the channel are partially or completely controlled by bedrock associated with the inselbergs and pediment. There are a number of locations where caliche crops out in the bed and several areas of distributary flow both upstream and downstream of the parkway. In addition, the upstream end of the active alluvial fan at BSV Site #4 appears to capture some of the flow from this wash at about 21,800 feet upstream. The wash that is the principal drainage for BSV Site #4 passes in close proximity to Primary Wash #18 (see Figure 4.12). Because of the close proximity of these two washes, it appears that part of the flow from Primary Wash #18 avulses into this unnamed wash and may have been the principal cause of the development of the BSV Site #4 active alluvial fan.

Primary Wash #19 – A total of about 8.71 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes to the north of 2 inselbergs as part of the BSV Site #5 active alluvial fan, crosses under the Sun Valley Parkway, and merges with the Hassayampa River about 3.88 miles southwest of the parkway crossing. The bed and or banks of the upper 7,500 feet of the channel are partially or completely controlled by bedrock. A small tributary, Primary Wash #19 Trib, merges with this wash at about 37,000 feet upstream. At the upstream end of the active fan of BSV Site #5, flow splits around and rejoins at the downstream (west) end of the inselbergs. A short distance downstream of the fan area, the throughflow channel splits forming a narrow, entrenched split flow zone for a short distance. At about a half mile upstream of the parkway, a distributary channel from the downstream end of the BSV Site #4 alluvial fan merges with this wash. At the confluence of the distributary channel, Primary Wash #19 divides into two flow paths that pass under the parkway and remain divided on the downstream side (see Figure 4.12). The southern channel is Primary Wash #19. There are additional flow splits and divides downstream between the confluence and the parkway (see Figure 4.13).

Primary Wash #19 Trib – A total of about 1.21 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains and is intercepted by Primary Wash #19 about a half mile upstream (east) of the hydrographic apex of the BSV Site #5 alluvial fan. There is intermittent bedrock control along the wash with a 10-foot high bedrock falls located about 2,300 feet upstream of the confluence.

Primary Wash #20 (White Tank Wash) – A total of about 14.2 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes through the small BSV Site #6 active alluvial fan on the upstream side of the Sun Valley Parkway, passes under the parkway, turns due south about 8 miles above the confluence, and empties into the Buckeye FRS #1 basin about 2 miles east of the Hassayampa River. Primary Washes #20 North, #21, #22, and #23 are tributary to the wash at 6.63, 5.4, 3.4, and 0.8 miles upstream of the FRS, respectively. There are a number of relatively confined distributary and braided flow zones and caliche outcrops in the bed along the length of the wash. Small knickzones are present at the upstream and downstream ends of the BSV Site #6 alluvial fan.

Primary Wash #20 North – A total of about 2.8 miles of this wash were examined in the field. The wash drains from the relict fan area just east of Sun Valley Parkway to Primary Wash #20. The wash is fairly well entrenched with no distributary split flow areas. The channel immediately downstream of the parkway is incised about 2 feet as seen in the 2-foot high headcut in caliche about 50 feet downstream of the concrete apron of the parkway bridge. The headcut represents the upstream end of a short knickzone. Another small knickzone is located about 700 feet downstream of the parkway.

Primary Wash #21 – A total of about 7.77 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes between several inselbergs, is the primary wash for the USGS Site #39 active alluvial fan, crosses under the Sun Valley Parkway, and merges with White Tank Wash (Primary Wash #20) about 3 miles downstream of the parkway. The upper 1.71 miles of the channel are deeply entrenched and are partially or completely controlled by bedrock. The wash is the primary supply to the USGS Site #39 active alluvial fan with the wash being the northern boundary of the

fan over most of its length. The confluence of Primary Wash #21 North is located a few hundred feet downstream of the hydrographic apex. Caliche is exposed intermittently in the channel bed and banks for about 800 feet upstream of the parkway. Prior to construction of the parkway, the active portions of alluvial fan extended well downstream of the parkway area (see Figure 4.14). However, with the construction of the roadway the upper and lower parts of the fan are now disconnected, and Primary Wash #21 downstream of the parkway is less affected by processes on the fan now. Although there is still a braided pattern to the channel for some distance downstream of the parkway, the active distributary flow paths downstream of the roadway appear to be less active now. Narrow, well confined split flow and distributary flow zones are present further downstream.

Primary Wash #21 North – A total of about 1.7 miles of this wash were examined in the field. The wash runs generally north to south and drains relict fan surfaces and the west side of several inselbergs between Primary Washes #20 and #21. The confluence of this wash with Primary Wash #21 is located about 1,500 feet downstream of the USGS Site #39 fan hydrographic apex. The wash is well defined and well entrenched.

Primary Wash #22 – A total of about 5.23 miles of this wash were examined in the field. This wash is tributary to White Tank Wash. The wash begins on the relict fan surface about a mile east of the Sun Valley Parkway, but a significant portion of the flow of water and sediment at the parkway crossing is supplied by the USGS Site #39 active alluvial fan. Although the wash only passes through the fan area for a short distance at the southern end of the fan where it intersects the parkway, there is a significant volume of water and sediment supplied to the wash by the fan. The wash passes through 2 short knickzones in caliche a short distance downstream of the parkway. At about 2,000 feet downstream of the parkway, the wash intercepts another small tributary wash from the north and the combination has produced a small active alluvial fan known as BSV Site #14 (see Figure 4.15). A number of flow splits and confined distributary flow paths are present along this wash downstream of the active portion of BSV Site #14.

Primary Wash #23 – A total of about 10.92 miles of this wash were examined in the field. The wash drains from the west side of the White Tank Mountains, passes between several inselbergs, is the primary wash for the USGS Site #38 active alluvial fan, crosses under the Sun Valley Parkway, and merges with White Tank Wash (Primary Wash #20) less than a mile north of Buckeye FRS #1. The upper part of the channel east of the inselbergs is deeply entrenched and passes through a major relict fan embayment in the mountains. The inselbergs between which the wash passes are located between 8.5 to 9 miles upstream of the confluence. The wash is the primary supply to the USGS Site #38 active alluvial fan with flow from the wash being distributed over the fan surface. The wash maintains a relatively well-defined, shallow course as it passes through the central part of the fan. Caliche is exposed in the channel bed in places as the wash passes over the fan. The wash passes under the parkway about 4.55 miles upstream of the confluence. Minor distributary/split flow zones and caliche outcrops in the bed of the channel are present downstream of the parkway. Primary Wash #23 Trib merges with this wash at about 2.4 miles upstream of the confluence.

Primary Wash #23 Trib – A total of only about 1.23 miles of this wash were examined in the field. This small wash is well entrenched into the relict fan area west of the parkway and is tributary to Primary Wash #23.

Primary Wash #24 – A total of about 7.69 miles of this wash were examined in the field. The wash drains a portion of a major relict fan embayment on the west side of the mountains, passes through the southern limb of the USGS Site #38 active alluvial fan before turning southwest and crossing under the parkway. The wash crosses under the parkway at about 4.24 miles upstream of its confluence with Buckeye FRS #1. The wash becomes oversteepened for about 300 feet immediately upstream of the intersection of the wash with the southern boundary of the USGS Site #38 alluvial fan. There is a major flow split at the intersection and the primary flow path of the wash follows the northwest channel. Flow that avulses to the south of the wash at the intersection is recaptured by the wash once it turns due south about a half mile from the Sun Valley Parkway. However, further downstream the channel redistributes flow through a series of distributary channels and flow paths before reaching the parkway. Downstream of the parkway, there is a long, wide depositional area along the channel that may be a remnant of the USGS Site #38 alluvial fan processes prior to construction of the parkway. At about 13,200 feet upstream of the confluence, the channel appears to become oversteepened, loses capacity, and flow is delivered downstream via sheetflow. A1.5-foot high headcut marks the downstream end of sheetflow where some of the flow is collected back into a small, well-defined channel. However, a short distance further downstream at about 11,700 feet upstream of the confluence, the channel loses capacity and flow spreads out again as sheetflow. A few hundred feet further downstream, the sheet flow becomes confined and is creating multiple gullies that eventually feed to a main channel again at about 10,000 feet upstream of the confluence. The wash crosses McDowell Road at about 8,200 feet upstream. At about 6,000 feet upstream, the channel intersects a developed area and, as a result, the original channel has been rerouted and the old channel has been abandoned. As described above, the wash through the developed are is not well confined and future flows could pose a significant flood hazard to the homes in the area (see Figure 4.22). The lower reach of the wash just north of the FRS is marked by sheetflow and poorly defined flow paths that eventually converge to form a series of shallow gullies that then converge to reform the main wash just north of the FRS. The intersection of the shallow gullies and the main wash with the FRS basin is marked by channel incision and headcutting due to a significant change in base level at the FRS.

Primary Wash #25 – A total of about 11.08 miles of this wash were examined in the field. The wash drains from the White Tank Mountains, passes through a portion of a major relict fan embayment on the west side of the mountains, is the primary contributor to and flow path through the USGS Site #37 active alluvial fan, crosses under the parkway at about 3.08 miles upstream, and then turns south and drains into Buckeye FRS #1. The upper 1.6 miles is bedrock controlled. At about 46,000 feet upstream, the channel passes through a bedrock constriction created by the pediment that underlies the relict fan surface in the area. At about 44,000 feet upstream, the channel passes over a 10 to 12 foot high bedrock falls created by the pediment. The wash is the principal contributor to the USGS Site #37 active alluvial fan with the hydrographic apex located at about 38,300 feet upstream of the confluence. A large proportion of the flow and sediment from the wash is distributed over the fan surface. The wash traverses the central part of the fan, the active part of which ends at about 28,000 feet upstream of the confluence. For about a mile upstream of the Sun Valley Parkway, the wash is defined by a narrow zone of braided and distributary flow before passing under the parkway at about 16,200 feet upstream. About 1,000 feet downstream of the parkway, the channel splits into a series of small distributary channels with 1 to 2 foot high headcuts. At about 7,500 feet upstream the channel crosses the unpaved West Tonopah-Salome Highway (dirt road) and then loses confinement and definition at a ranch on the south side of the road. The remaining length of wash is undefinable because of obliteration by a dairy farm and home sites south of the highway (see Figure 4.23) as described above. The wash does not redevelop until about 2,000 feet north of the Buckeye FRS #1. The lower reach of the wash just north of the FRS is marked by sheetflow and poorly defined flow paths that eventually converge to form a series of shallow gullies that then converge to reform the main wash just north of the FRS (see Figure 4.25). The intersection of the main wash with the FRS basin is marked by channel incision and a 3-foot high headcut due to the change in base level at the FRS.

Primary Wash #26 – A total of about 1.97 miles of this wash were examined in the field. This well-defined wash, which flows north to south near the east side of the Hassayampa River, is confined by and drains the relict fan surface to the north of the west end of the Buckeye FRS #1. The wash drains into the FRS basin.

Primary Wash #27 – A total of about 6.9 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains. Once the wash exits the mountain front, it truns southward, passing between several large inselbergs, is the primary contributor to and flow path through the BSV Site #7 active alluvial fan, and empties into the eastern part of the Buckeye FRS #1. The upper

mile of channel is deeply entrenched and bedrock controlled. Between 28,000 and 31,000 feet upstream of the FRS, where the channel turns southward, there are several tributaries draining from the north that are contributing a significant volume of sediment to the wash. The sediment contribution at this location has resulted in a wider entrenched reach of channel with multiple flow paths. At about 25,400 feet upstream, the wash loses capacity (hydrographic apex) and creates the BSV Site #7 active alluvial fan. The wash is somewhat defined until about a half mile downstream of the hydrographic apex where it becomes poorly defined and difficult to follow. South of the fan, flow follows multiple small, shallow, poorly defined paths until the unpaved West Tonopah-Salome Highway crossing. Downstream of the roadway, multiple flow paths combine to form a better-defined channel. At about 3,500 feet downstream of the highway, flow from this channel is captured by a dirt track that follows a north-south fence line. The track has developed into a channel and carries flow southward until it intersects the FRS basin levee. At the FRS levee, the channel turns due west and runs along the levee for about 1,250 feet where it spills into the FRS basin with another major wash that drains part of the White Tank Fan (USGS Site #36). The reach from about 1,700 feet upstream to about 5,000 feet upstream of the confluence appears to be oversteepened and the channel flows across extensive exposures of caliche in the bed. A 2-foot high bedrock drop related to a heavily weathered and poorly exposed inselberg is present in the channel bed at about 5,300 feet upstream of the confluence.

Primary Wash #28 – A total of about 4.55 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains and empties into the eastern part of the Buckeye FRS #1. The upper 2,000 feet of the channel is controlled by bedrock. At about 20,000 feet upstream of the confluence, the channel intersects the southern portion of the east limb of the BSV Site #7 active alluvial fan and provides the eastern boundary for the active part of the fan for less than 1,000 feet. From about 14,000 feet to about 16,100 feet upstream of the confluence, the wash provides the western boundary for much of the length of the BSV Site #8 active alluvial fan. At the downstream end of the fan, the wash loses capacity and flow is distributed predominantly along multiple, poorly defined flow paths. The wash does not become well defined until about 6,400 feet upstream of the confluence where it crosses the unpaved West Tonopah-Salome Highway below which it redistributes flow into a number of poorly defined distributary channels again.

Primary Wash #28 East – A total of about 1.55 miles of this wash were examined in the field. The wash is tributary to Primary Wash #28. The wash drains part of the southwestern end of the White Tank Mountains with the upper 4,500 feet of the channel being controlled by bedrock. Between about 1,900 and 2,300 feet upstream of the confluence, the channel has aggraded along a narrow entrenched section and might be considered as an inset alluvial fan. The hydrographic apex for the BSV Site #8 active alluvial fan is about 1,400 feet upstream of the confluence. The wash is the primary supply to the fan and provides the northwestern boundary of the fan until the confluence.

Primary Wash #29 – A total of about 3.98 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains and empties into the east end of the Buckeye FRS #1. Much of the area through which the channel passes is partially or completely controlled by bedrock that is associated with inselbergs and numerous other larger remnants of the retreating mountain front. The wash is the primary supply to and passes through the BSV Site #12 and BSV Site #9 active alluvial fans. The reach of channel within BSV Site #12 active fan is from 6,700 to 8,800 feet upstream of the confluence and the BSV Site #9 active fan is located at the confluence with the FRS. There appears to be ongoing aggradation within the entrenched channel upstream of the hydrographic apex of BSV Site #12. In addition, the wash crosses the West Tonopah-Salome Highway three times between 3,200 and 5,100 feet upstream of the confluence. The Primary Wash #29 East and #29 Trib confluences are located at 14,000 and 15,800 feet upstream of the FRS.

Primary Wash #29 East – A total of about 1.23 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before joining Primary Wash #29. Bedrock control is present in parts of the lower reaches.

Primary Wash #29 Trib – A total of about 0.47 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before joining Primary Wash #29. Some bedrock control is present.

Primary Wash #30 – A total of about 1.31 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before emptying into the west end of Buckeye FRS #2. Bedrock control is present along much of the channel. A 12-foot high bedrock falls is present at about 6,000 feet upstream.

Primary Wash #31 – A total of about 3.56 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before emptying into Buckeye FRS #2. Bedrock control is present along most of the upper 8,500 feet of channel. A 12-foot high bedrock falls is present at about 6,000 feet upstream. Constrictions are present at about 5,000 and 8,800 feet and the channel is actively aggrading at about 6,500 feet upstream of the confluence. The wash is the primary supply to and provides the western boundary for the BSV Site #10 active alluvial fan, which empties into the FRS. The hydrographic apex of the fan is located at about 2,000 feet upstream of the FRS.

Primary Wash #32 – A total of about 1.61 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before emptying into Buckeye FRS #2. Bedrock control is present along most of the upper 4,000 feet of channel. Three long knickzones developed in caliche are present in the lower 2,500 feet of the wash. In addition, the channel appears to be actively aggrading between 1,600 and 2,000 feet upstream of the FRS.

Primary Wash #33 – A total of about 1.8 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan before emptying into Buckeye FRS #2. Bedrock control is present at the upper end of the wash and at about 4,300 feet upstream where it passes around a small inselberg. Short knickzones are present at about 3,200 and 6,600 feet upstream of the FRS. In addition, there are multiple small distributary flow paths associated with the lower knickzone.

Primary Wash #34 – A total of about 1.63 miles of this wash were examined in the field. The wash drains part of the southwestern end of the White Tank Mountains including areas of pediment and relict fan just west of the Skyline Wash Fan before emptying into the west end of Buckeye FRS #3. Bedrock control is present at the upper end of the wash down to about 6,000 feet upstream of the FRS where the channel moves away from the mountain front. A 4-foot high headcut and short upstream knickzone are present just downstream of the Watson Road crossing and about 4,100 feet upstream of the confluence. The headcut is developed in caliche, but because it is less than 100 feet downstream of Watson Road, it still poses a significant threat to the road crossing. A few hundred feet downstream of the headcut, the channel becomes constricted and deeply entrenched.

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APPENDIX A

(Text Figures)

Figure 3.1. All Terrain Vehicle used for assessing existing conditions on the primary washes.

Figure 3.2. The Trimble GeoXT handheld GIS-based GPS unit (arrow) mounted on an ATV.

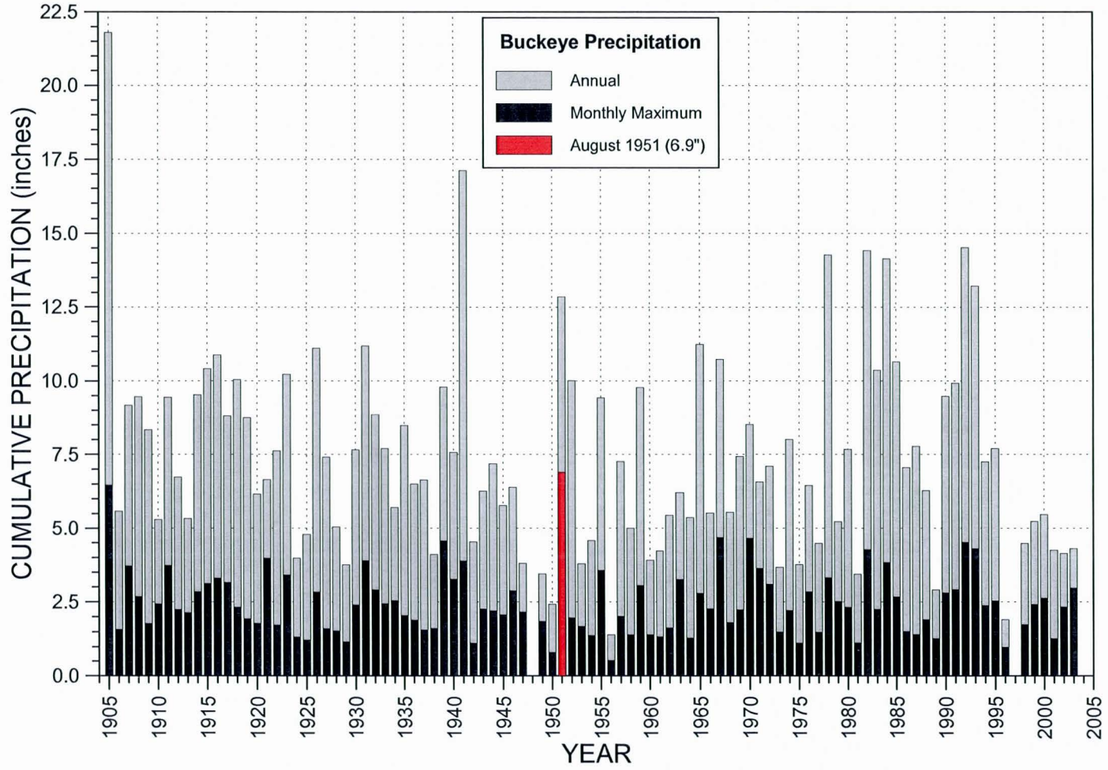


Figure 4.1. Annual and monthly maximum precipitation (1905-2003) for Buckeye, Arizona.

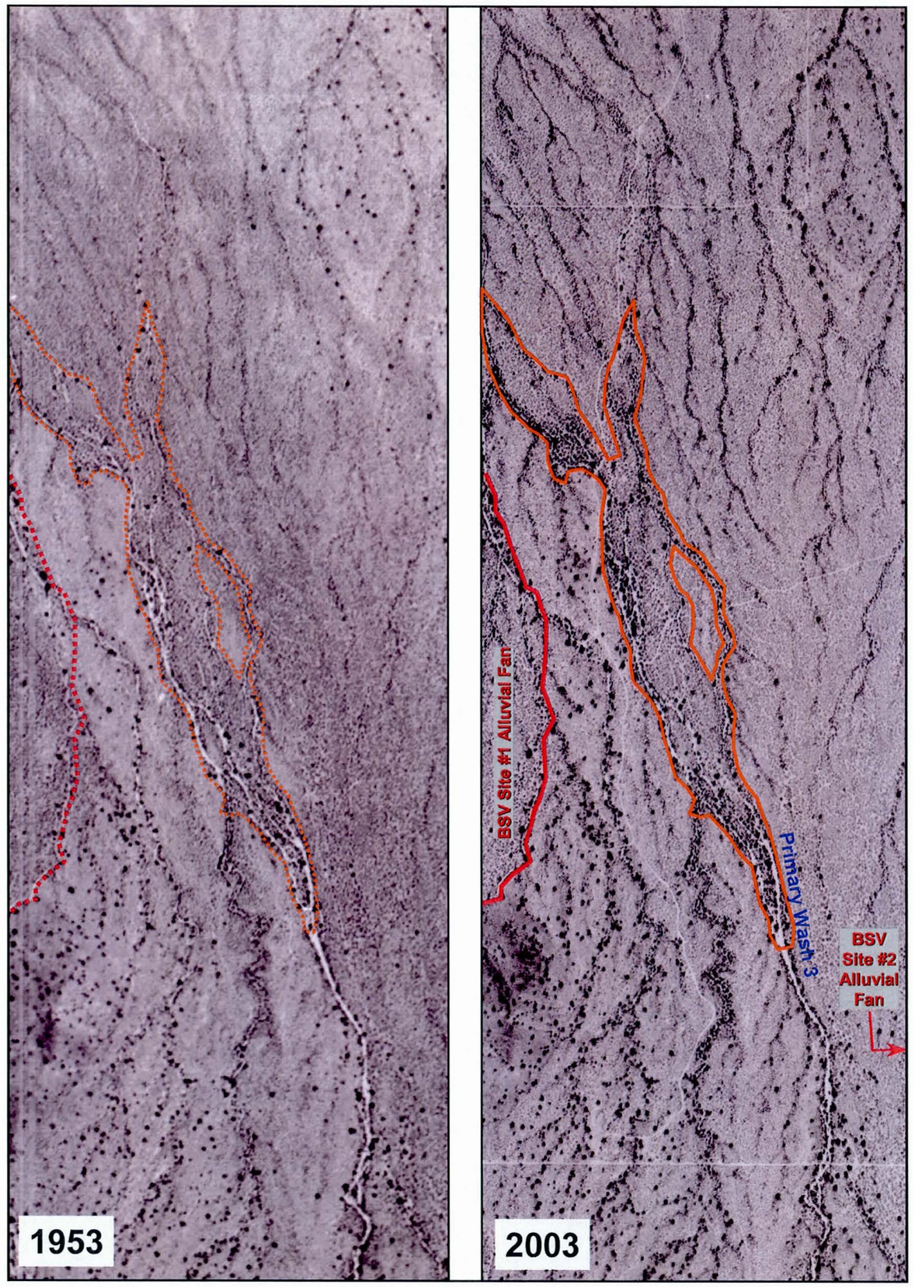


Figure 4.2. Comparison of 1953 and 2003 aerial photos for area around Primary Wash 3 between BSV Site #1 and BSV Site #2 active alluvial fans (red) showing unstable areas of high (orange) hazard.

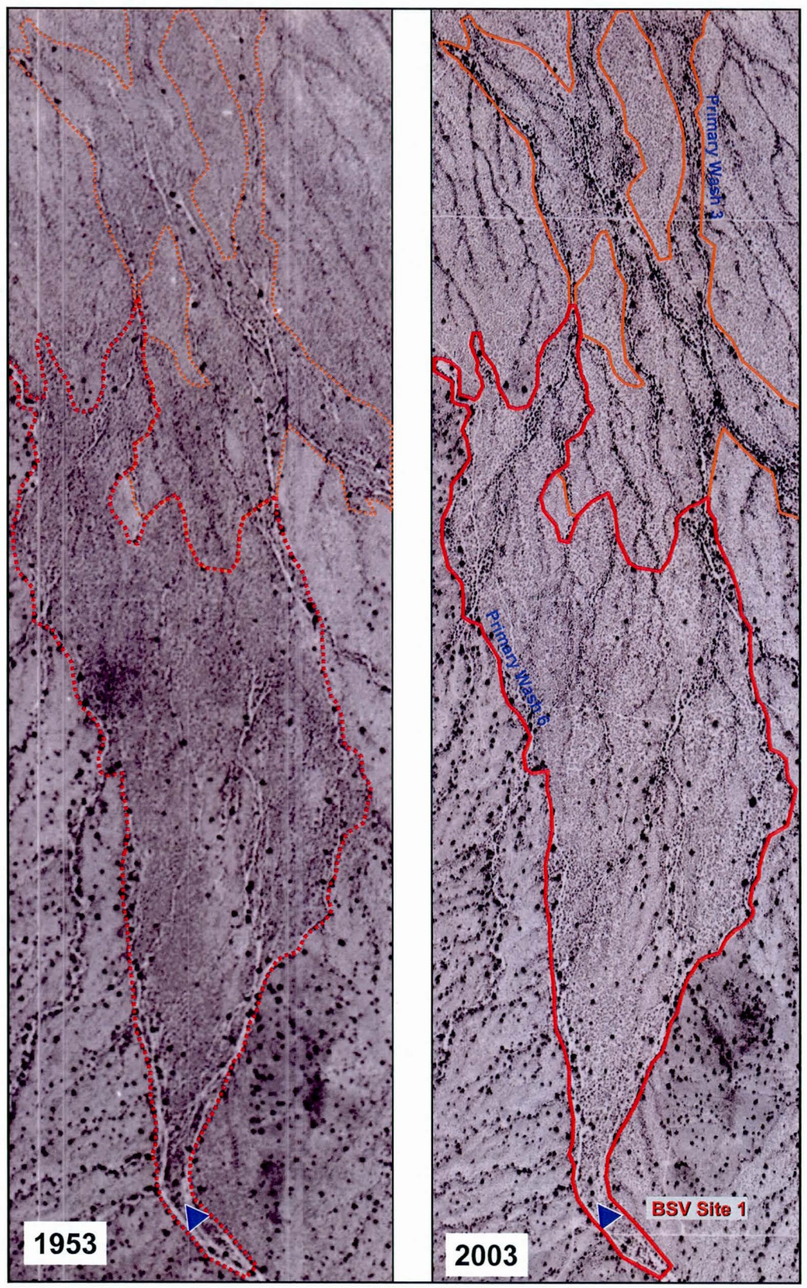


Figure 4.3. Comparison of 1953 and 2003 aerial photos for area around Primary Wash 3 downstream of the BSV Site #1 active alluvial fan (red) showing unstable areas of high (orange) hazard.

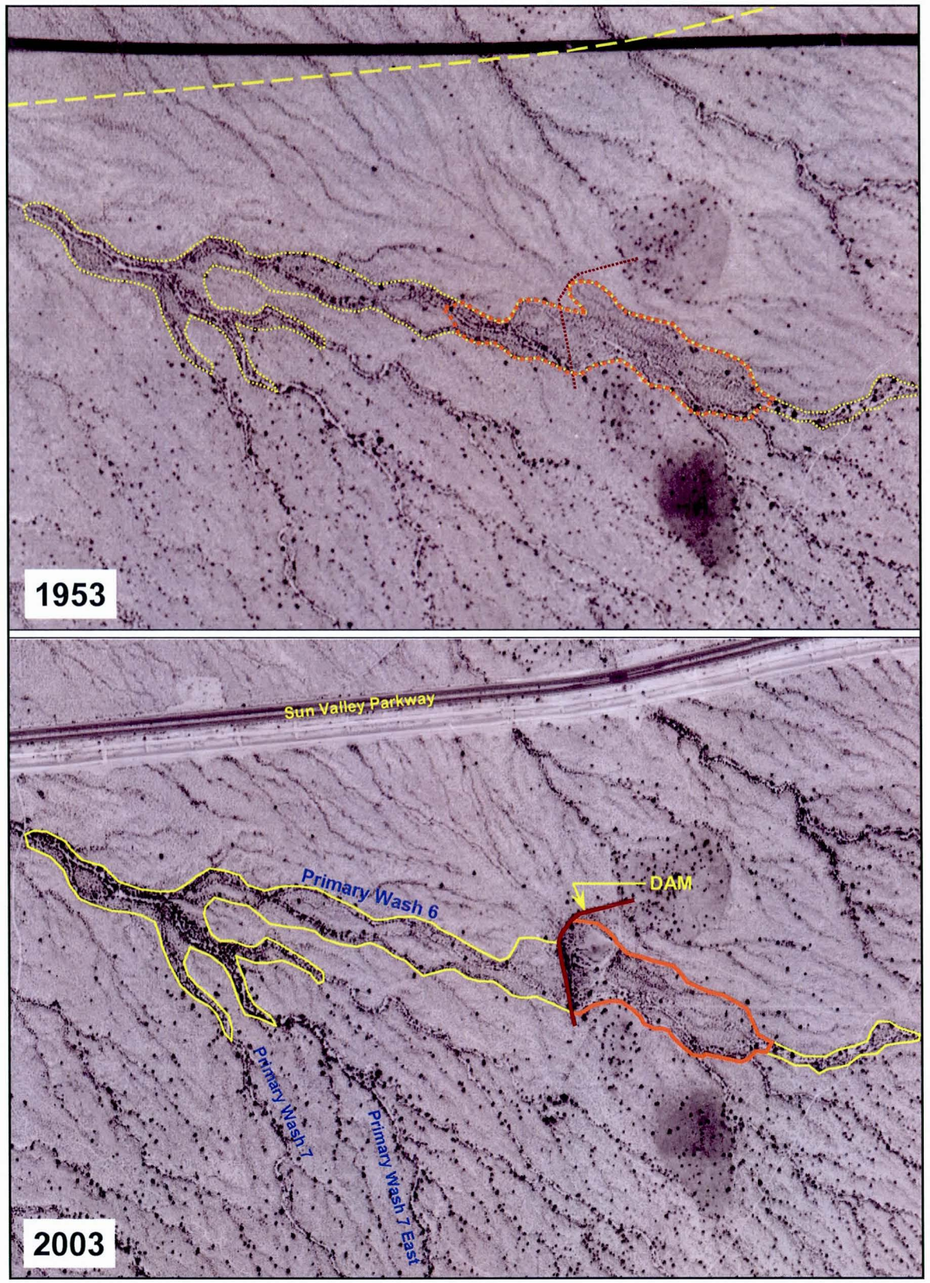


Figure 4.4. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 6, 7, and 7 East showing unstable areas of moderate (yellow) and high (orange) hazard and a dam on Primary Wash 6.

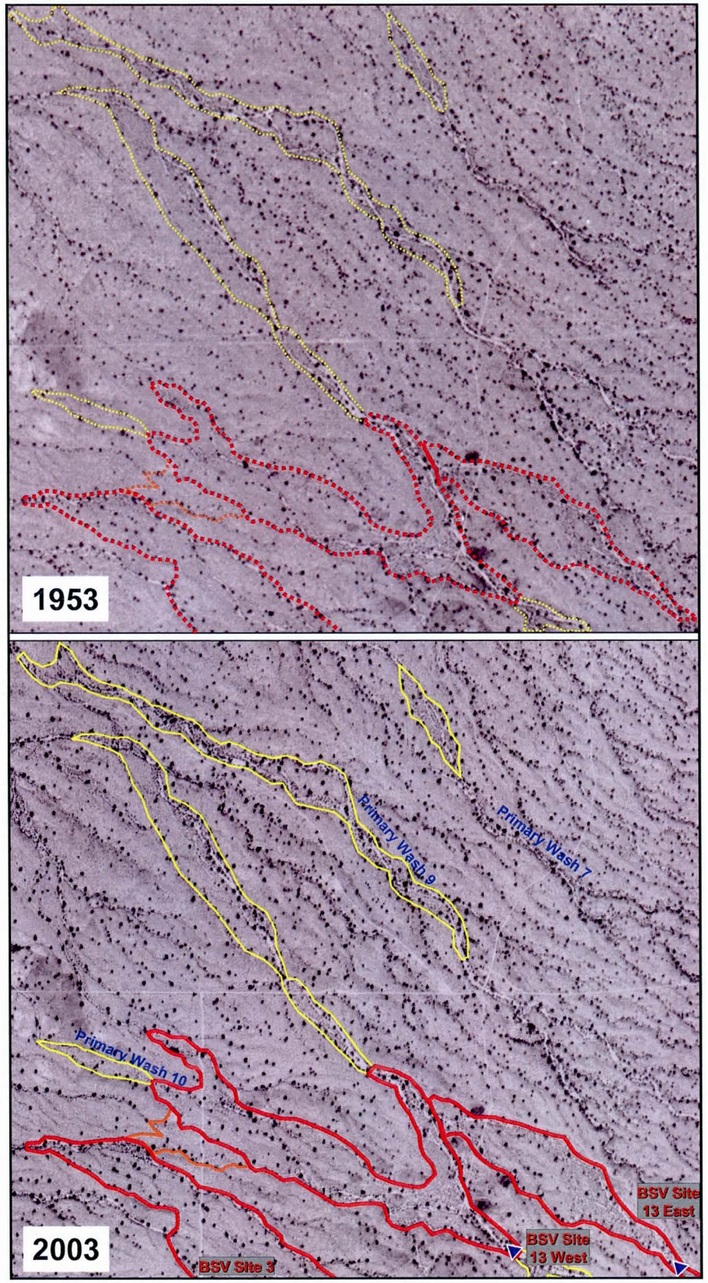


Figure 4.5. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 7, 9, and 10 showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard.

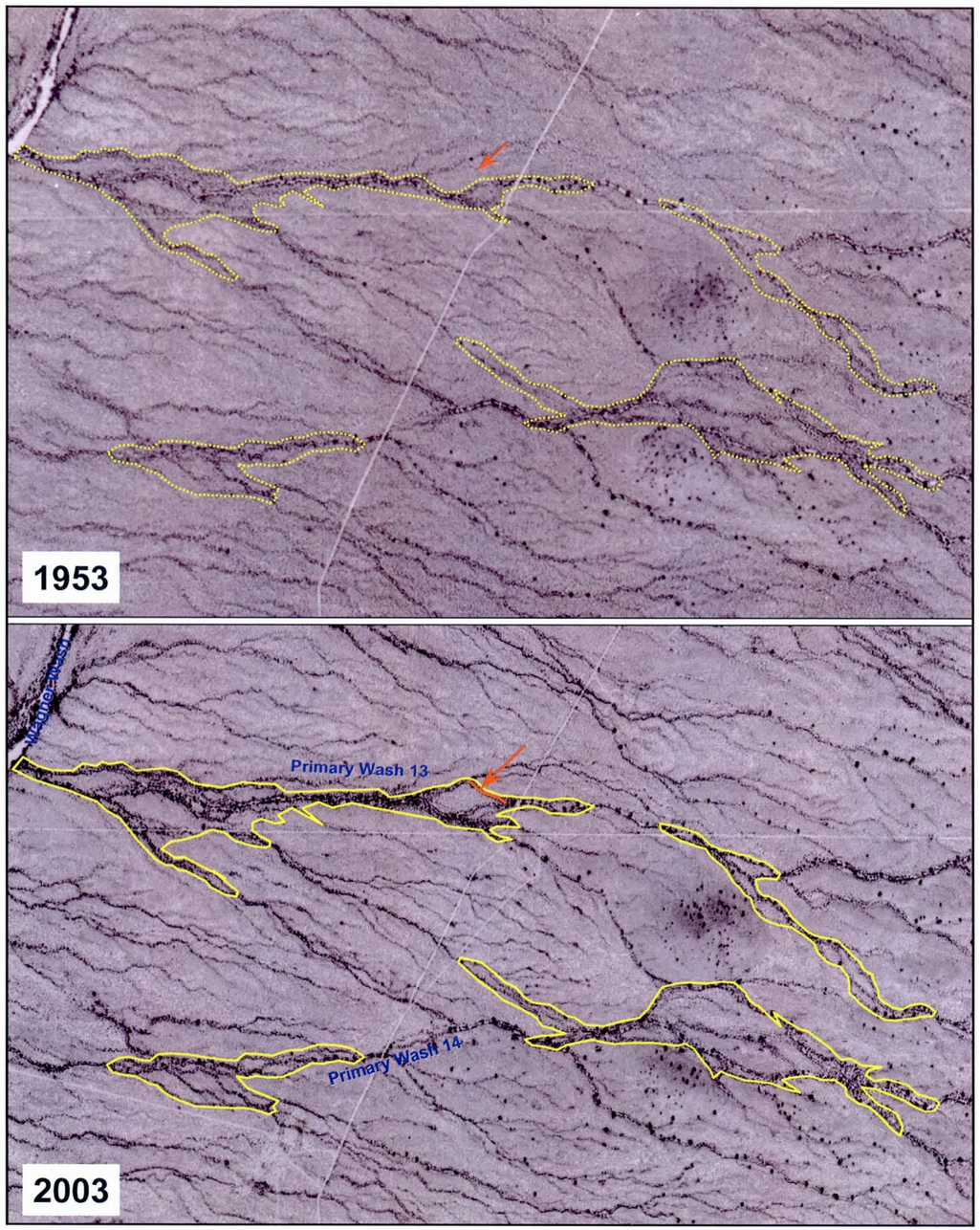


Figure 4.6. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 13 and 14 showing unstable areas of moderate (yellow) hazard.

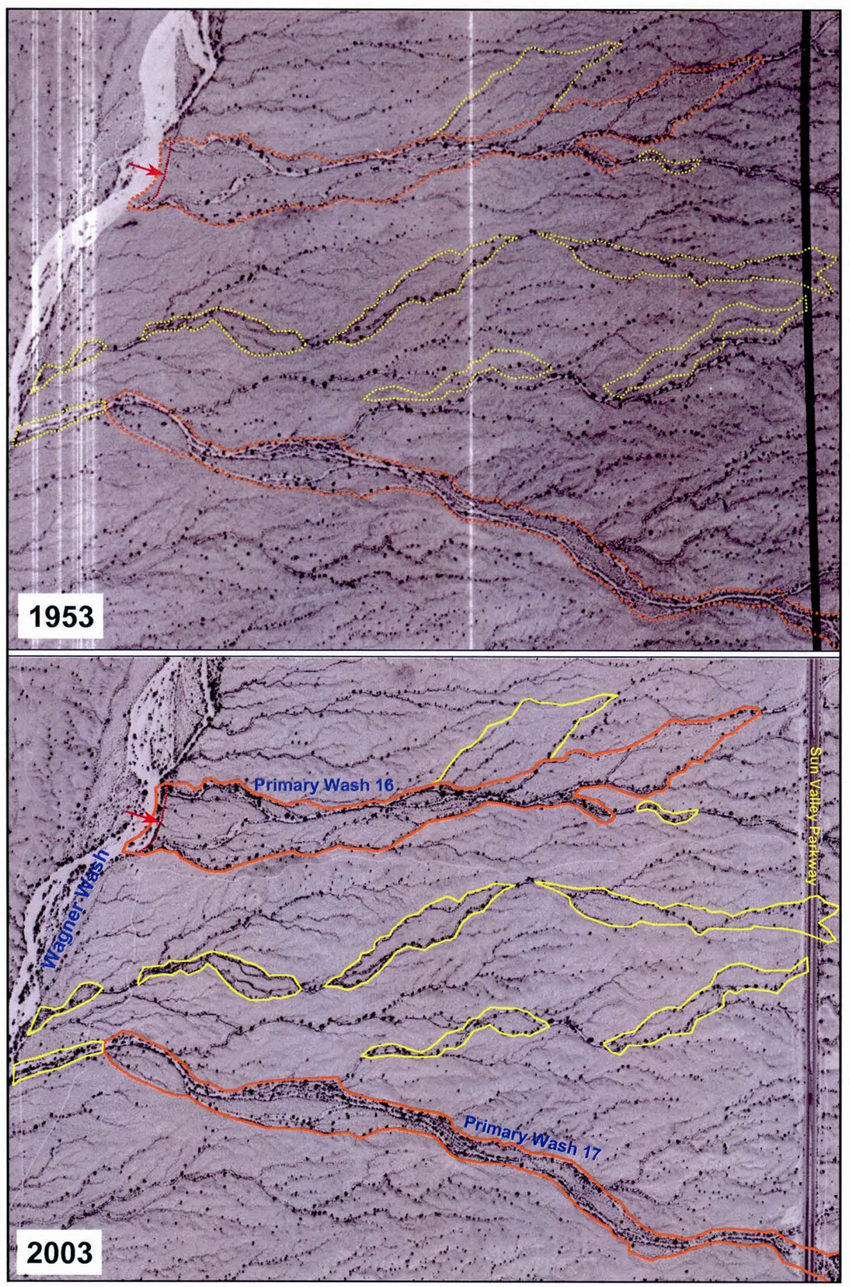


Figure 4.7. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 16 and 17 showing unstable areas of moderate (yellow) and high (orange) hazard.

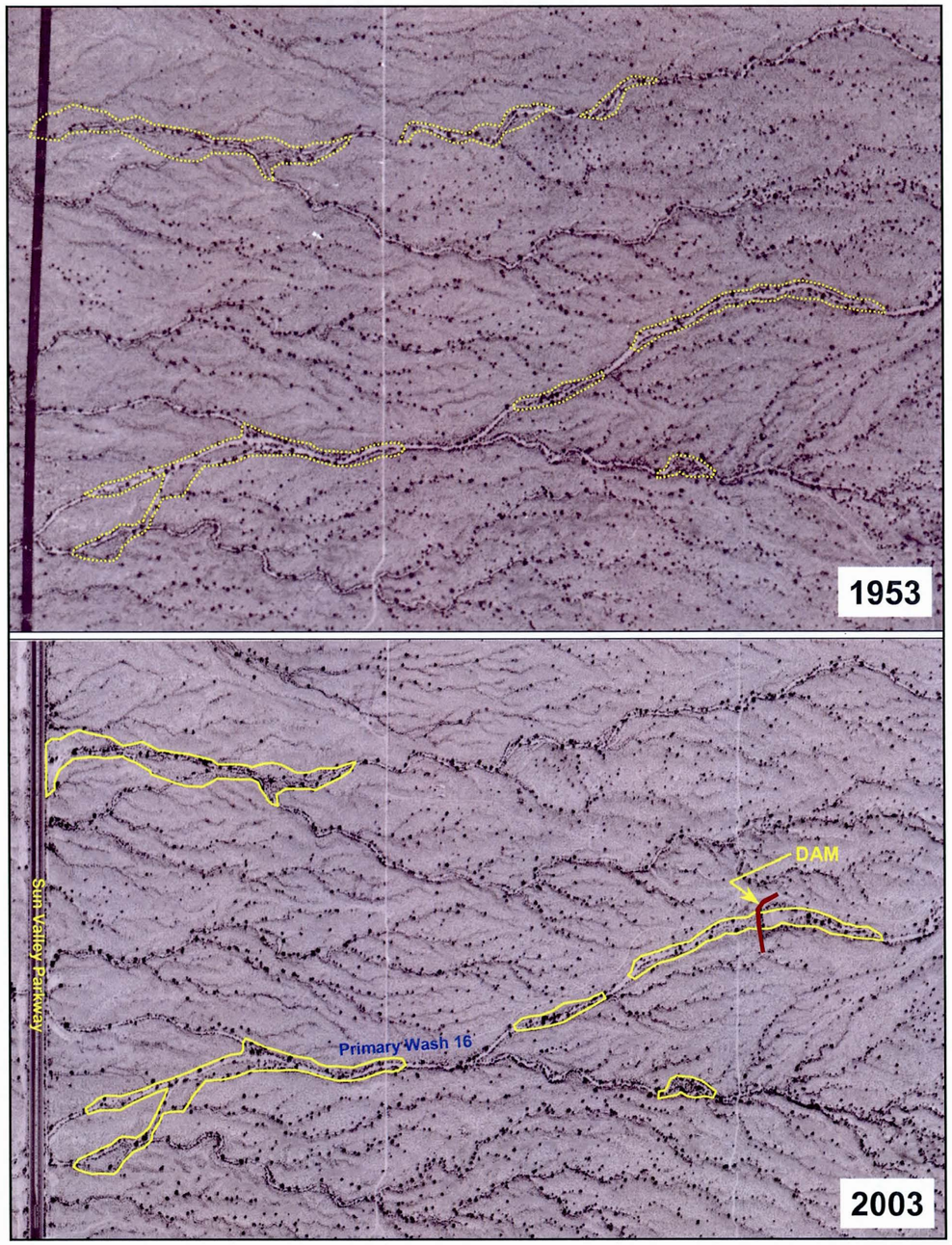


Figure 4.8. Comparison of 1953 and 2003 aerial photos for parts of Primary Wash 16 and surrounding areas showing unstable areas of moderate (yellow) hazard and wing dam.

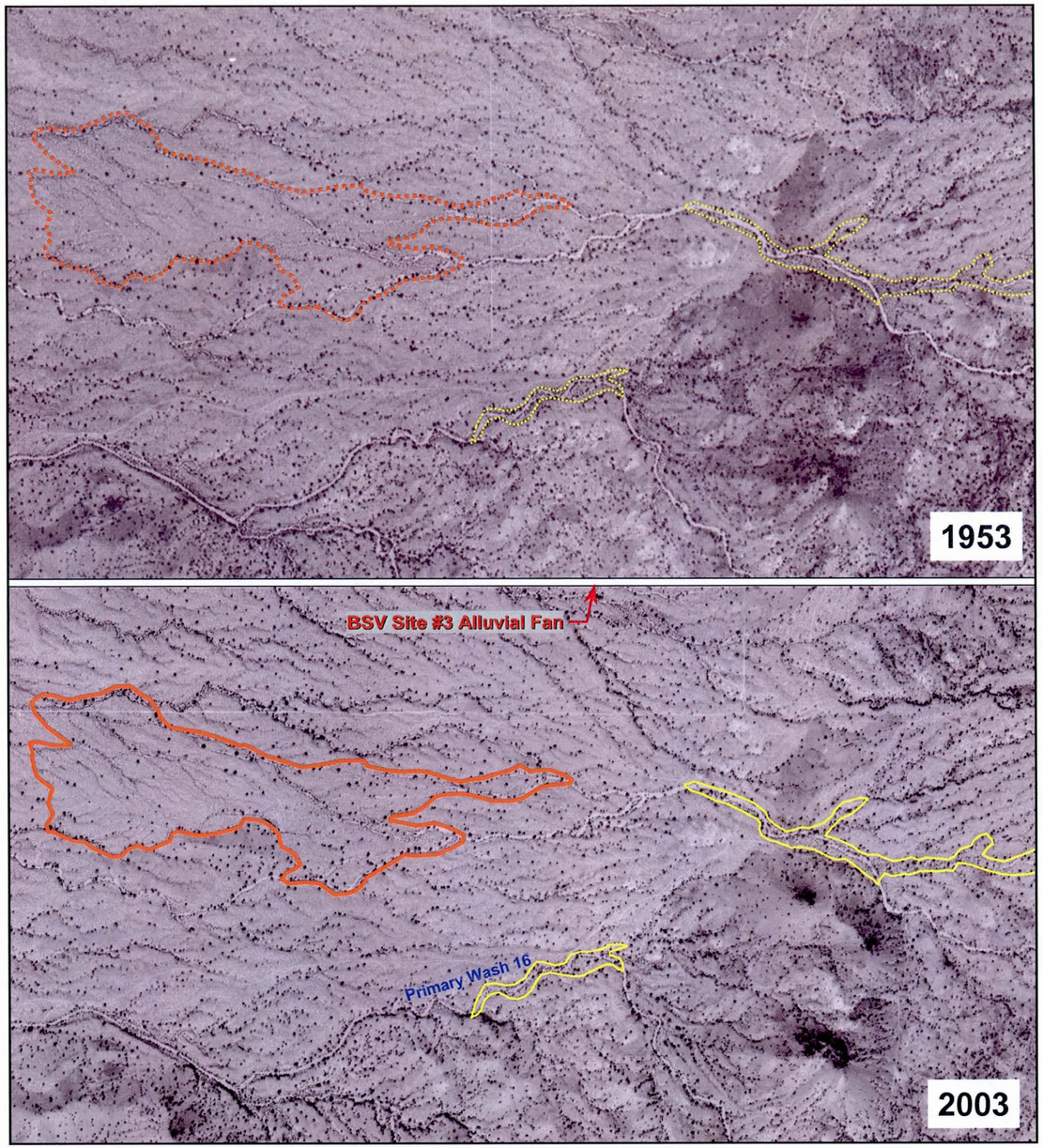


Figure 4.9. Comparison of 1953 and 2003 aerial photos for parts of Primary Wash 16 and surrounding areas showing unstable areas of moderate (yellow) and high (orange) hazard.

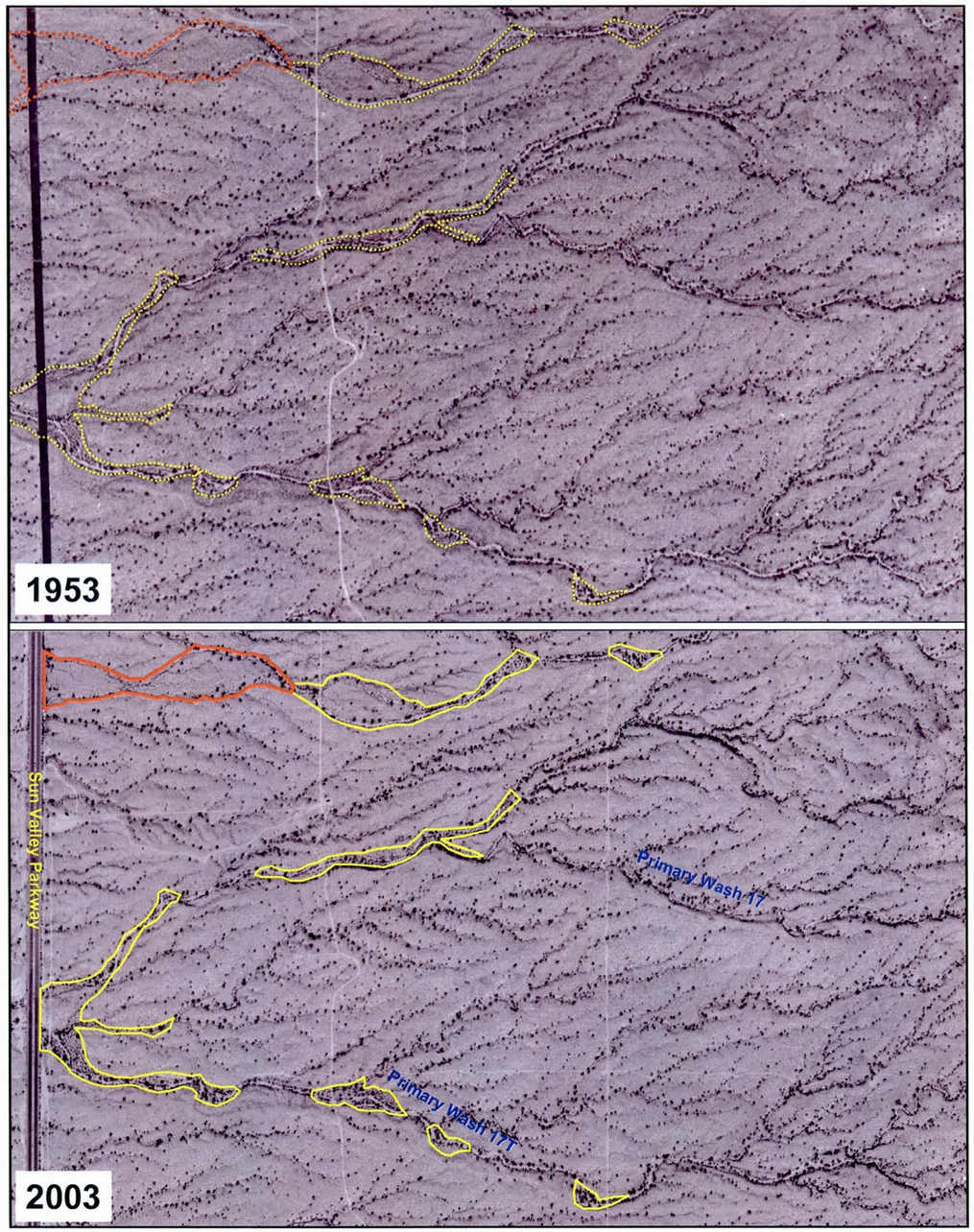


Figure 4.10. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 17 and 17T and surrounding areas showing unstable areas of moderate (yellow) and high (orange) hazard.

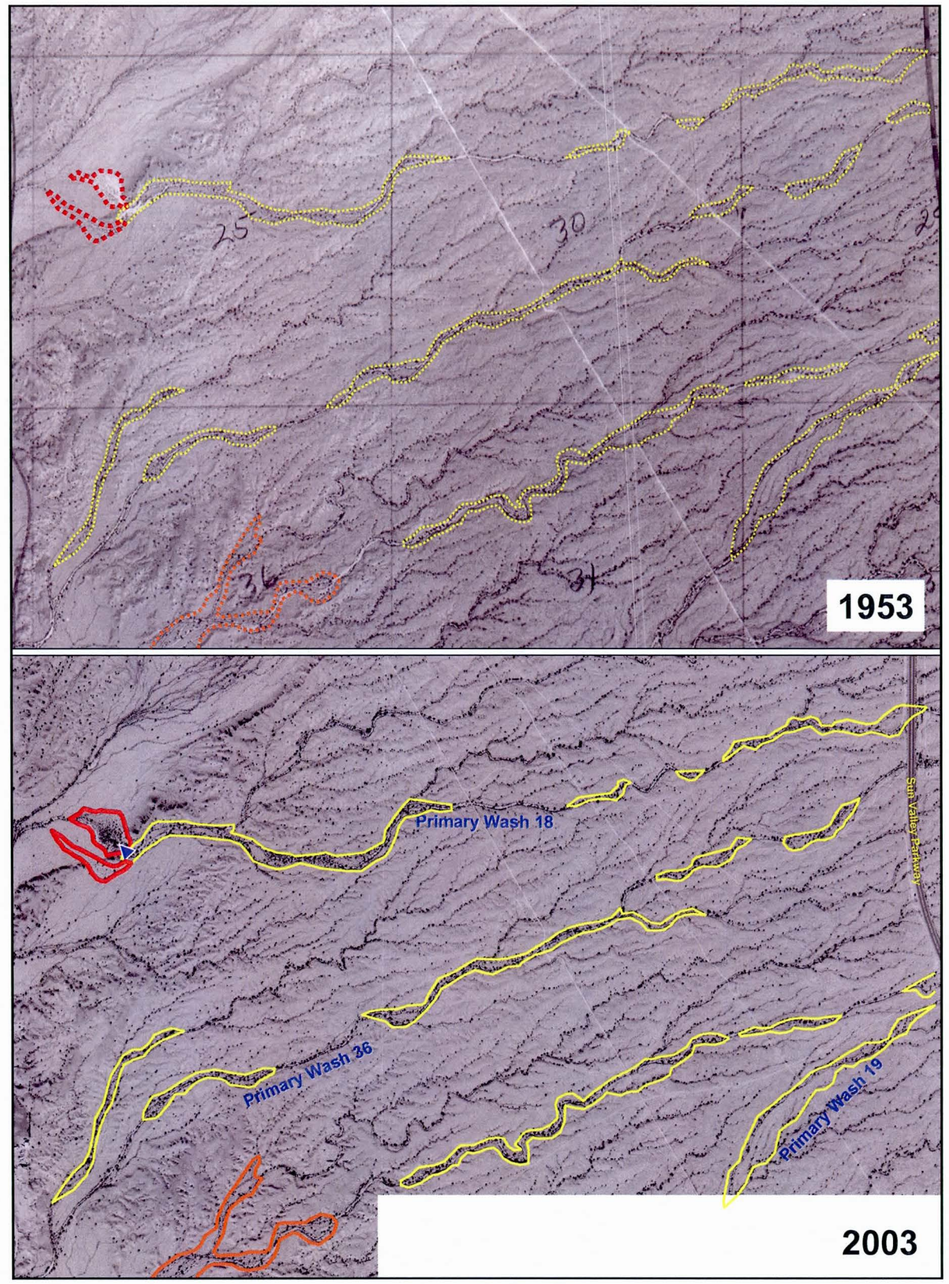


Figure 4.11. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 18 and 19 and surrounding areas showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard.

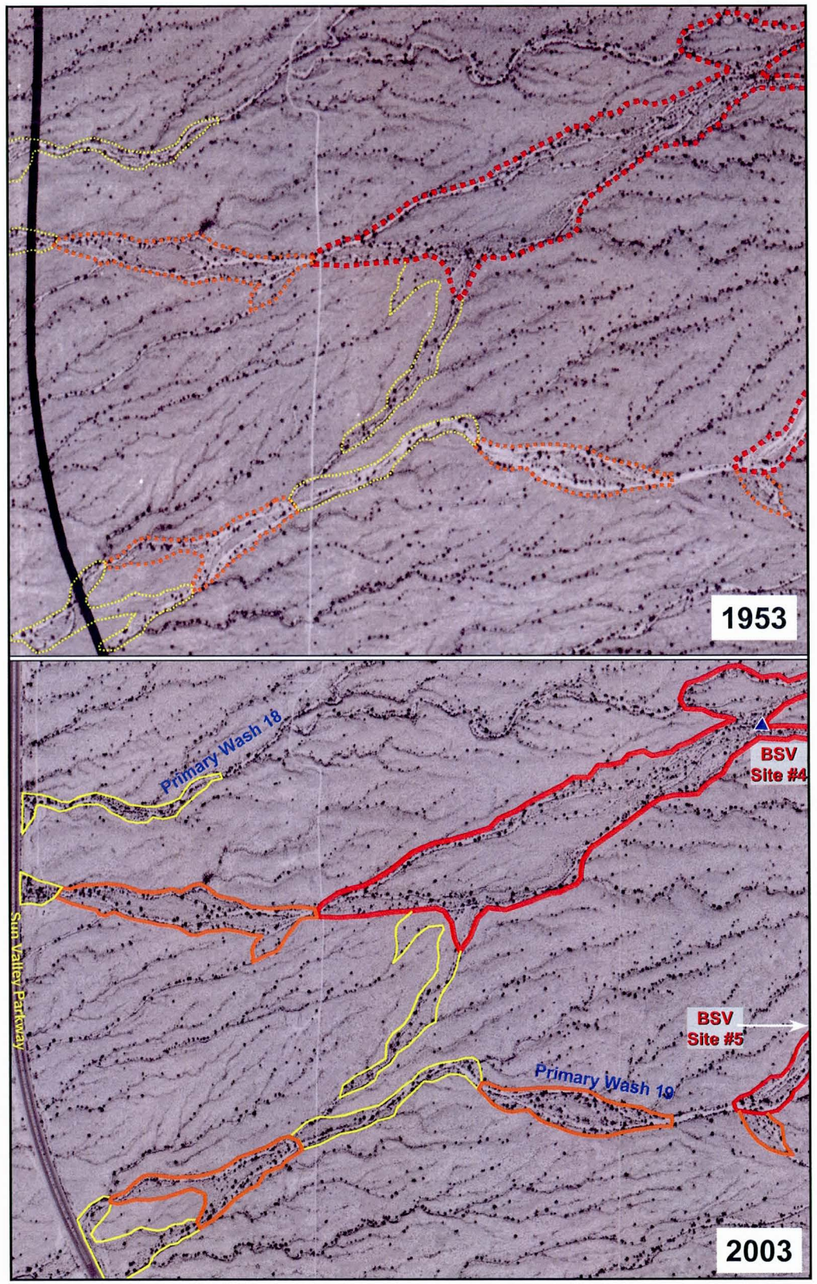


Figure 4.12. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 18 and 19 and surrounding areas showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard.

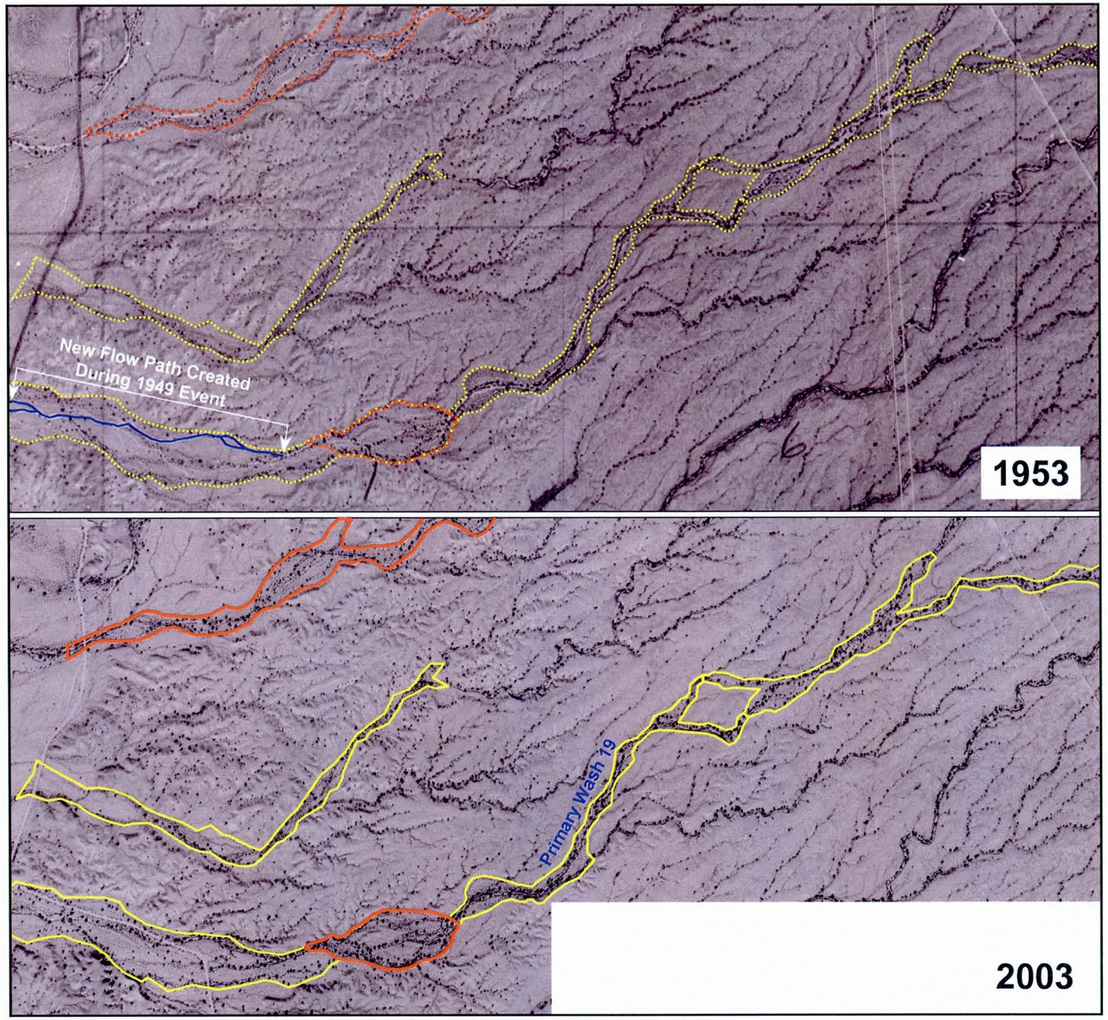


Figure 4.13. Comparison of 1953 and 2003 aerial photos for parts of Primary Wash 19 and surrounding areas showing unstable areas of moderate (yellow) and high (orange) hazard.

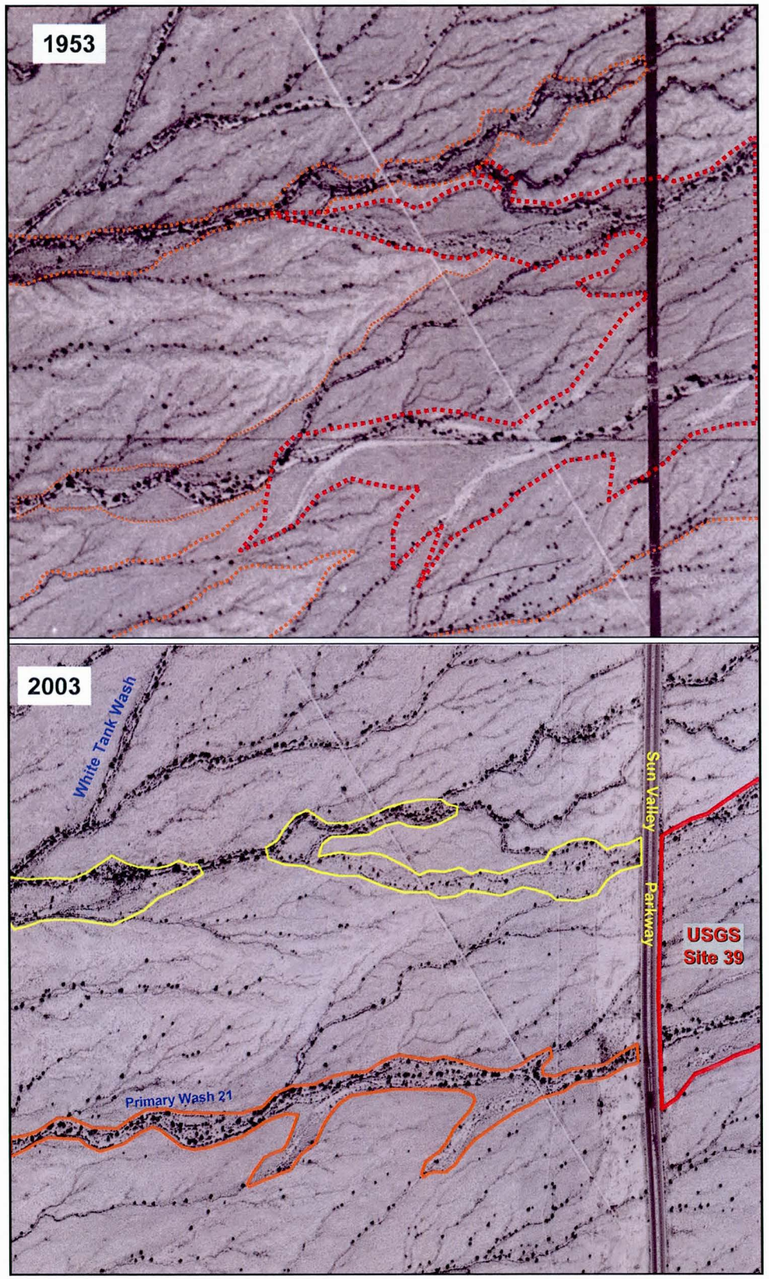


Figure 4.14. Comparison of 1953 and 2003 aerial photos for parts of Primary Wash 21 and surrounding areas showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard.

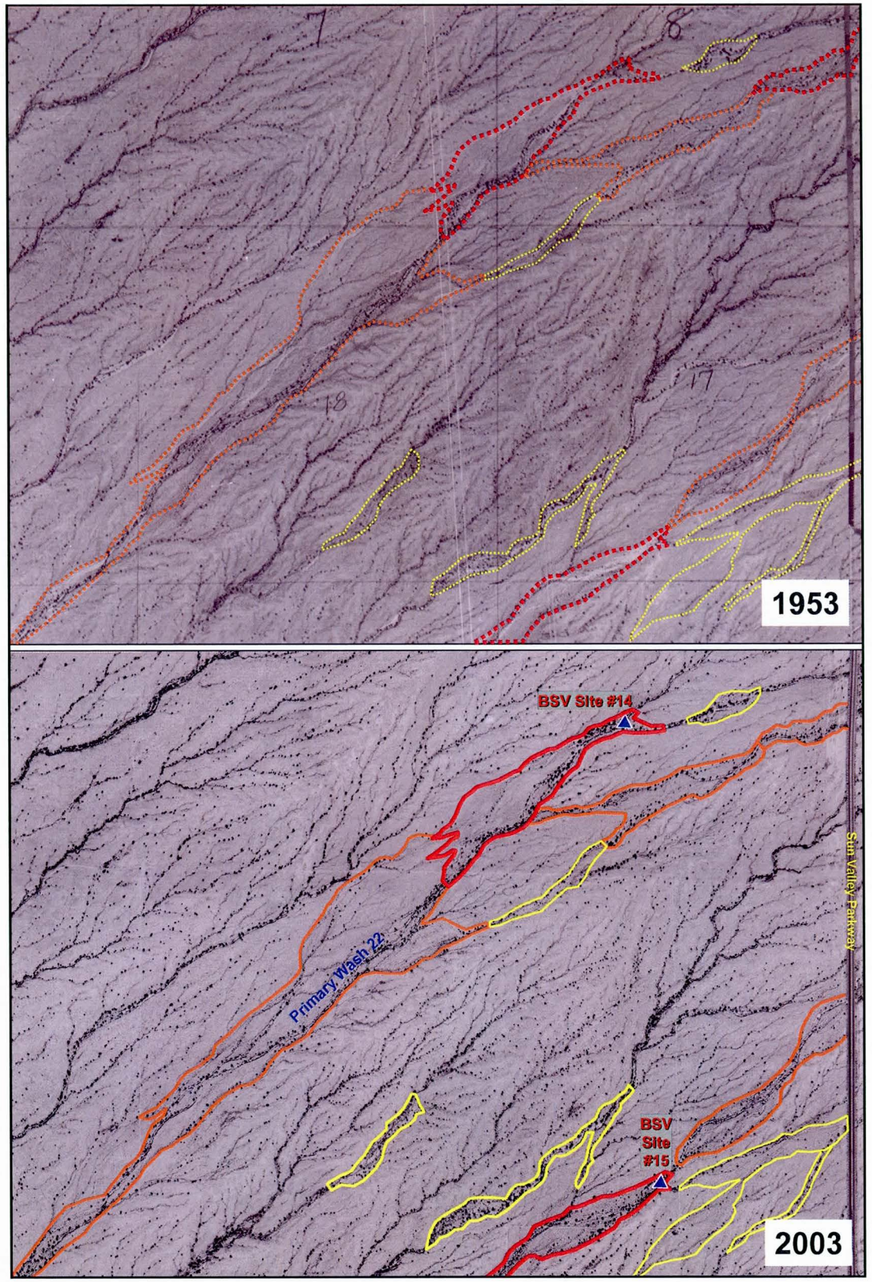


Figure 4.15. Comparison of 1953 and 2003 aerial photos for parts of Primary Wash 22 and surrounding areas showing unstable areas of moderate (yellow), high (orange), and extreme (red) hazard.

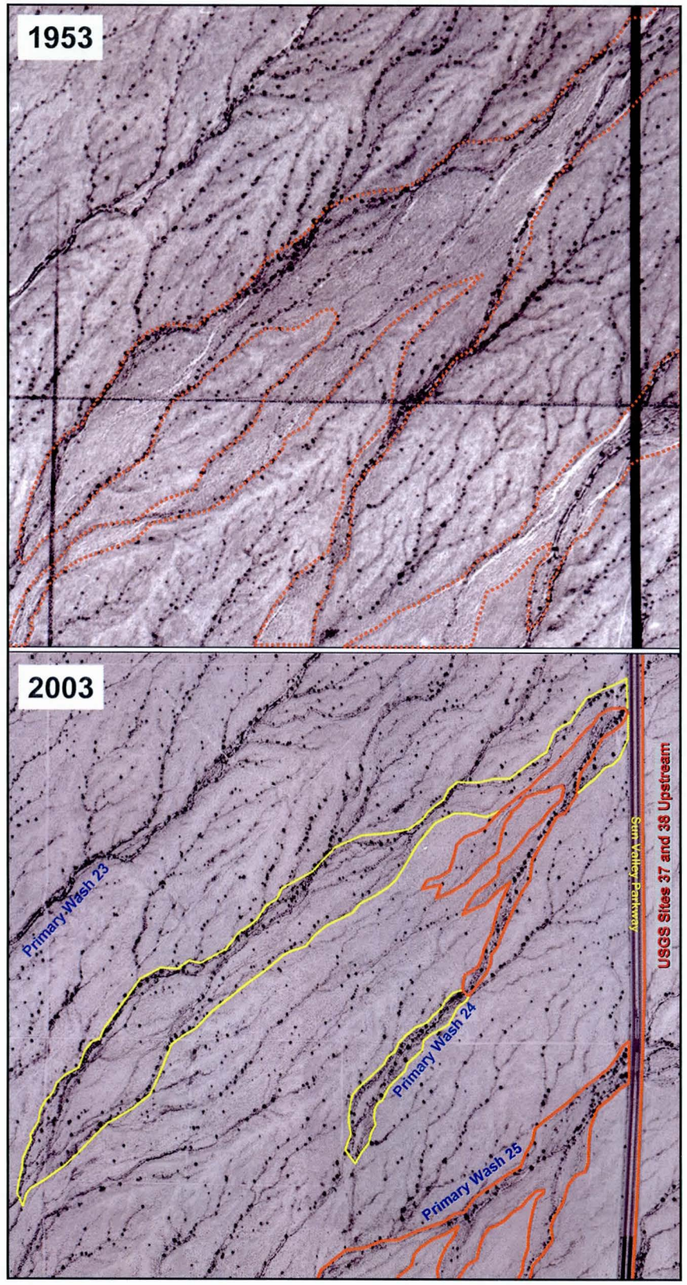


Figure 4.16. Comparison of 1953 and 2003 aerial photos for parts of Primary Washes 23, 24 and 25 and surrounding areas showing unstable areas of moderate (yellow) and high (orange) hazard.

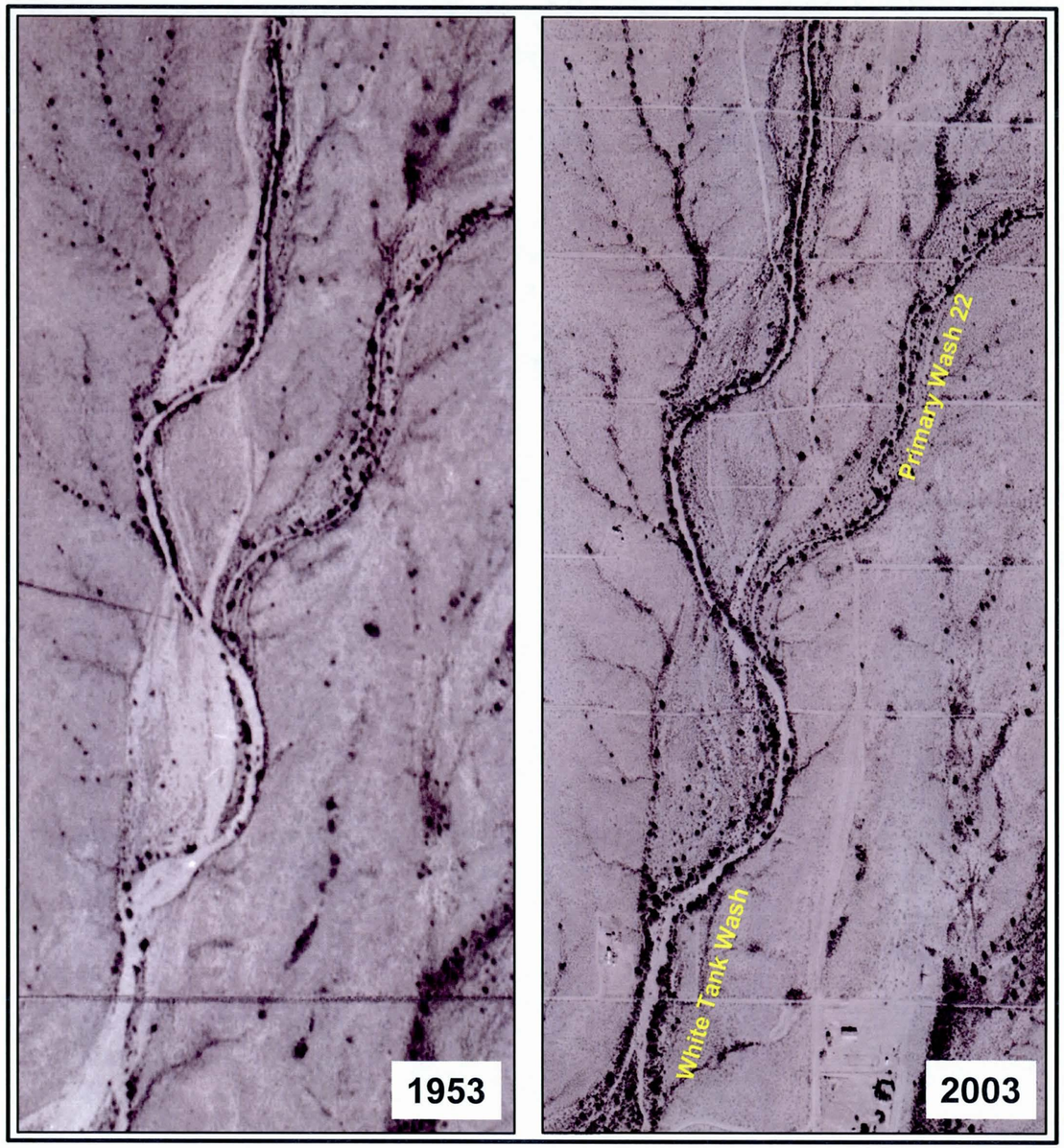


Figure 4.17. Comparison of 1953 and 2003 aerial photos for White Tank Wash (Primary Wash 20) at the confluence with Primary Wash 22.

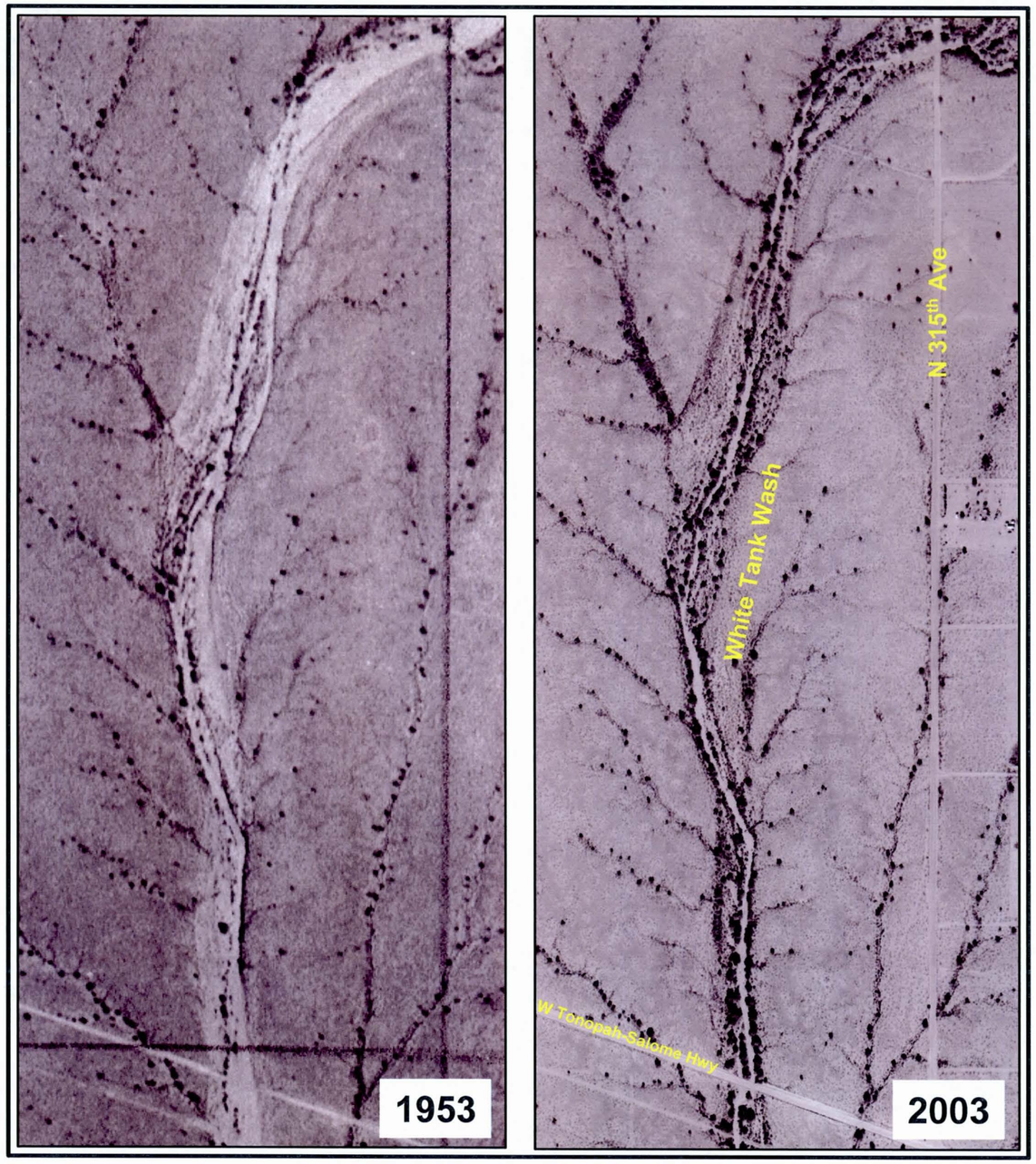


Figure 4.18. Comparison of 1953 and 2003 aerial photos for White Tank Wash (Primary Wash 20) upstream of the West Tonopah-Salome Highway.

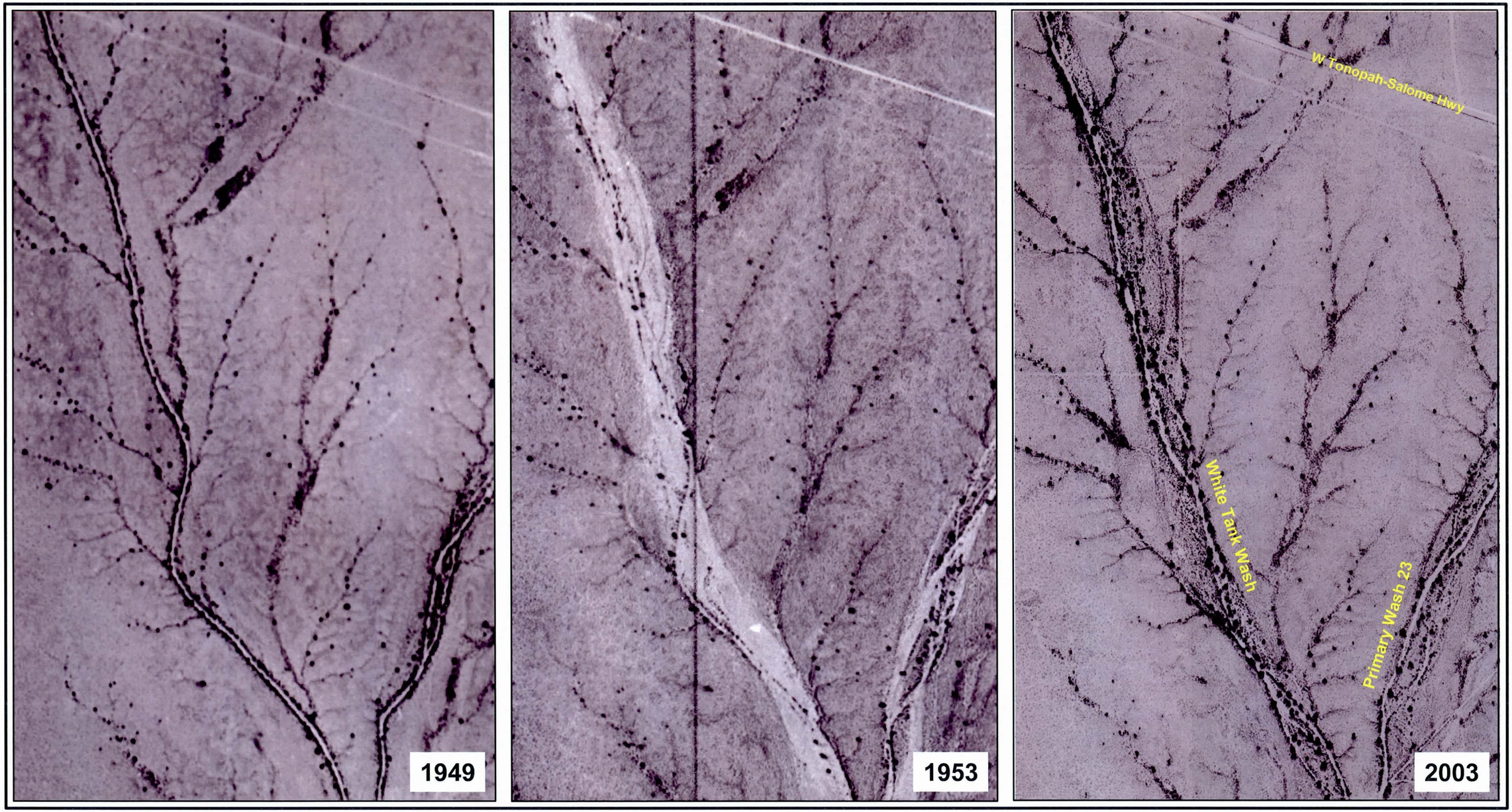


Figure 4.19. Comparison of 1949, 1953, and 2003 aerial photos for White Tank Wash (Primary Wash 20) downstream of the West Tonopah-Salome Highway.

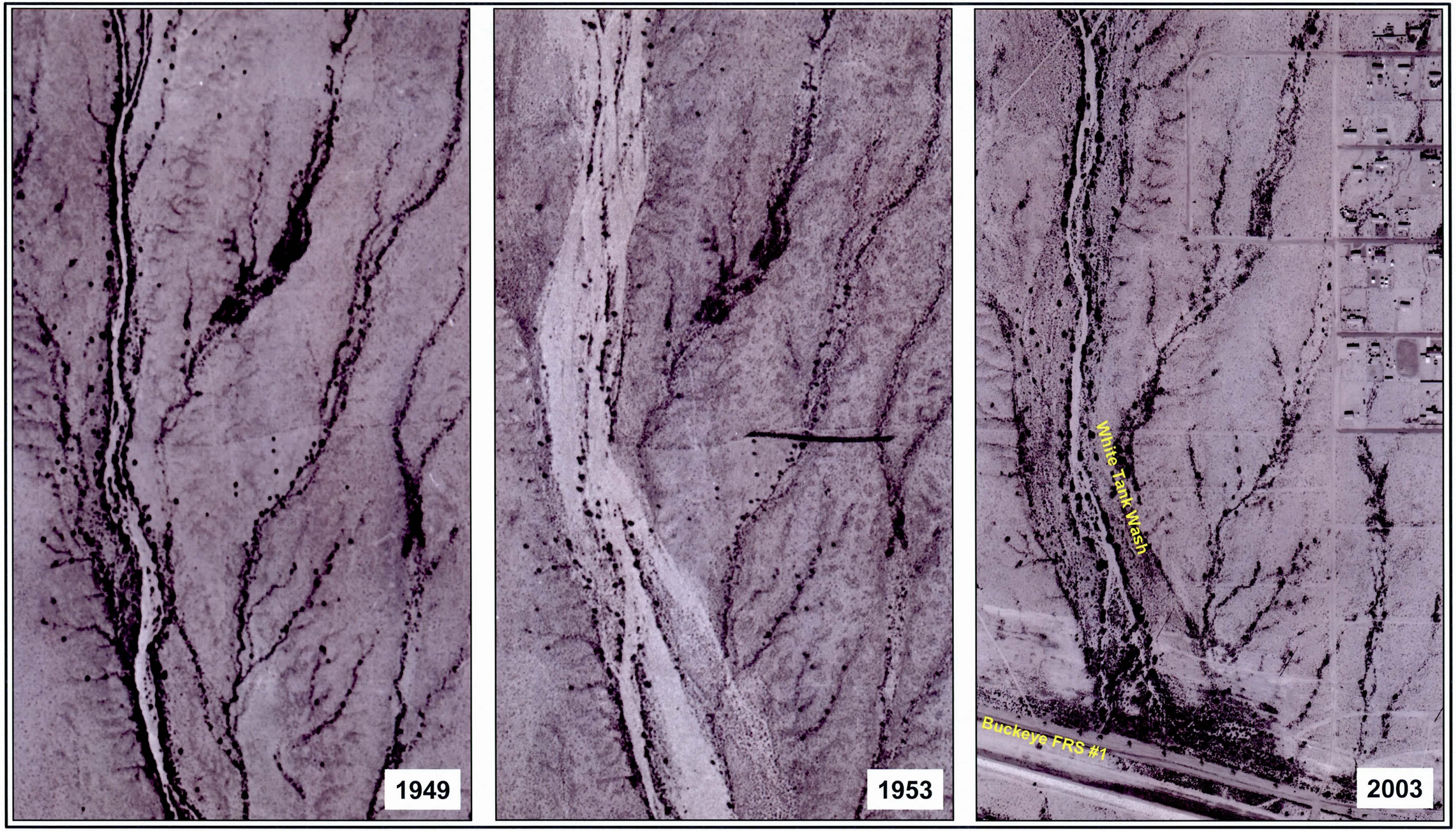


Figure 4.20. Comparison of 1949, 1953, and 2003 aerial photos for White Tank Wash (Primary Wash 20) upstream of Buckeye FRS #1.

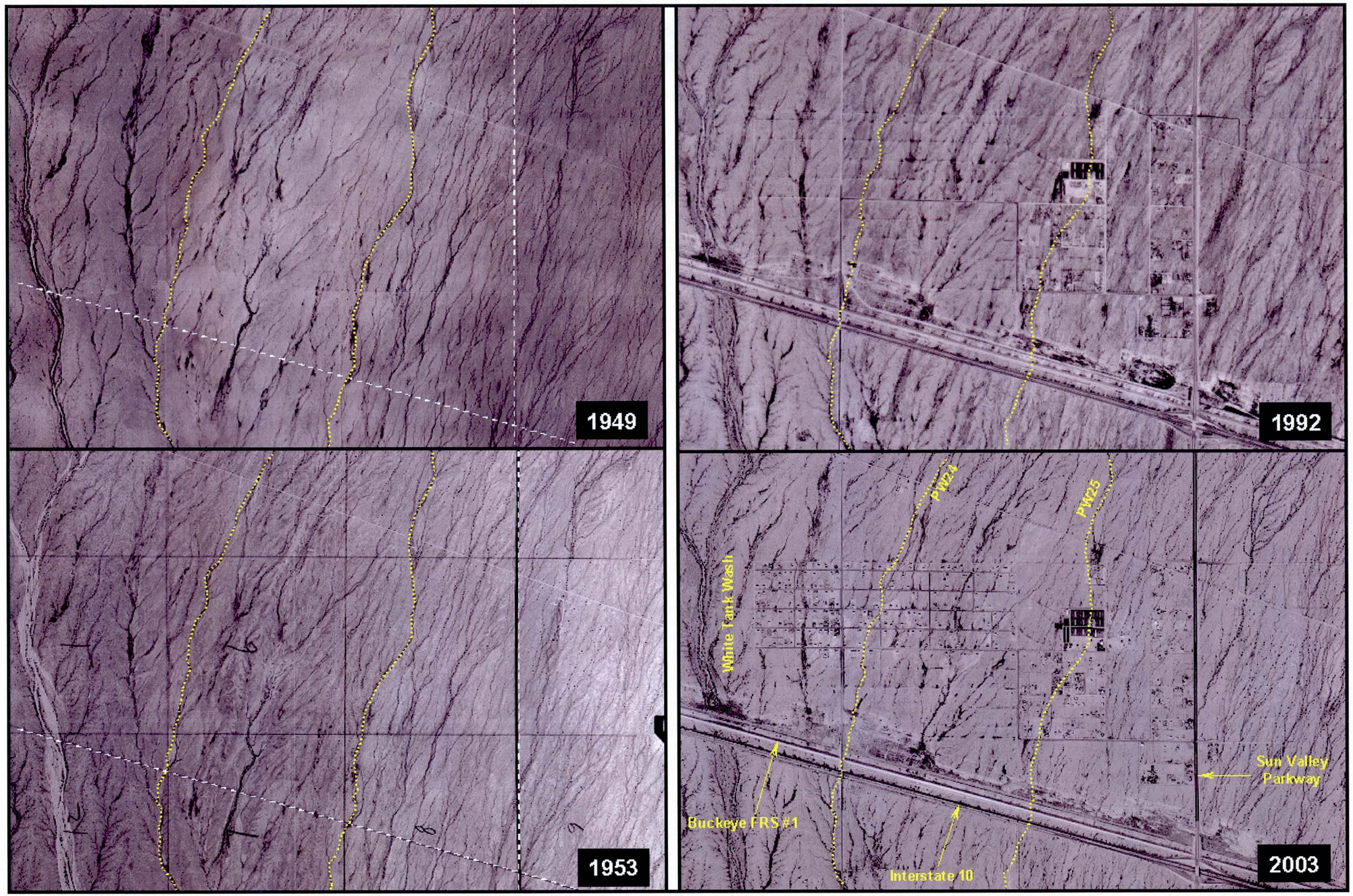


Figure 4.21. Comparison of 1949, 1953, 1992, and 2003 aerial photos for the area bound by White Tank Wash (Primary Wash 20), Sun Valley Parkway, the West Tonopah-Salome Highway, and Buckeye FRS #1.

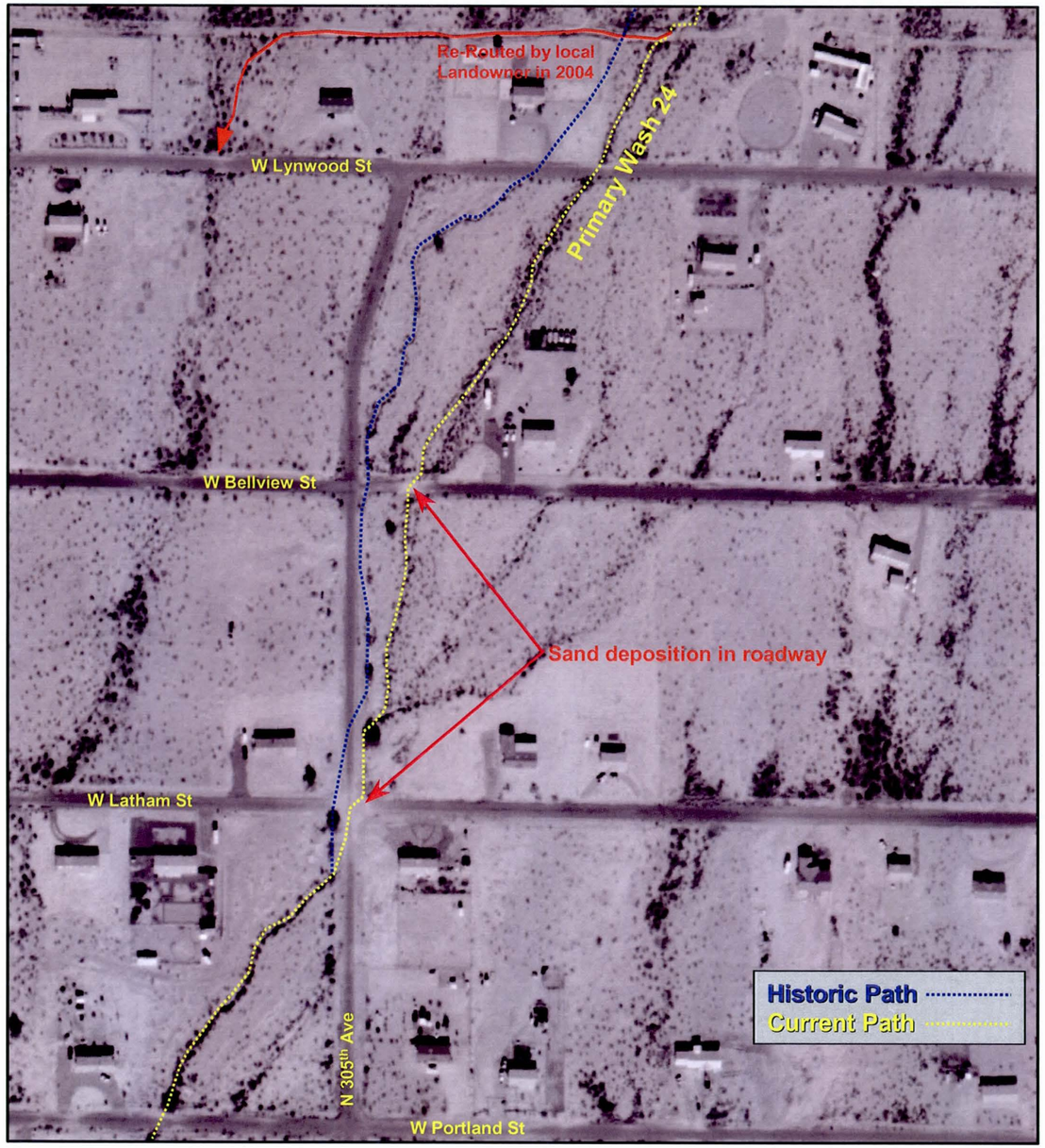


Figure 4.22. Magnified 2003 aerial photo of the development along Primary Wash 24 shown in Figure 4.21.

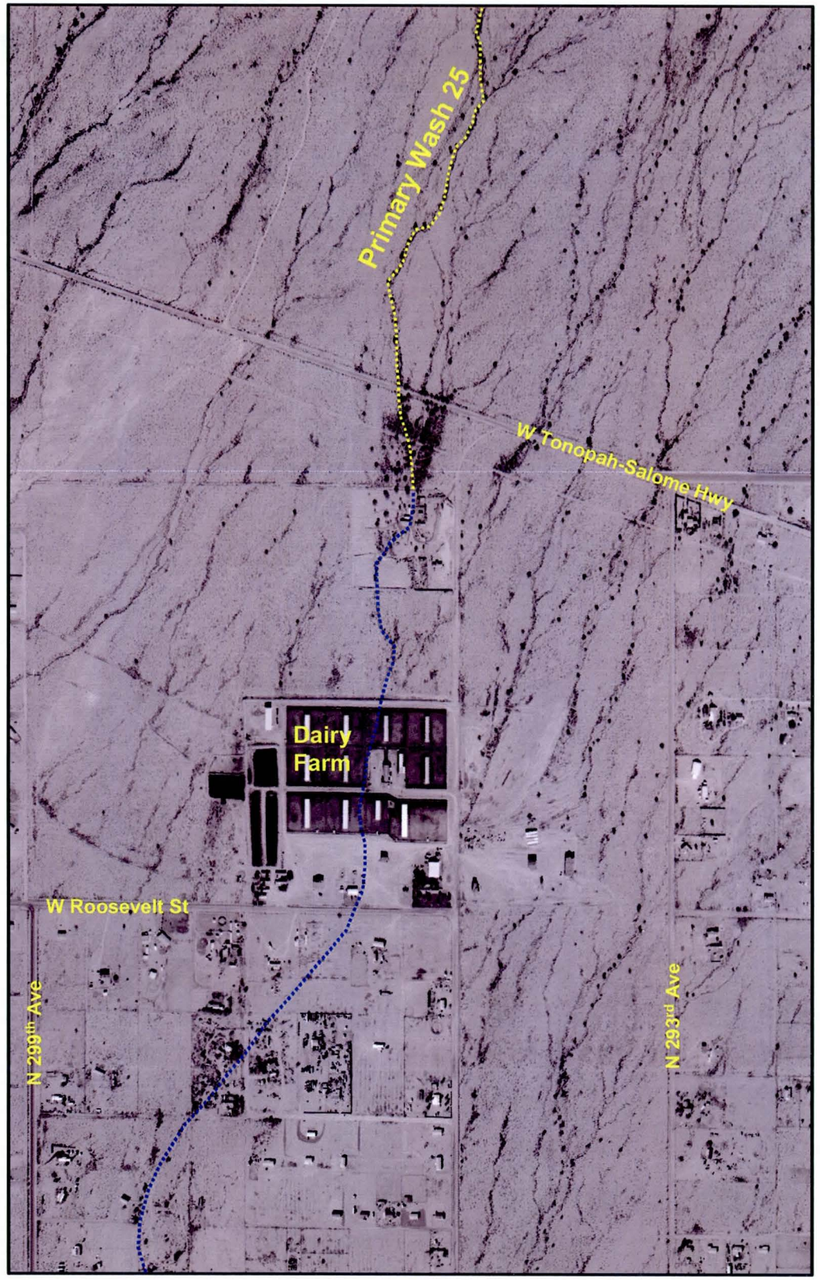


Figure 4.23. Magnified 2003 aerial photo of the development and dairy farm along Primary Wash 25 as shown in Figure 4.21.

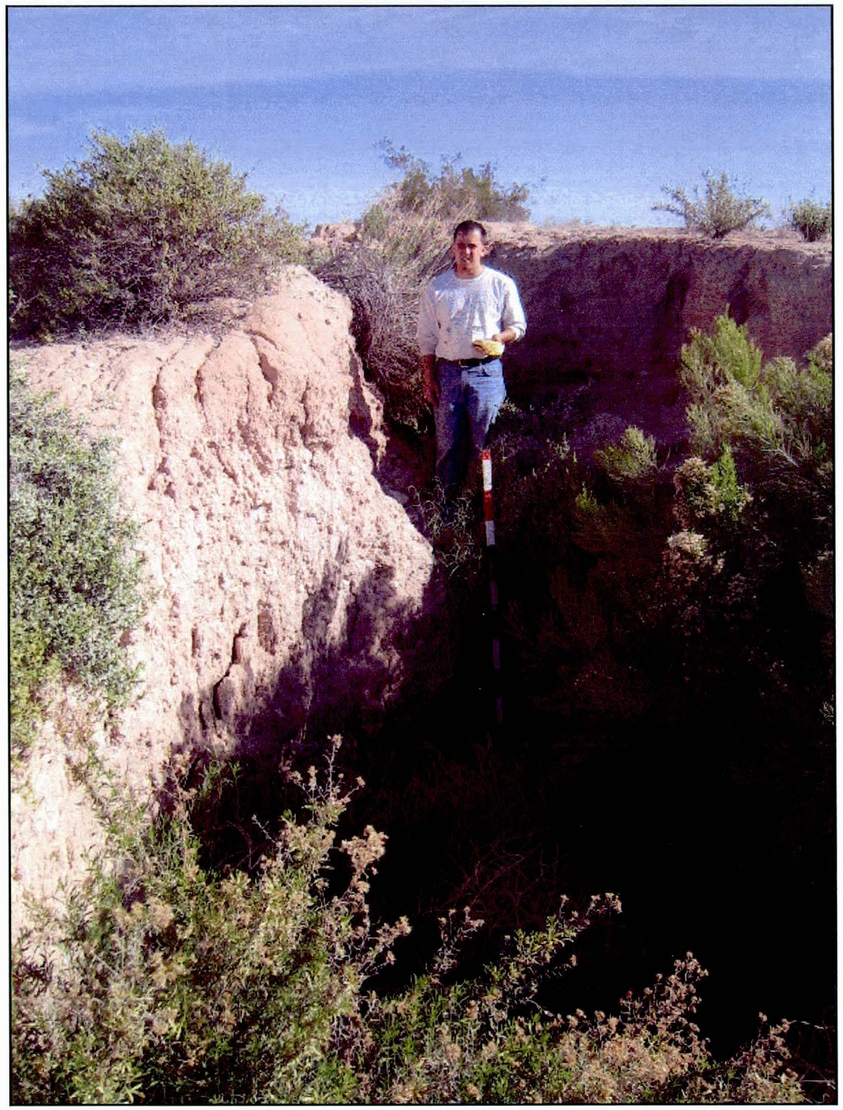


Figure 4.24. View looking upstream showing a 3-foot high headcut at the confluence of Primary Wash 25 with Buckeye FRS #1. Note the 3.5-foot deep incised channel upstream.

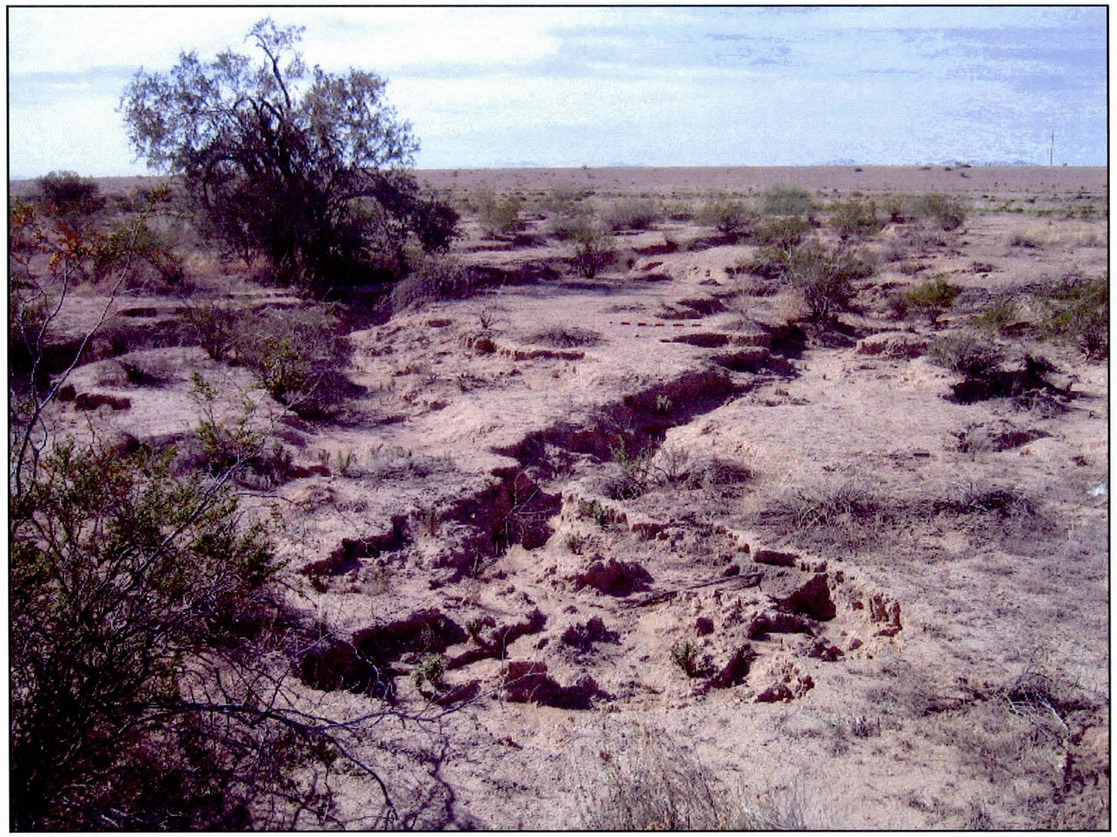


Figure 4.25. View looking downstream on Primary Wash 25 toward Buckeye FRS #1 showing the extensive gullying upstream of the incised channel reach of the wash.

Figure 4.26. View looking upstream showing eroding banks on Primary Wash #3.

Figure 4.27. View upstream showing high cutbank in relict fan deposits of right valley wall on Primary Wash #21.

Figure 4.28. View looking upstream showing bank undercutting and failure associated with channel incision on Primary Wash #9.

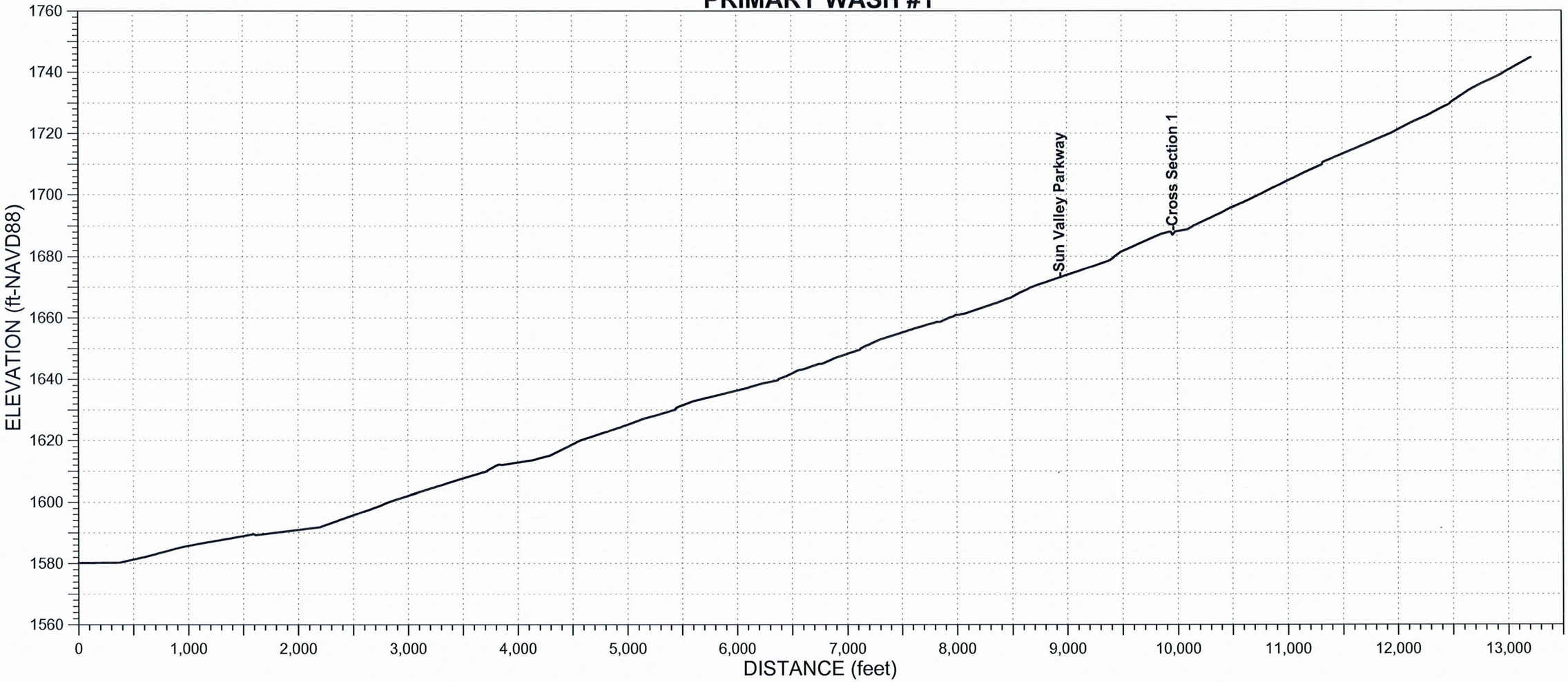
Figure 4.29. View looking downstream showing undercut bank in caliche on left bank of Primary Wash #23 due to abrupt change in flow path.

Figure 4.30. View looking upstream on Primary Wash #25 showing high, undercut left bank in relict fan deposits due to flow deflection around sediment and debris deposits (bar) in channel along right bank. Note high, steep slip face on the cobble-boulder bar on the left side of photo. Bar is forcing flow into left bank causing bank to be undercut and inducing mass failure of the bank material. Note the large blocks of failed bank material at the toe of the left bank.

APPENDIX B

(Profiles, Cross Section Field Sheets, and Field Photos)

PRIMARY WASH #1



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW1	1	418	March 17, 2004

North: 967688.1 m
East: 489123.1 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		vertical	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		vertical	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.	X	
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	1 ft	1+ ft
Right Bank	1 ft	1+ ft
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

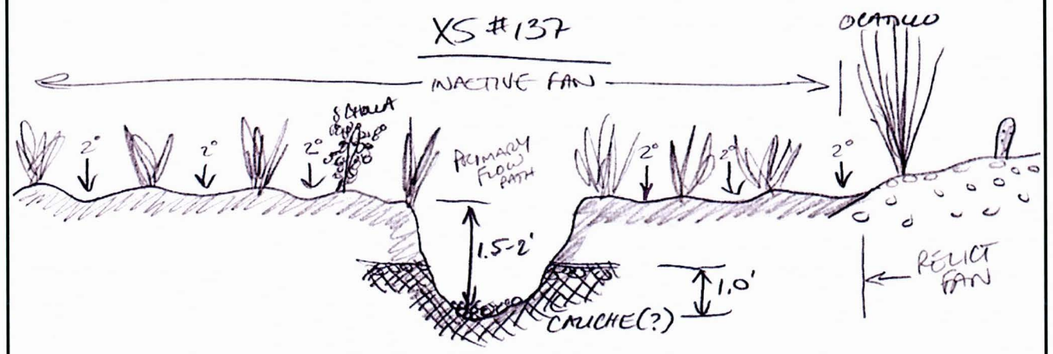
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

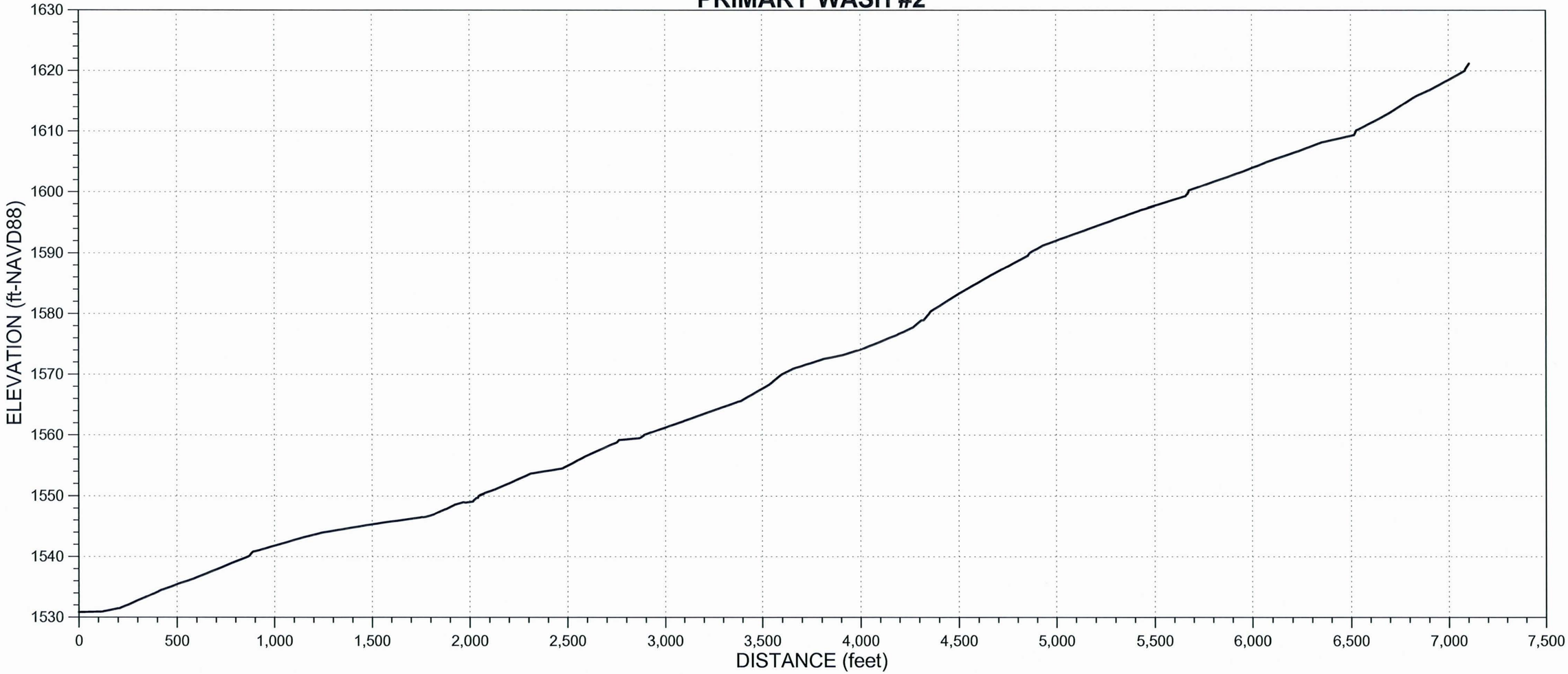
TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #137



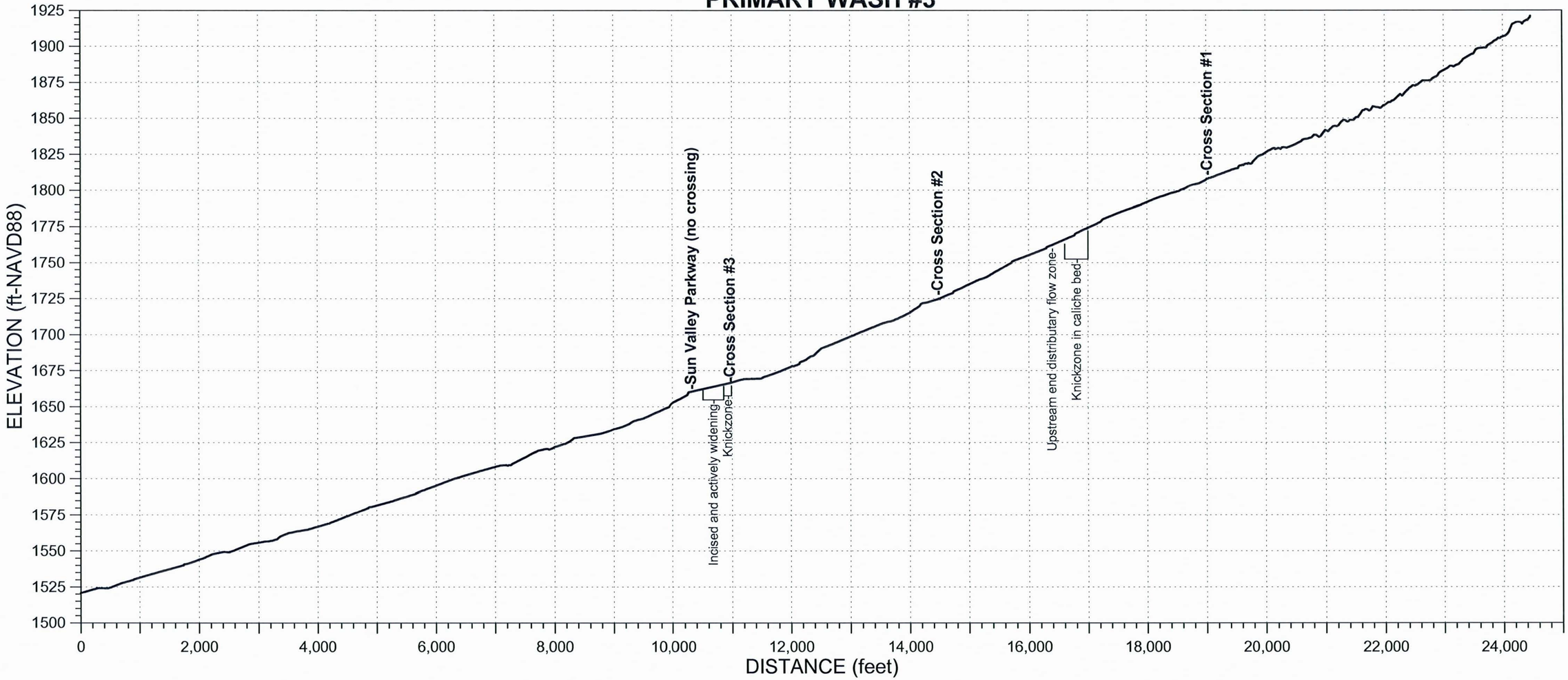
Notes:

AYRES ASSOCIATES

PRIMARY WASH #2



PRIMARY WASH #3



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW3	1	411	March 17, 2004

North: 961139.6 m
East: 489519.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway	X	Single	X	Left Bank	
Channel	X	Multiple		Right Bank	

H:V	Height	BED MATERIAL	
<1:1	6-10 ft	Sand X	Gravel X
3:1	4 ft	Cobble	Bldrs

VEGETATION		INSET F/P
In-channel		
Marginal	X	

TERRACES (height-ft)		
Left Bank		
Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

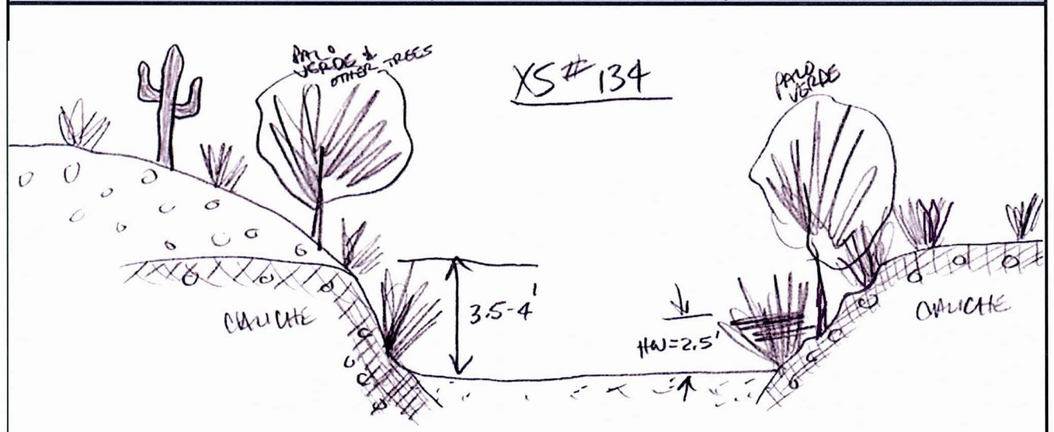
CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	full bank	
Right Bank	full bank	
Channel	DS	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	2-2.5 ft	2-2.5 ft	3 ft

PHOTOS & DESCRIPTION:
P10/20 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE: Caliche Present: Dimensions:			HEADCUT: Caliche Present: Dimensions:		
Spotty						
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #134



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW3	2	415	March 17, 2004

North: 965123.1 m
East: 487662.7 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway		Single		Left Bank	
Channel		Multiple	X	Right Bank	

H:V	Height	BED MATERIAL	
1:1	1 ft	Sand X	Gravel X
1:1	1 ft	Cobble	Bldrs

VEGETATION		INSET F/P
In-channel		
Marginal	X	

TERRACES (height-ft)		
Left Bank		
Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

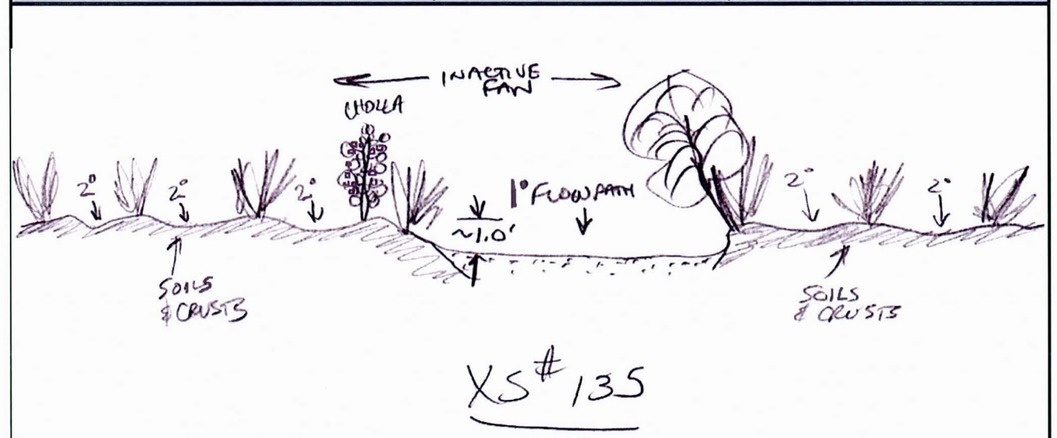
CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P10/19 - View downstream, note highwater debris in snag

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE: Caliche Present: Dimensions:			HEADCUT: Caliche Present: Dimensions:		
Spotty						
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #135



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW3	3	416	March 17, 2004

North: 968142.3 m
East: 486424.8 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	vertical	3.5-4 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X	vertical	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel	in bed	

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

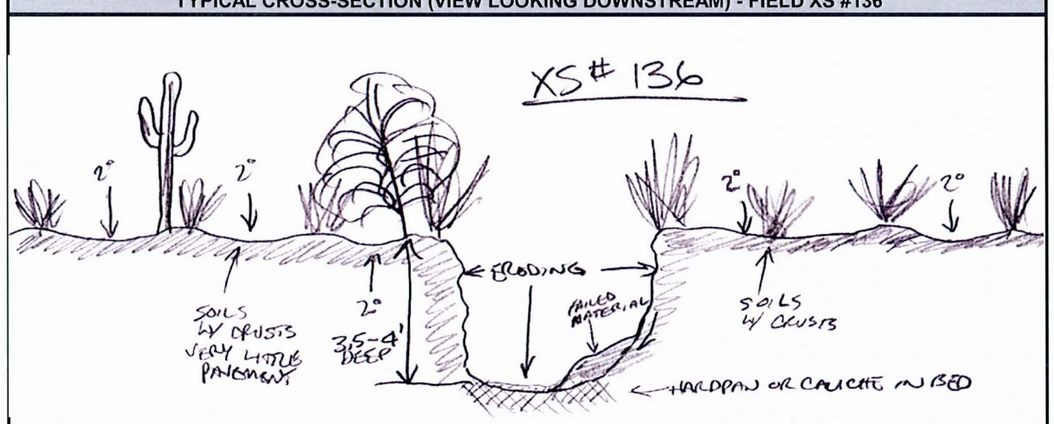
CRYPTO-BIOTIC CRUST (floodway)

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE: At Location	HEADCUT:
Absent	Caliche Present: YES
Spotty	Dimensions: This XS is at US end of incising reach to DS road drain
Extensive	

Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #136

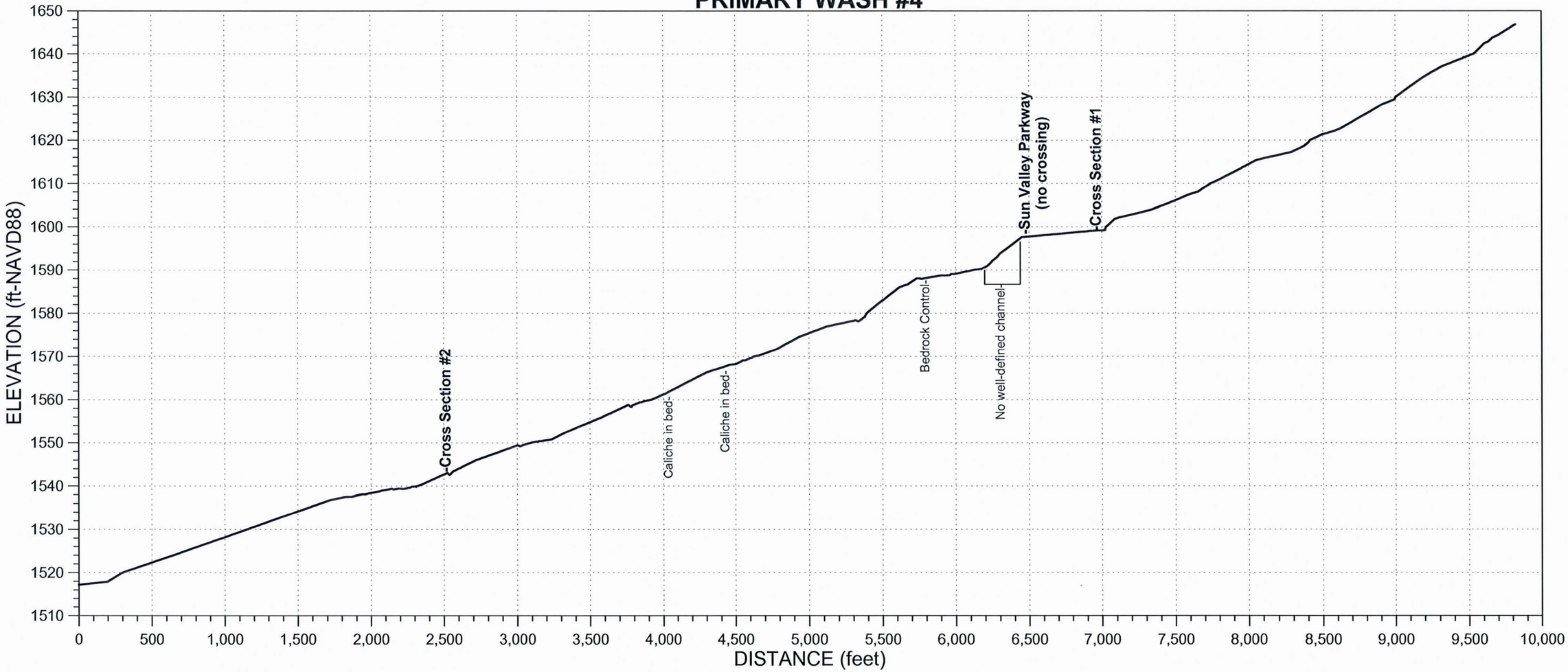


Notes:

P10/19 Cross Section #1 - view looking downstream

P10/20 Cross Section #2 - view looking downstream

PRIMARY WASH #4

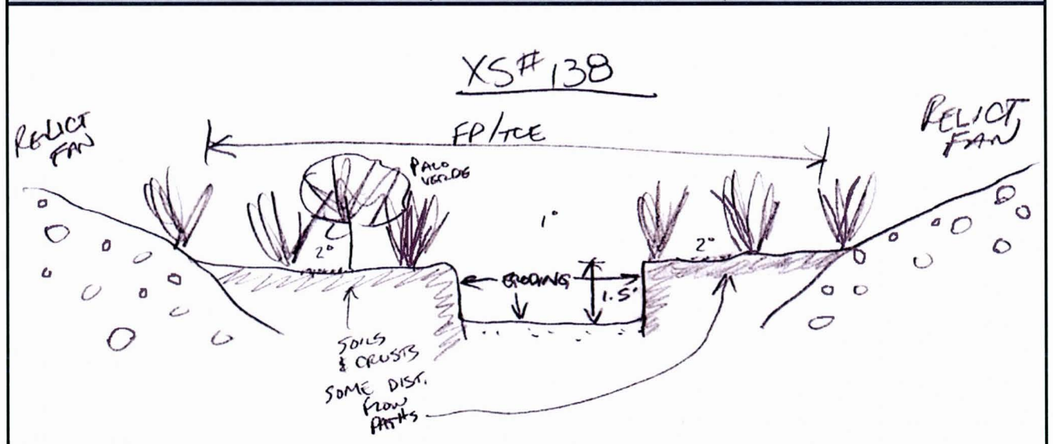


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW4	1	419	March 17, 2004
	North: 967979.6 m East: 481779.0 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		vertical	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		vertical	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P10/26 - View upstream showing incised (1 ft deep) channel						
Mormon Tea			P10/27 - View downstream showing incision at fence concrete						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				**Left Bank**	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				**Right Bank**	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			**Absent**	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #138



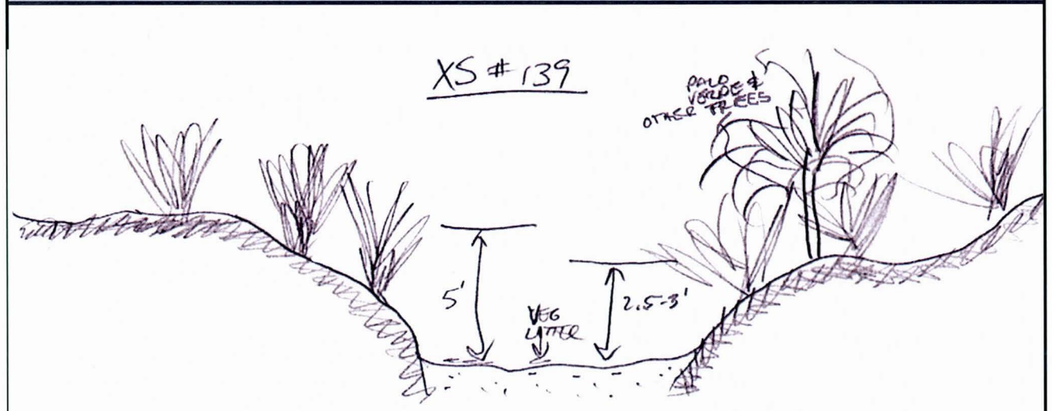
Notes:	Just upstream of Sun Valley Parkway.

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW4	2	423	March 18, 2004
	North: 969905.2 m East: 478056.3 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	2.5-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	2.5-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote			Channel						
Brittlebush			PHOTOS & DESCRIPTION:						
Bursage			P11/1 - View downstream, vegetation litter in bottom indicative of lack of flow.						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				**Left Bank**	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Prickly Pear				**Right Bank**	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			**Spotty**	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #139



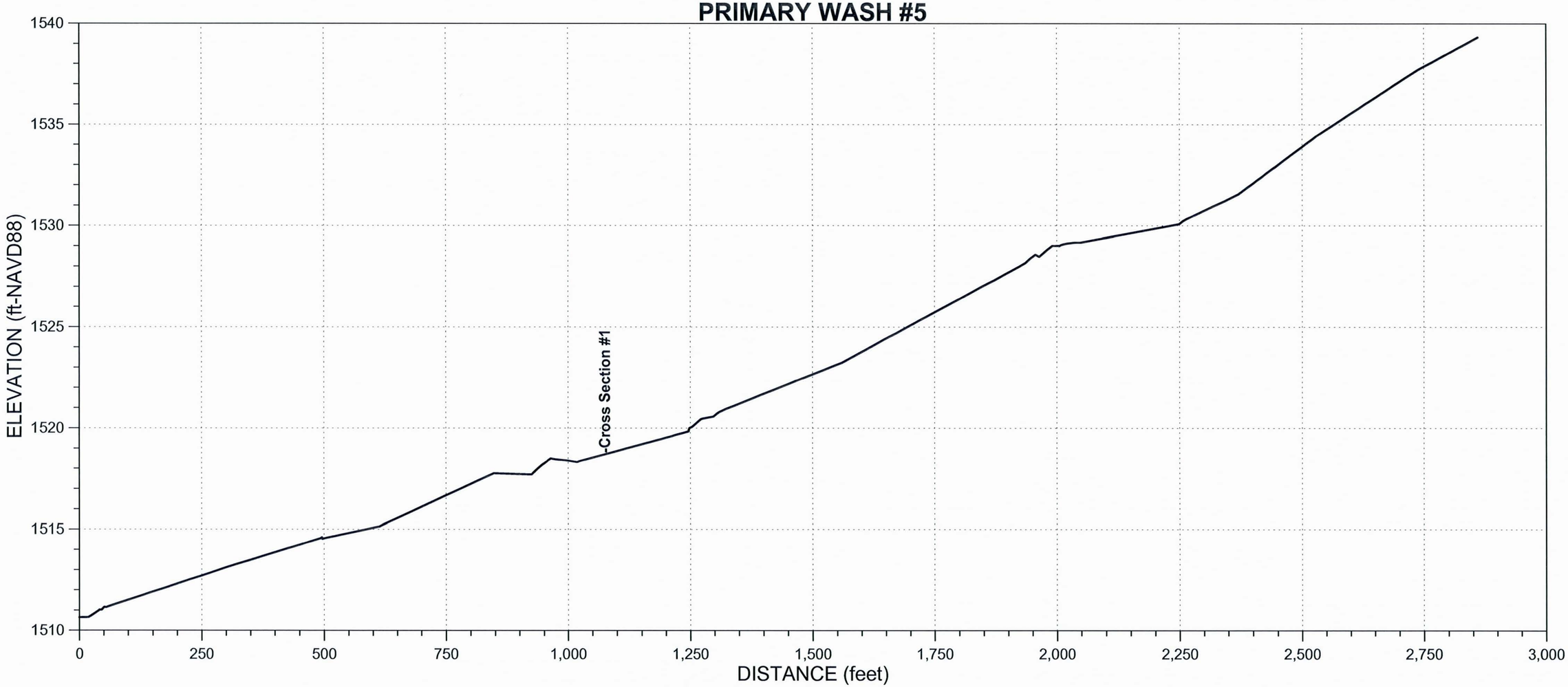
Notes:	Downstream (north) of Sun Valley Parkway. No flow from headwaters area upstream of Sun Valley Parkway. Only get localized drainage and runoff from roadway.

P10/26 Primary Wash #4 - Cross Section #1 – View upstream

P10/27 Primary Wash #4 - Cross Section #1 – View downstream

P11/1 Primary Wash #4 - Cross Section #2 – View downstream

PRIMARY WASH #5



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW5 North: 970491.7 m East: 476088.7 m	1	425	March 18, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	4.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	4.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<0.5 ft	<0.5 ft	

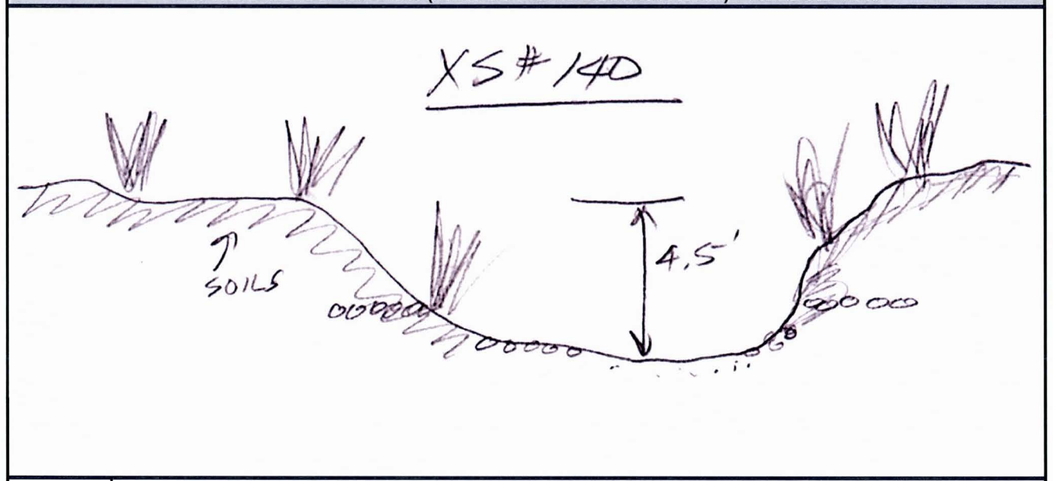
PHOTOS & DESCRIPTION:
P11/6 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	
	Absent
	Spotty
	Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

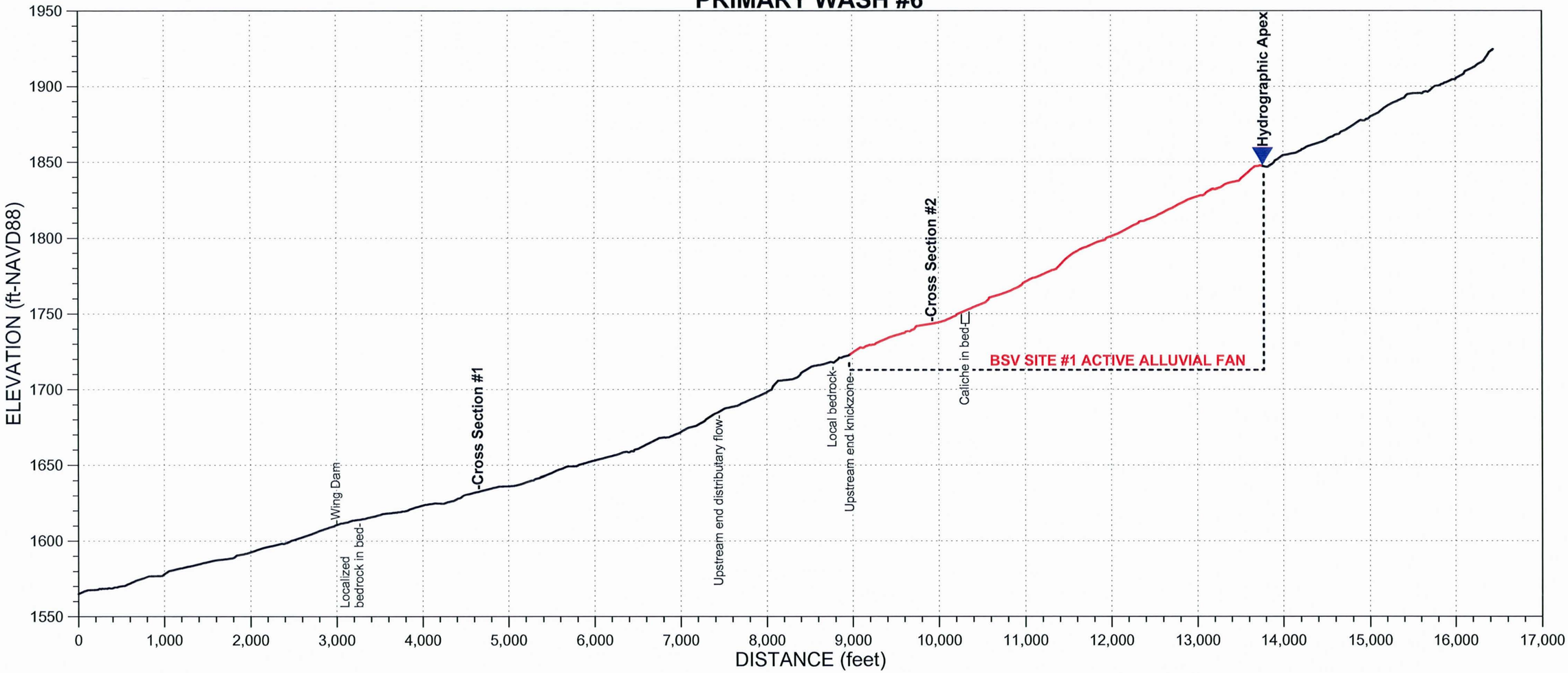
TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #140



Notes:

P11/6 Primary Wash #5 - Cross Section #1 – View upstream

PRIMARY WASH #6



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW6	1	404	March 17, 2004

North: 965711.8 m
East: 482777.7 m

Field Crew: W.J. Spitz, A.B. Alvarado

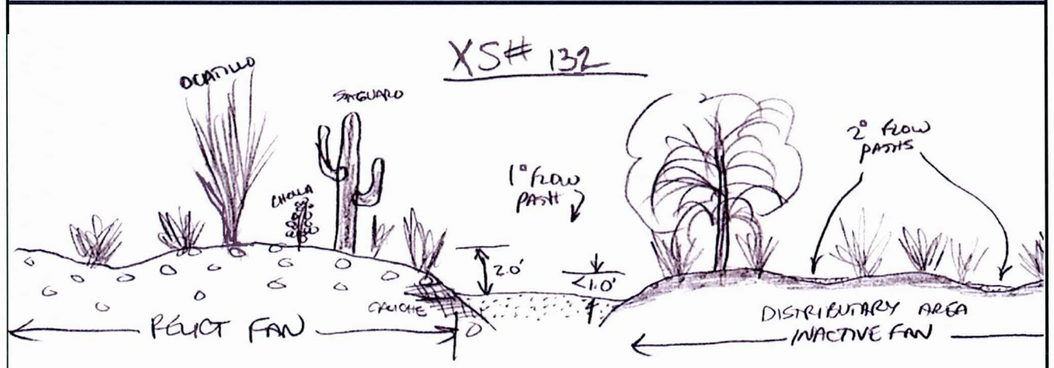
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		>6:1	<2 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>6:1	<1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				top of bank		
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X								
Mormon Tea									
Tamarisk									
Saguaro C.									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

Cholla C.
Barrel C.
Prickly Pear
X-mas C.
Hedgehog C.
Fishhook C.
Ocotillo

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #132



Notes: Flow from this and other nearby channels are captured by stock tank located about 1500 ft downstream, so channels downstream of tank see little flow except due to localized runoff.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW6	2	408	March 17, 2004

North: 964005.0 m
East: 486493.7 m

Field Crew: W.J. Spitz, A.B. Alvarado

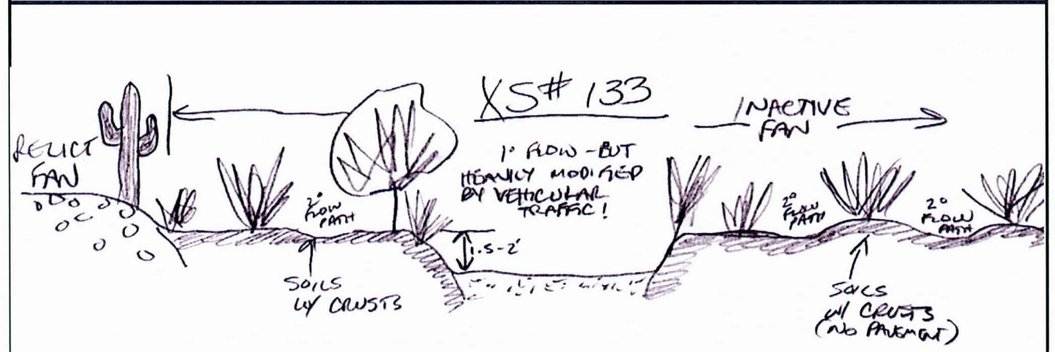
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	vertical	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X	vertical	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P10/18 - View upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

Cholla C.
Barrel C.
Prickly Pear
X-mas C.
Hedgehog C.
Fishhook C.
Ocotillo

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #133



Notes: Flow paths heavily modified and controlled by off-road vehicle traffic.

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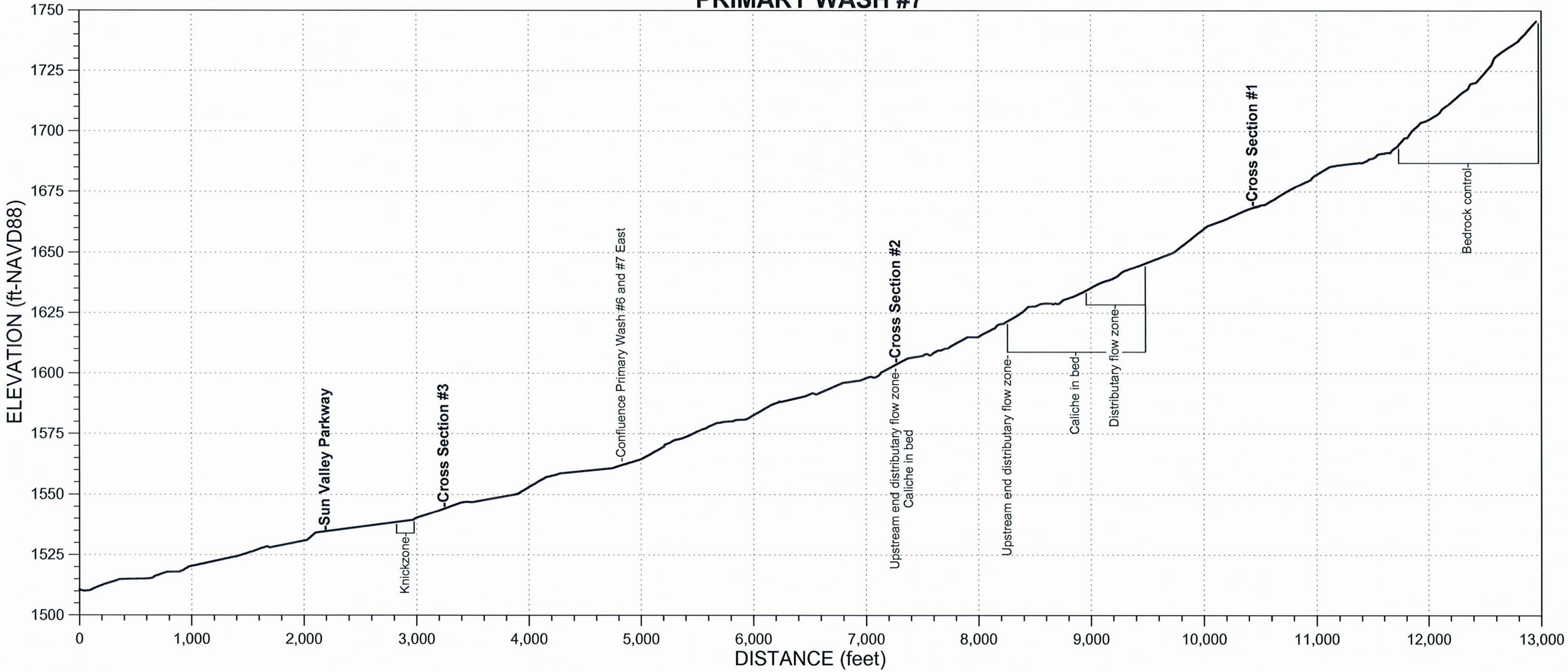
P10/18 Primary Wash #6 - Cross Section #1 – View upstream

P10/28 Primary Wash #6 - View looking upstream above confluence with Sun Valley Parkway drainage channel

PRIMARY WASH #7



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW7	1	385	March 17, 2004

North: 962069.3 m
East: 480848.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		>6:1	<1 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>6:1	<1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.	X	
Cholla C.	X	
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

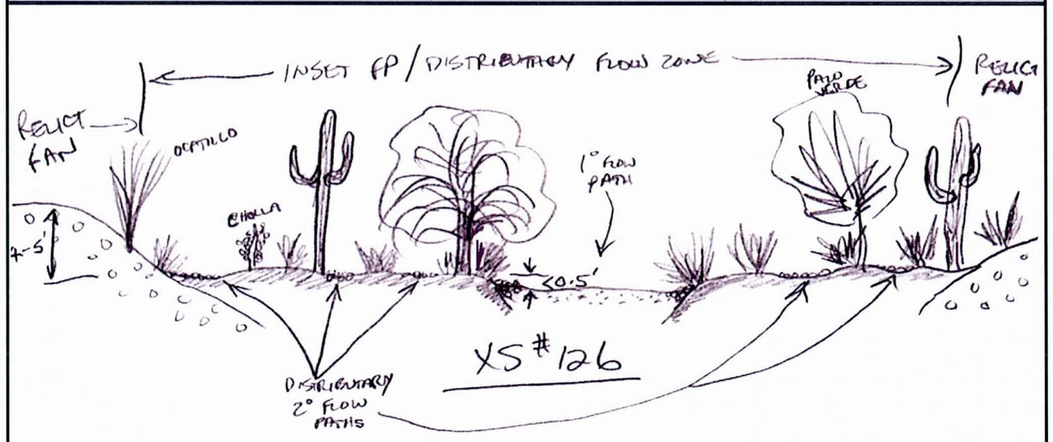
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	top bank	top bank	

PHOTOS & DESCRIPTION:
P10/9,10,11 Pan - View left bank to right bank looking downstream showing upstream end active distributary flow zone.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #126



Notes:

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AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW7	2	390	March 17, 2004

North: 964606.0 m
East: 479342.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		4:1	1.5-2 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		4:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.	X	
Barrel C.	X	
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

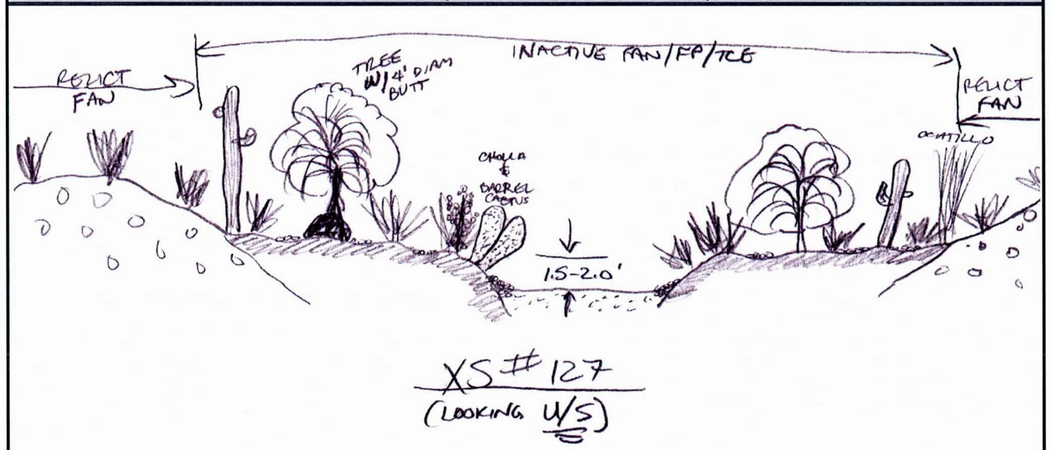
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	0.5 ft	0.5 ft	

PHOTOS & DESCRIPTION:
P10/12 - View looking upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING UPSTREAM) - FIELD XS #127



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW7	3	392	March 17, 2004

North: 967243.3 m
East: 476944.5 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	3.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1-1.5 ft	1-1.5 ft	

PHOTOS & DESCRIPTION:
P10/13 - View upstream, note sand bar on right bank up to 1.5 ft high on bank

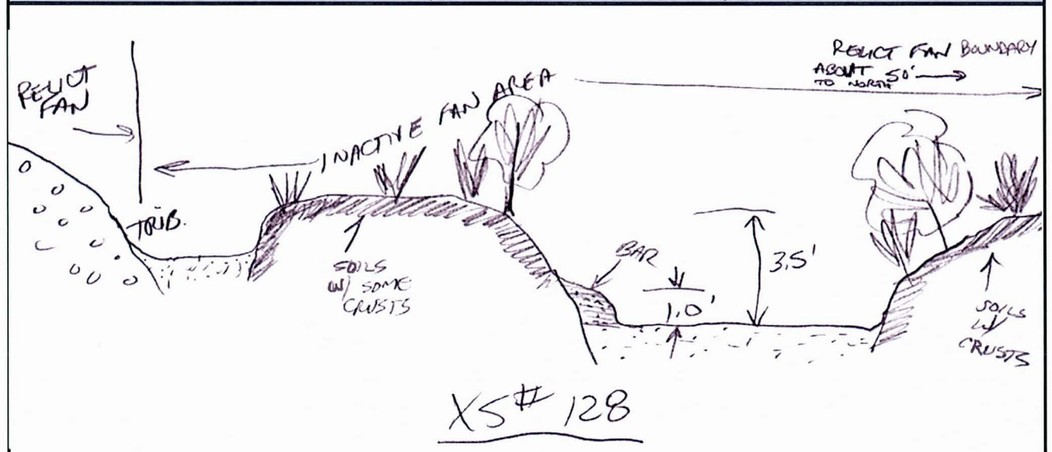
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #128



Notes:

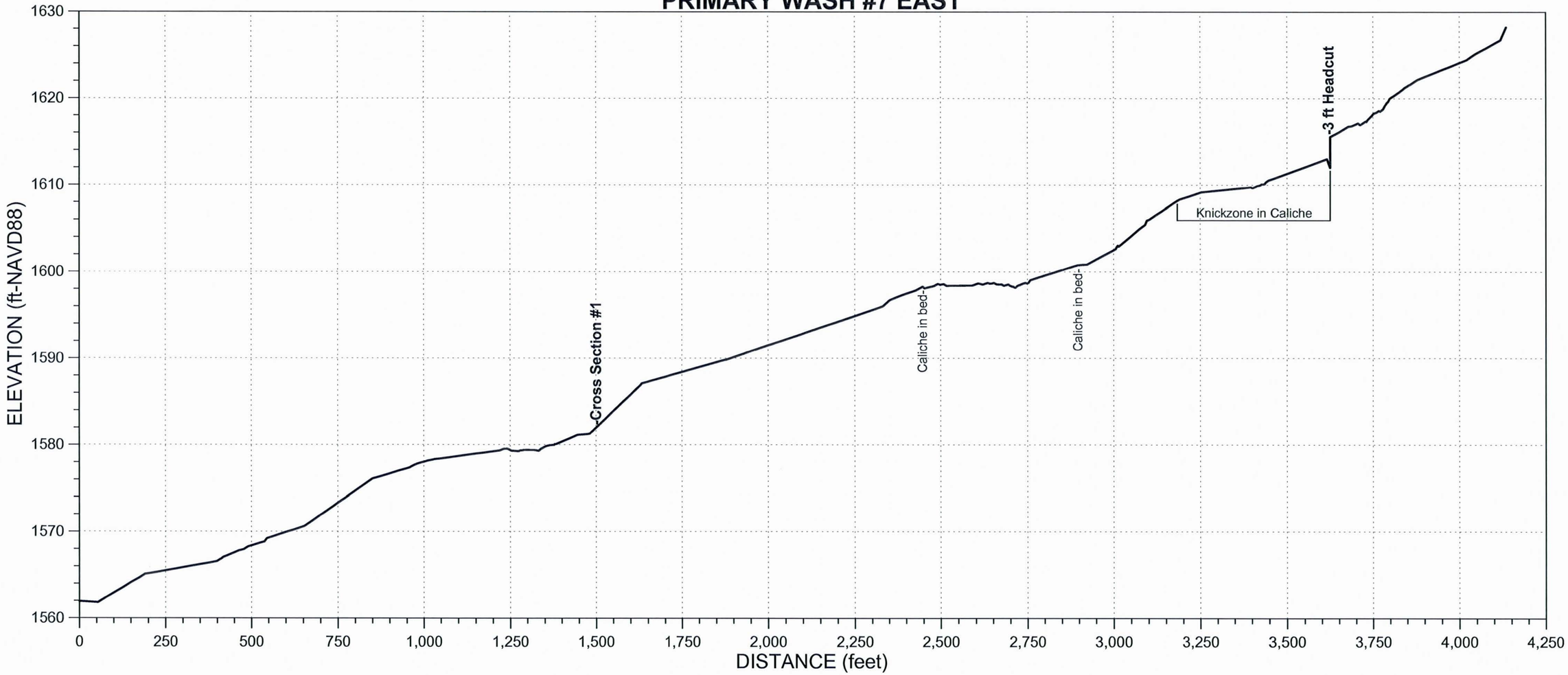
AYRES ASSOCIATES

P10/9,10,11 Primary Wash #7 - Cross Section #1 – Panorama looking downstream

P10/12 Primary Wash #7 - Cross Section #2 – View looking upstream

P10/13 Primary Wash #7 - Cross Section #3 – View looking upstream

PRIMARY WASH #7 EAST



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW7East	1	402	March 17, 2004

North: 965957.3 m
East: 479485.1 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1;1	6 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	8-10 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	whole bank	
Right Bank	whole bank	
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5 ft	1.5 ft	

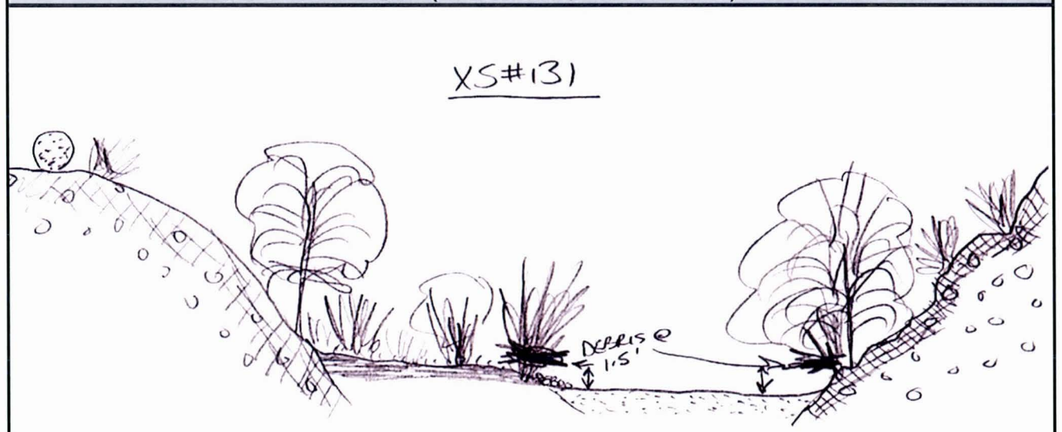
PHOTOS & DESCRIPTION:
P10/17 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

Absent
Spotty
Extensive

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #131



Notes:

AYRES ASSOCIATES

P10/17 Primary Wash #7 East - Cross Section #1 – View looking downstream

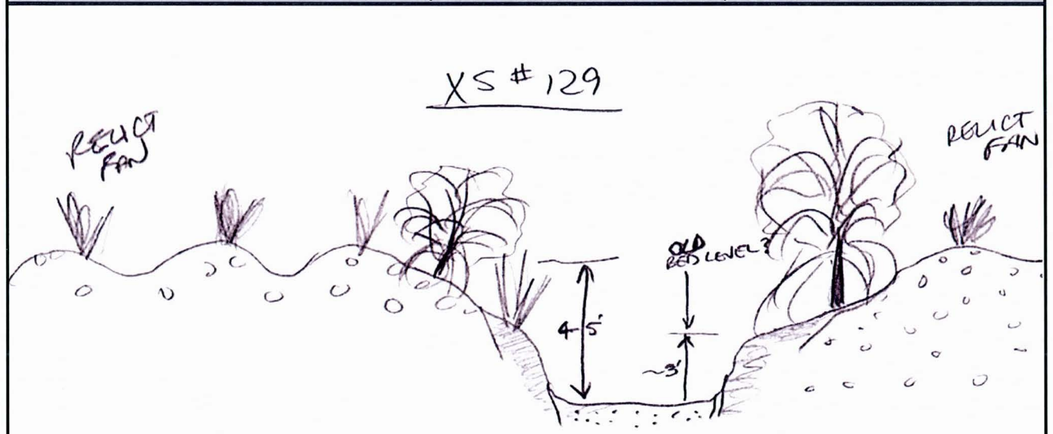
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW8	1	395	March 17, 2004
	North: 966976.2 m East: 475127.8 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	4-5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	4-5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P10/14 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #129



Notes:

AYRES ASSOCIATES

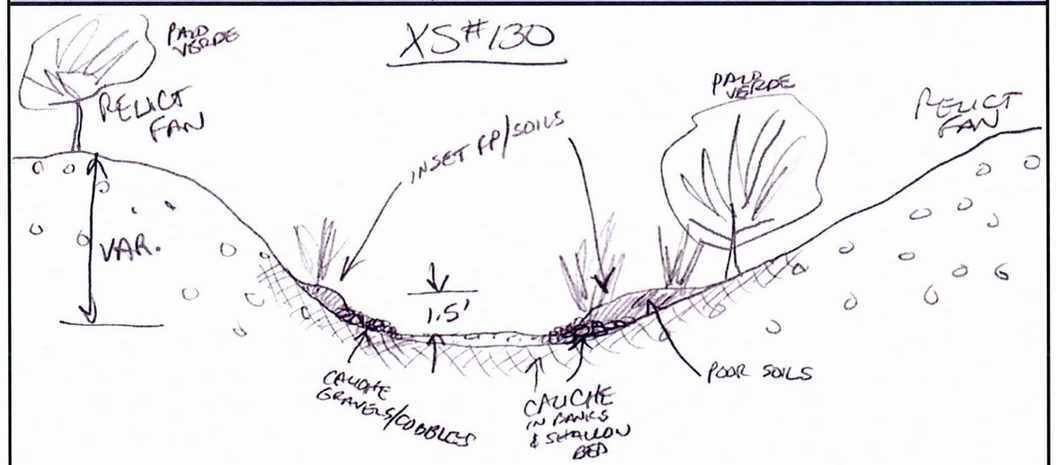
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW8	2	397	March 17, 2004
	North: 964545.0 m East: 477826.1 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X	X	Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils		X	
			Left Bank	<1 ft	1+ ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	<1 ft	1+ ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel	shallow			1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P10/15 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #130



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW8	3	426	March 17, 2004

North: 968399.9 m
East: 472928.1 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P11/7 - View upstream

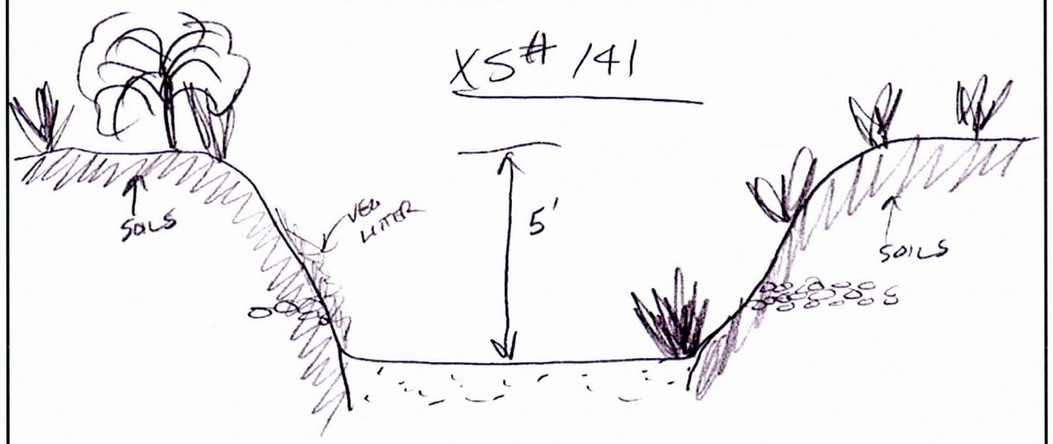
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #141



Notes:

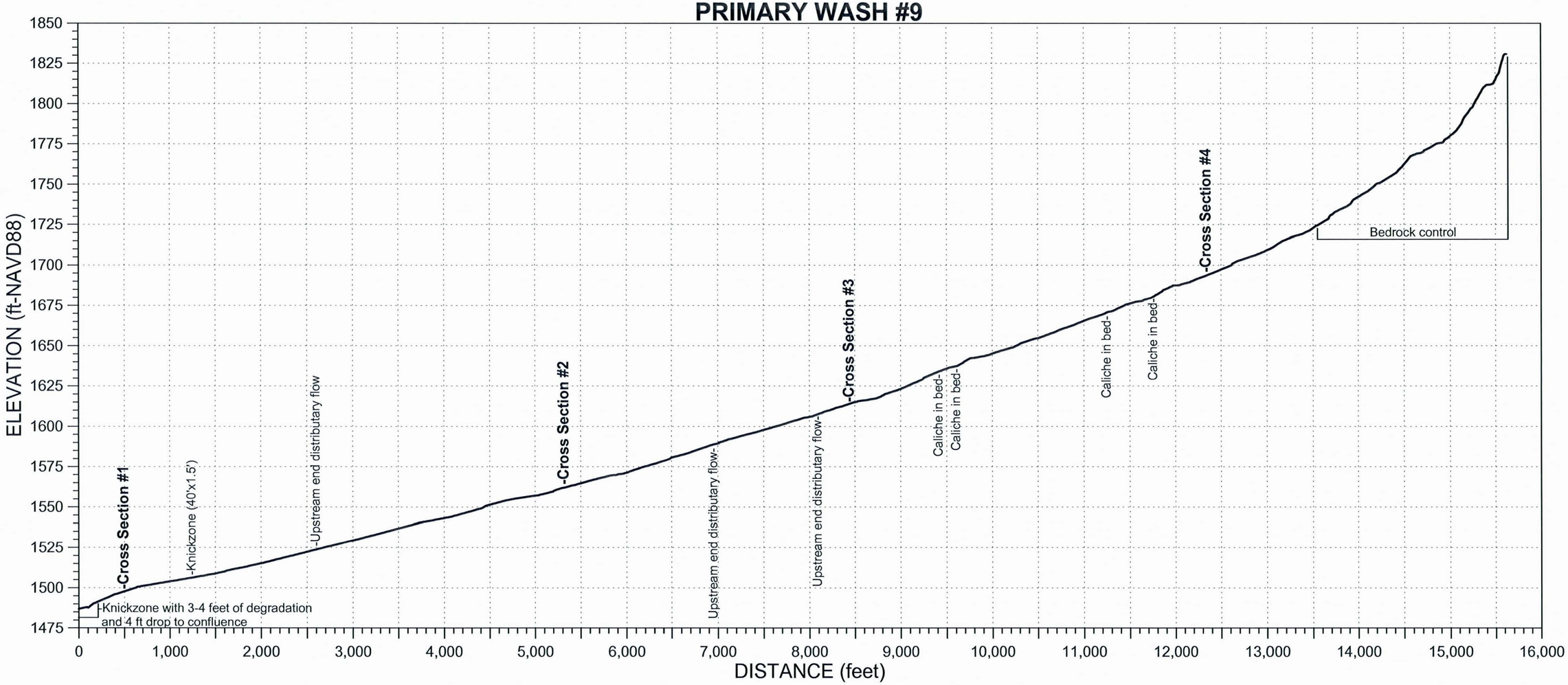
AYRES ASSOCIATES

P10/14 Primary Wash #8 - Cross Section #1 – View looking downstream

P10/15 Primary Wash #8 - Cross Section #2 – View looking downstream

P11/7 Primary Wash #8 - Cross Section #3 – View looking upstream

PRIMARY WASH #9



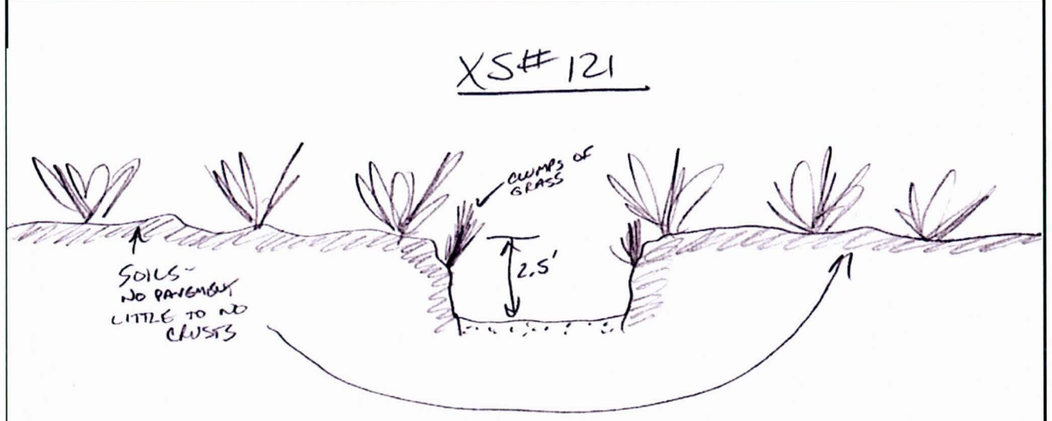
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW9 North: 966920.2 m East: 471892.8 m	1	368	March 17, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	<1:1	2.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	2.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<0.5 ft	<0.5 ft	
Brittlebush			PHOTOS & DESCRIPTION:						
Bursage	X		P10/4 - View downstream, note grass clump by stadia stick.						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #121



Notes: Extensive clumps of prairie grasses.

AYRES ASSOCIATES

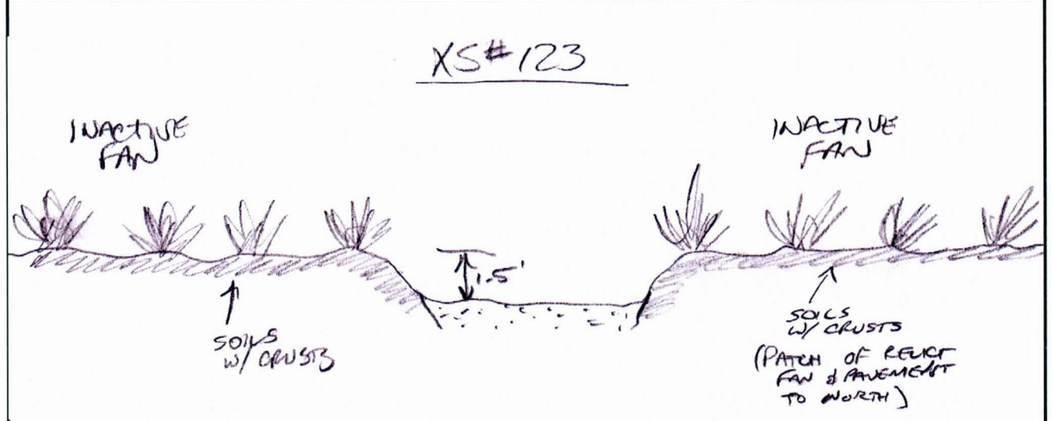
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW9 North: 964156.5 m East: 475567.6 m	2	372	March 17, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	1.5 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				0.5 ft	0.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P10/6 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #123



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW9	3	375	March 17, 2004

North: 962817.3 m
East: 478323.9 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway		Single	X	Left Bank	
Channel		Multiple		Right Bank	

H:V	Height	BED MATERIAL	
1:1	1.5 ft	Sand X	Gravel X
1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness
			Left Bank		
Palo Verde	X		Right Bank	1.5 ft	1.5+ ft
Creosote	X		Channel		
Brittlebush	X				
Bursage	X				
Mormon Tea					
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

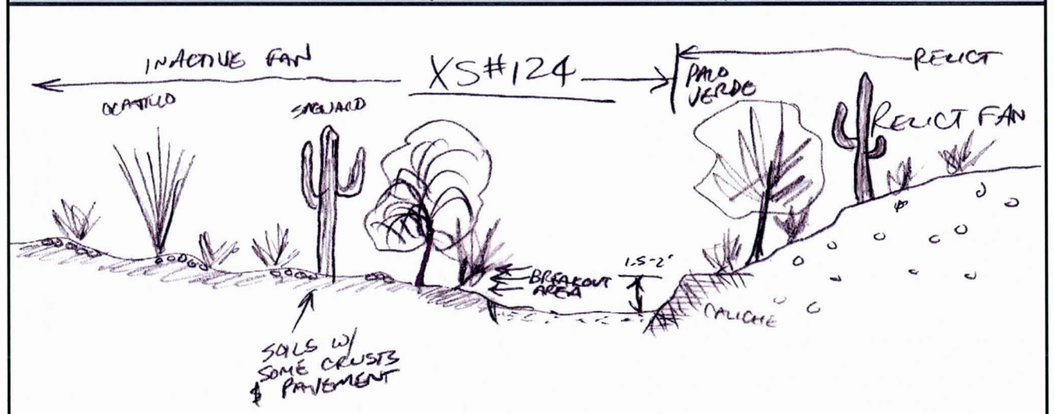
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

P10/7 - View downstream showing breakout (ramping) area along left bank.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Absent	**NICKZONE:**			**HEADCUT:**		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #124



Notes: Get overbank flows due to ramping/breakout along low, poorly defined left bank just downstream of cross section.

AYRES ASSOCIATES

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW9	4	380	March 17, 2004

North: 960733.5 m
East: 481008.9 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway		Single	X	Left Bank	
Channel		Multiple		Right Bank	

H:V	Height	BED MATERIAL	
>6:1	1-1.5 ft	Sand X	Gravel X
1:1	4-5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils		X	

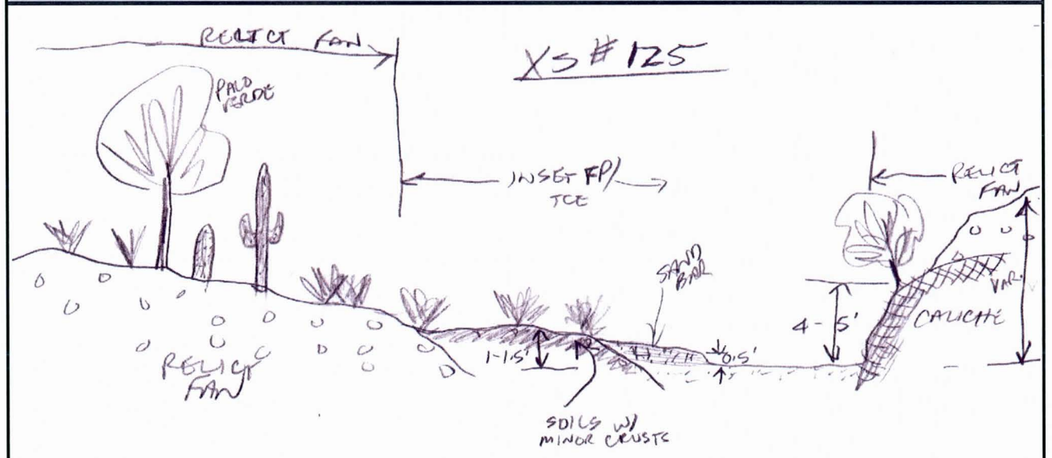
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness
			Left Bank		
Palo Verde	X		Right Bank	4-5 ft	4-5+ ft
Creosote	X		Channel		
Brittlebush	X				
Bursage	X				
Mormon Tea					
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	0.5 ft	0.5 ft	

PHOTOS & DESCRIPTION:

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Absent	**NICKZONE:**			**HEADCUT:**		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #125



Notes:

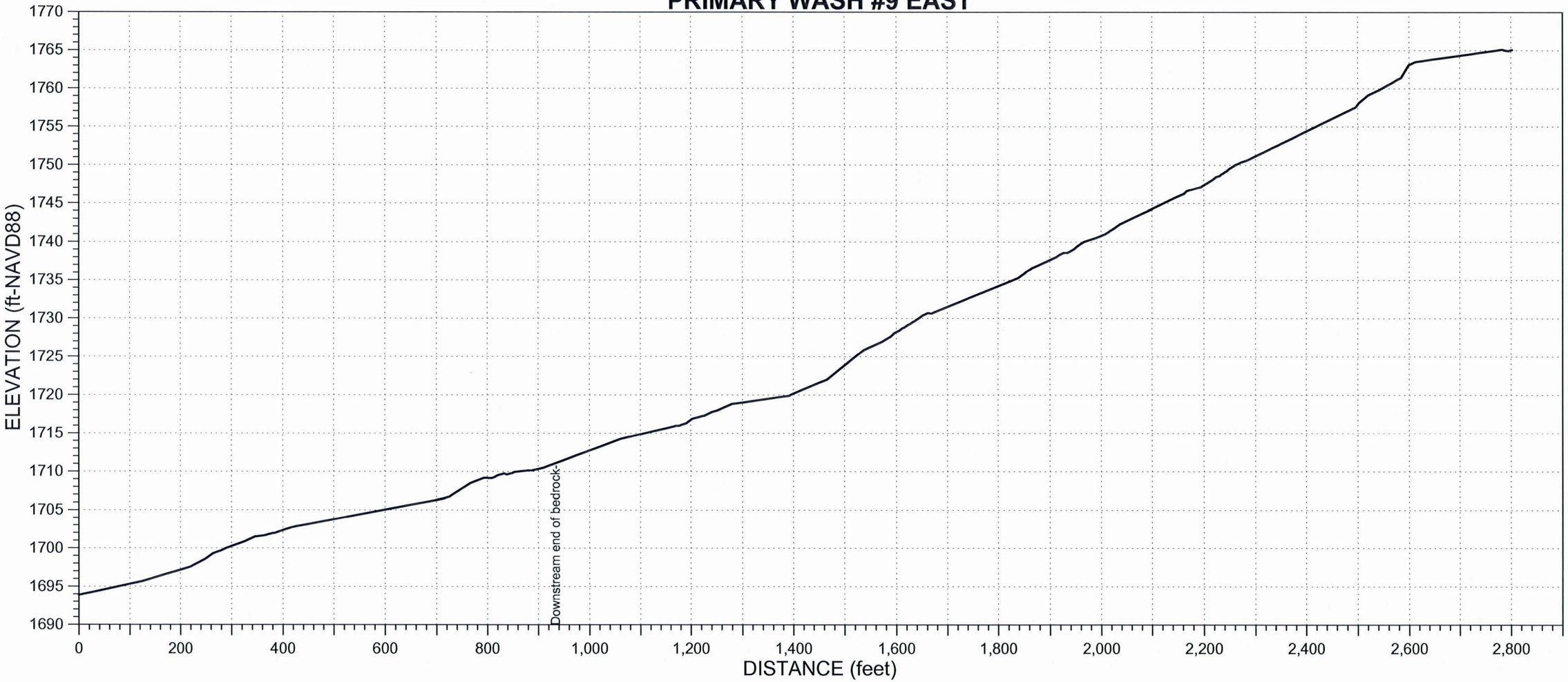
AYRES ASSOCIATES

P10/4 Primary Wash #9 - Cross Section #1 – View looking downstream

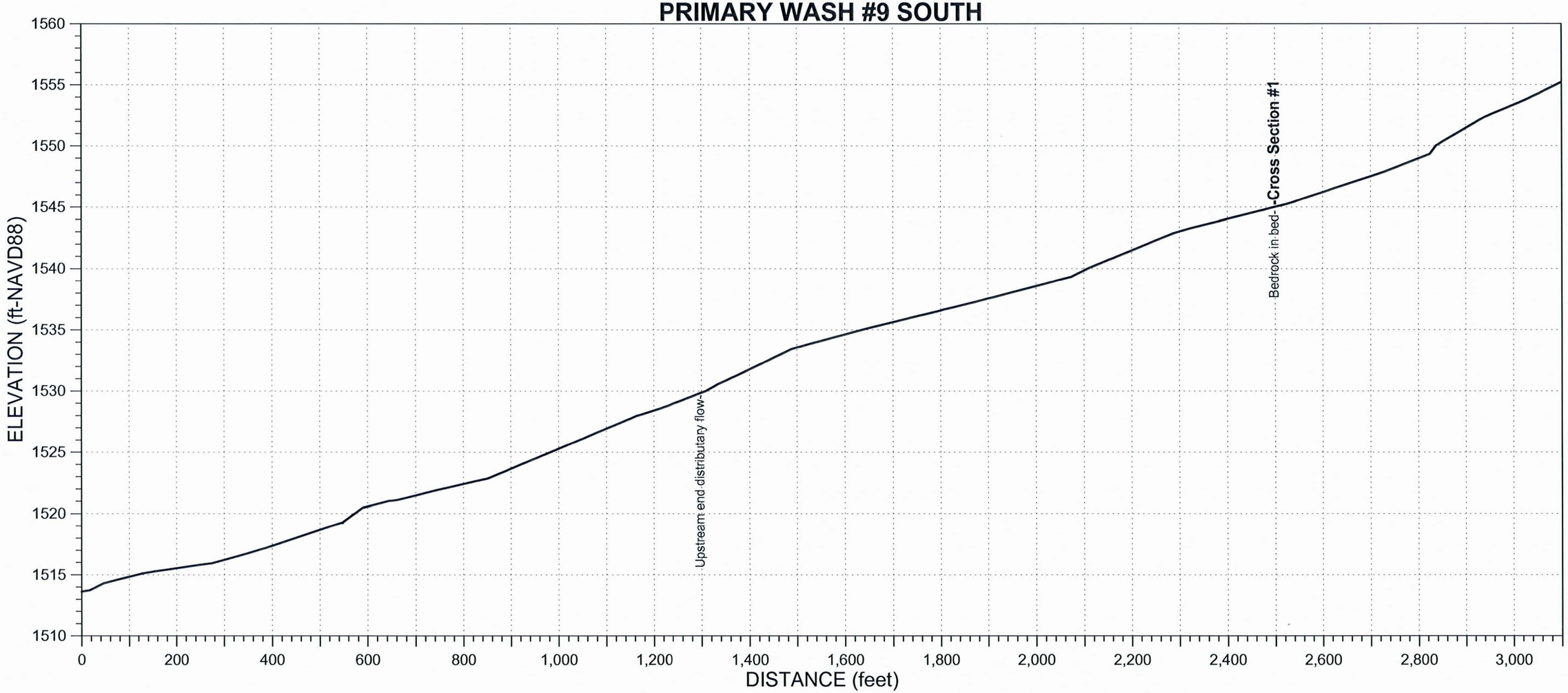
P10/6 Primary Wash #9 - Cross Section #2 – View looking downstream

P10/7 Primary Wash #9 - Cross Section #3 – View looking downstream

PRIMARY WASH #9 EAST



PRIMARY WASH #9 SOUTH



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW9South	1	371	March 17, 2004

North: 963904.0 m
East: 474283.2 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	2 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	0.5-1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	

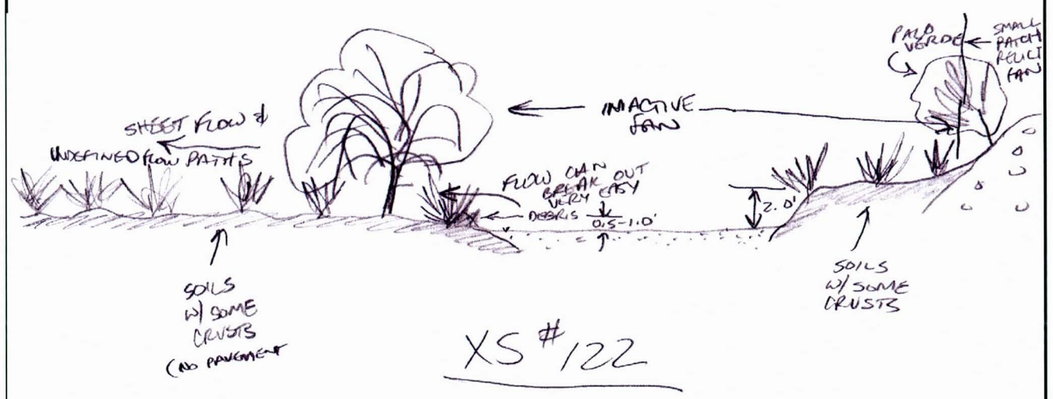
PHOTOS & DESCRIPTION:
P10/5 - View looking upstream, note flow breakout points along left bank

CRYPTO-BIOTIC CRUST (floodway): Absent / **Spotty** / Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #122

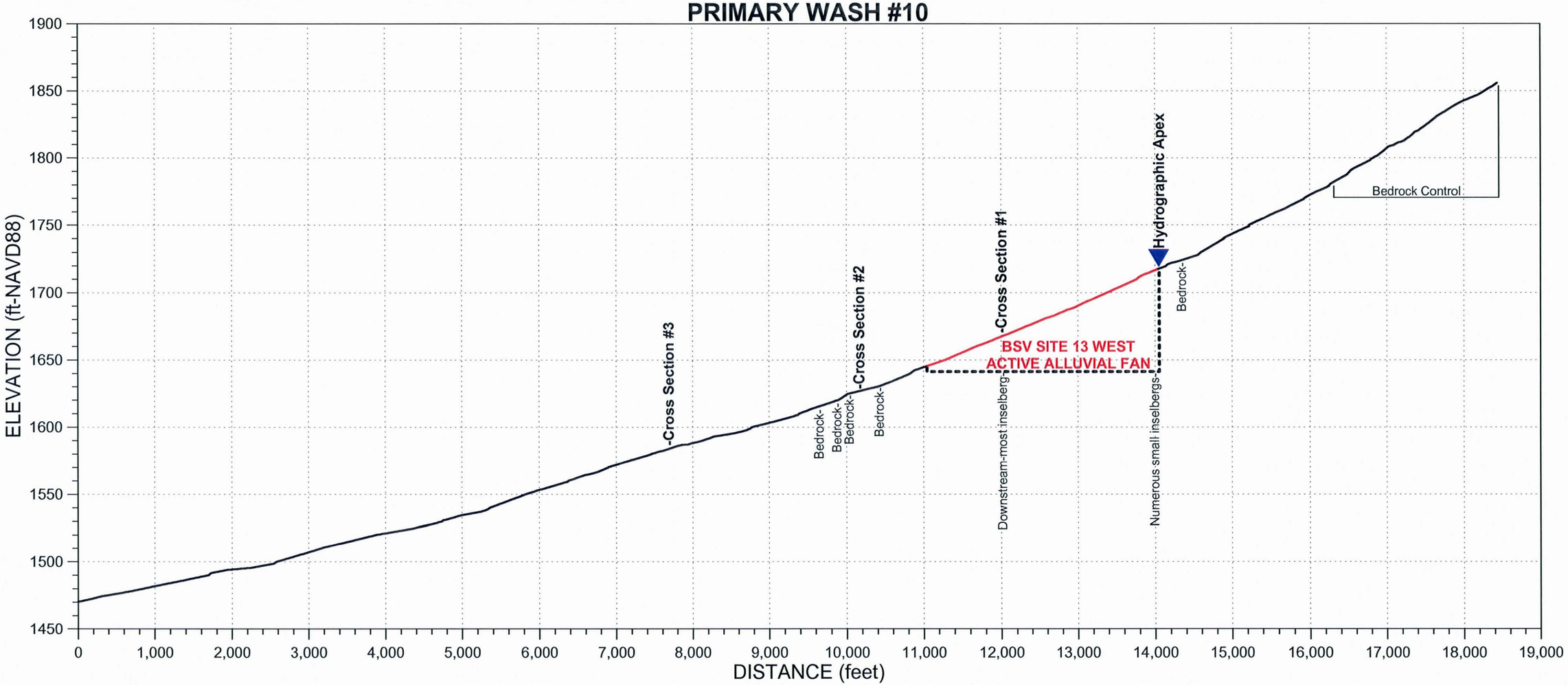


Notes:

AYRES ASSOCIATES

P10/5 Primary Wash #9 South - Cross Section #1 – View looking upstream

PRIMARY WASH #10



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW10	1	347	March 16, 2004
	North: 959866.3 m East: 495150.9 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		?	?	Sand X	Gravel X
Channel		Multiple	X	Right Bank		?	?	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal			Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/16 - View downstream showing distributary flow paths, note lack of well-defined channel.						
Mormon Tea	X								
Tamarisk									
Saguaro C.	X								
Cholla C.	X		CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.	X			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			**Spotty**	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #NA

Site at last downstream inselberg
Distributary Flow Paths
(no well defined-flow channels so no XS shown)

Notes: ***CROSS SECTION IS LOCATED ON BSV SITE 13 WEST ACTIVE ALLUVIAL FAN***

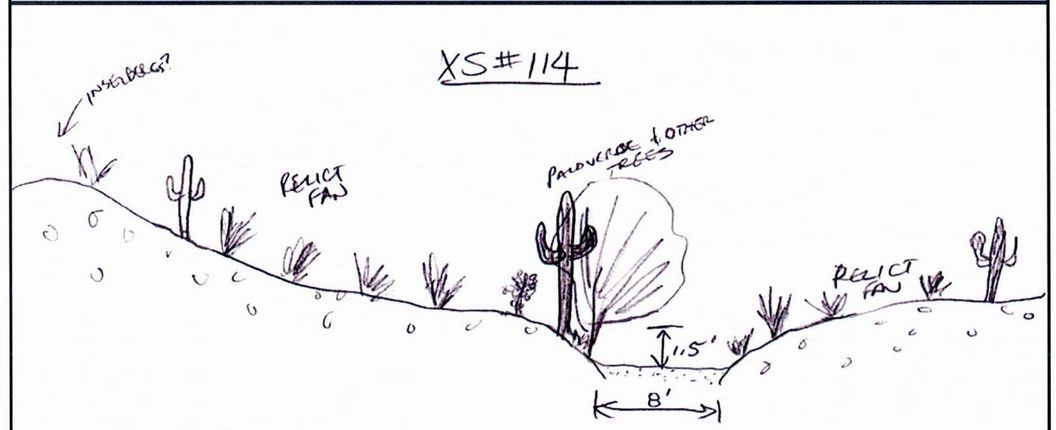
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW10	2	349	March 16, 2004
	North: 960685.3 m East: 477645.4 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		3:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<0.5 ft	< 0.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/17 - View upstream looking at XS location, note hills						
Mormon Tea									
Tamarisk									
Saguaro C.	X								
Cholla C.	X		CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			**Absent**	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #114



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW10	3	353	March 16, 2004

North: 961797.8 m
East: 475484.0 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<0.5 ft	<0.5 ft	<0.5ft

PHOTOS & DESCRIPTION:
P9/18 - View upstream.

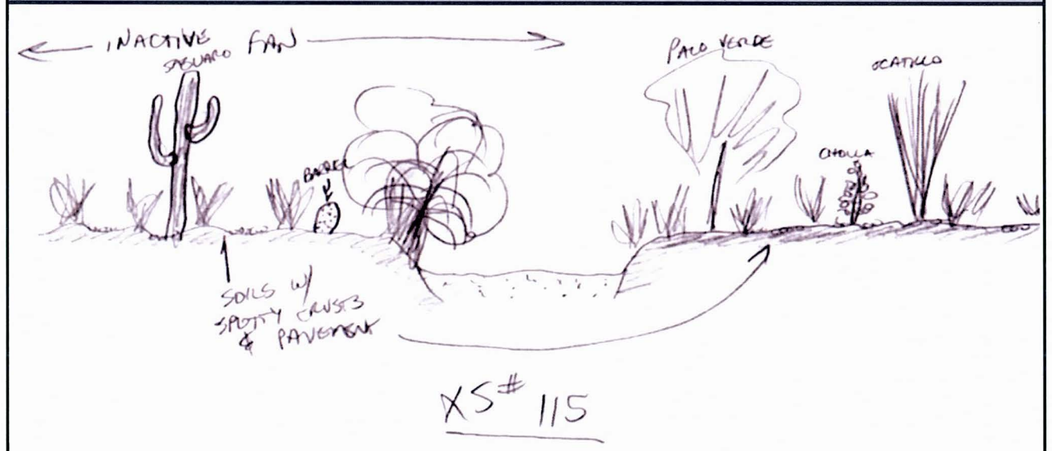
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

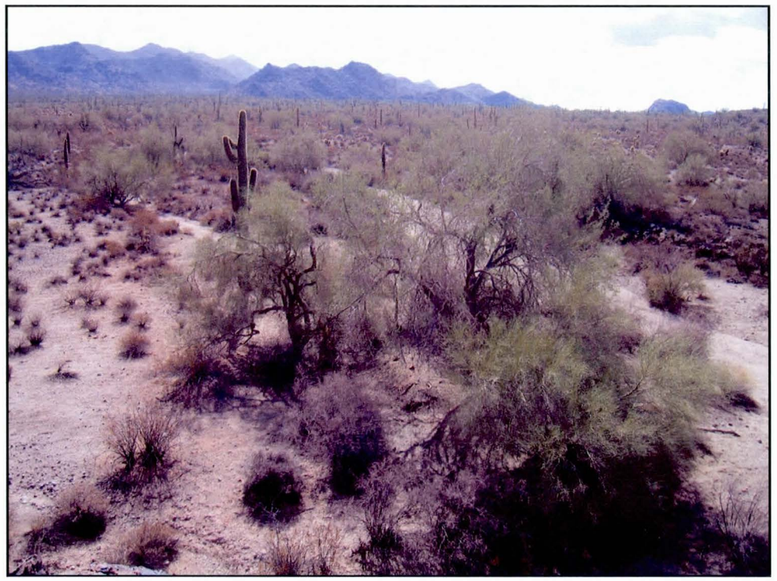
TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #115



Notes:

AYRES ASSOCIATES

P9/16 Primary Wash #10 - Cross Section #1 – View looking downstream

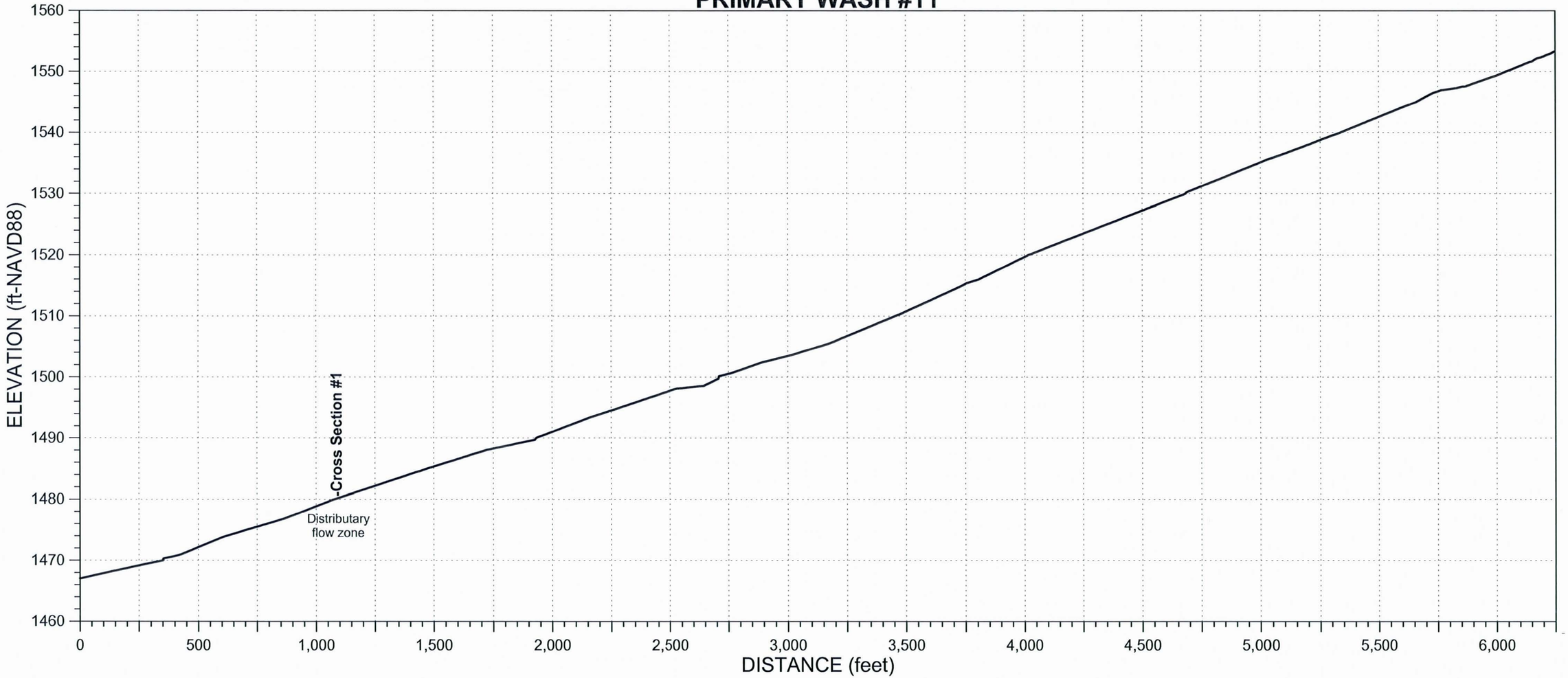


P23/14 Primary Wash #10 - BSV Site 13 West – View looking upstream toward hydrographic apex

P9/17 Primary Wash #10 - Cross Section #2 – View looking upvalley

P9/18 Primary Wash #10 - Cross Section #3 – View looking downvalley

PRIMARY WASH #11



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW11	1	354	March 16, 2004
	North: 963554.0 m East: 469289.0 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

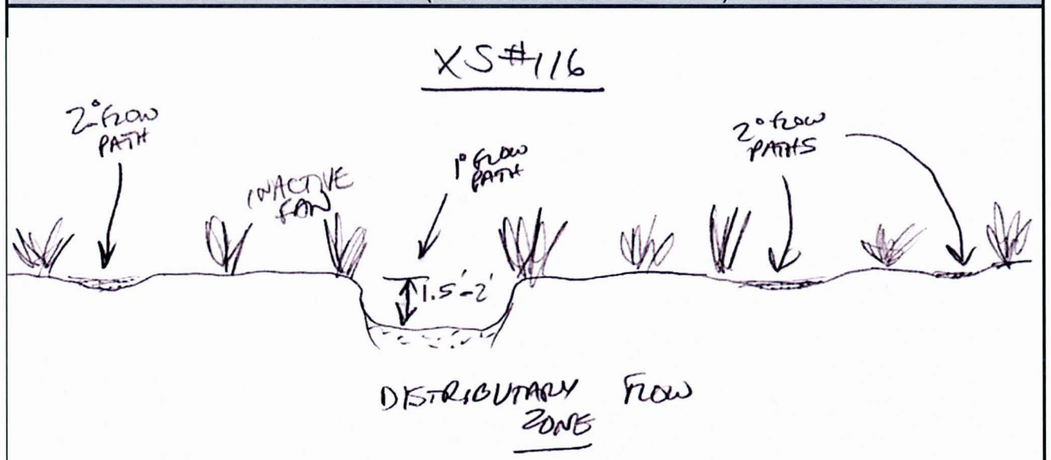
P9/19 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

Absent
Spotty
Extensive

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #116

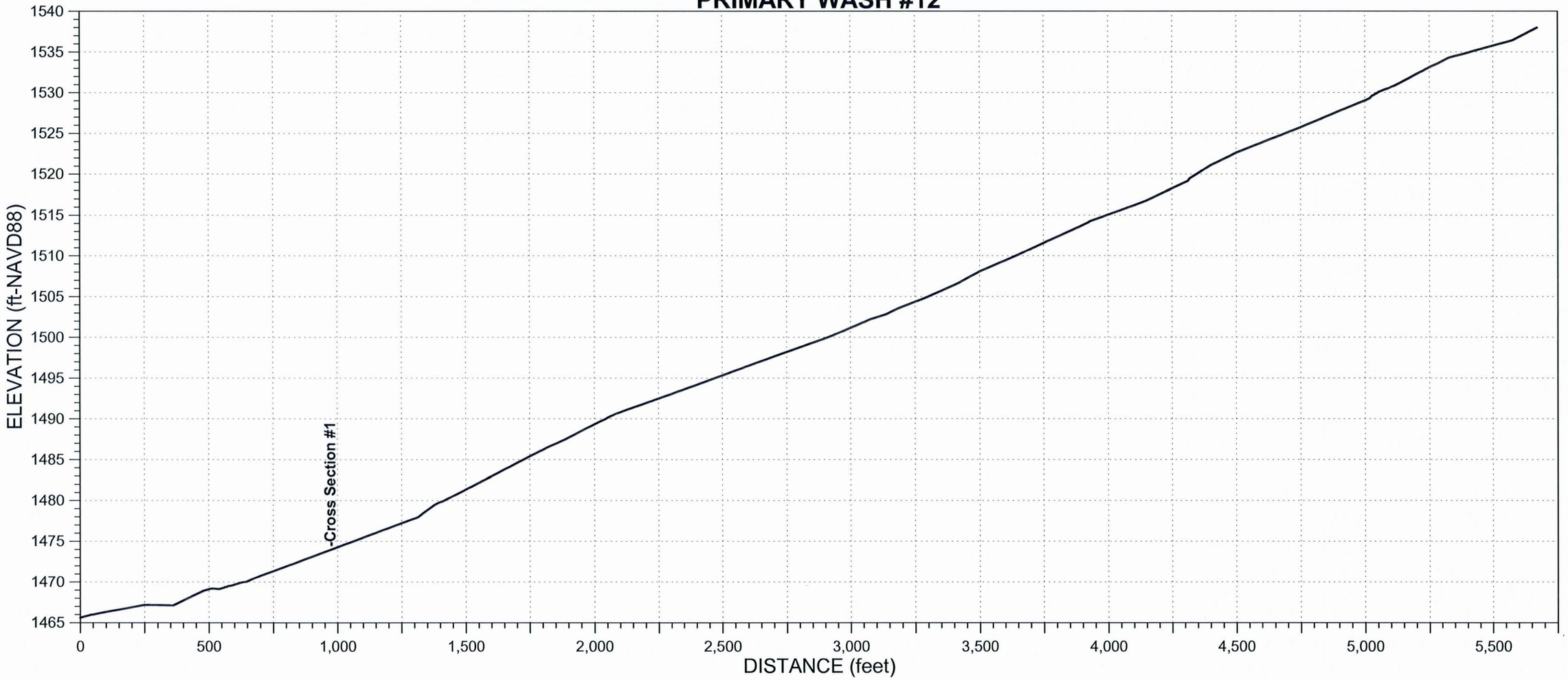


Notes: Distributary flow zone.

AYRES ASSOCIATES

P9/19 Primary Wash #11 - Cross Section #1 – View looking upstream

PRIMARY WASH #12



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW12	1	355	March 16, 2004

North: 963103.2 m
East: 468709.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	1-1.5 ft	1-1.5+ ft
Right Bank	1-1.5 ft	1-1.5+ ft
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P9/20 - View looking downstream

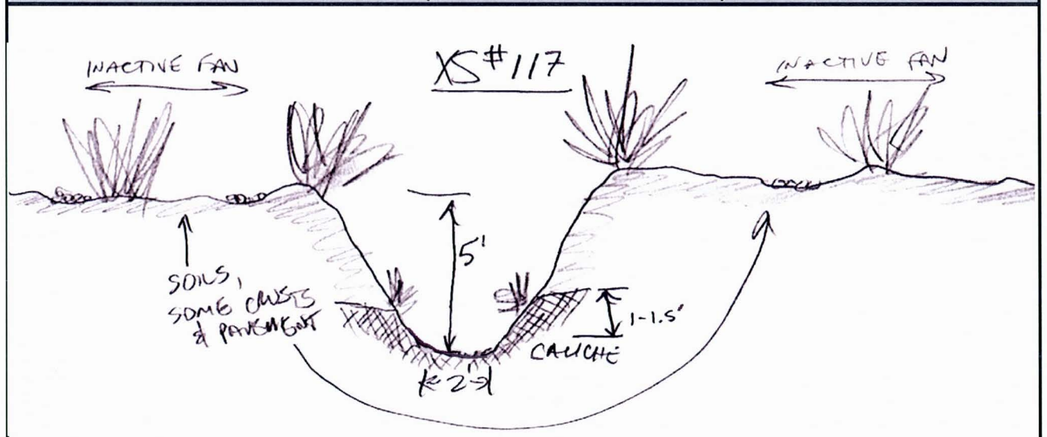
CRYPTO-BIOTIC CRUST (floodway): Absent / Spotty / Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE: Caliche Present: Dimensions:

HEADCUT: Caliche Present: Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #117

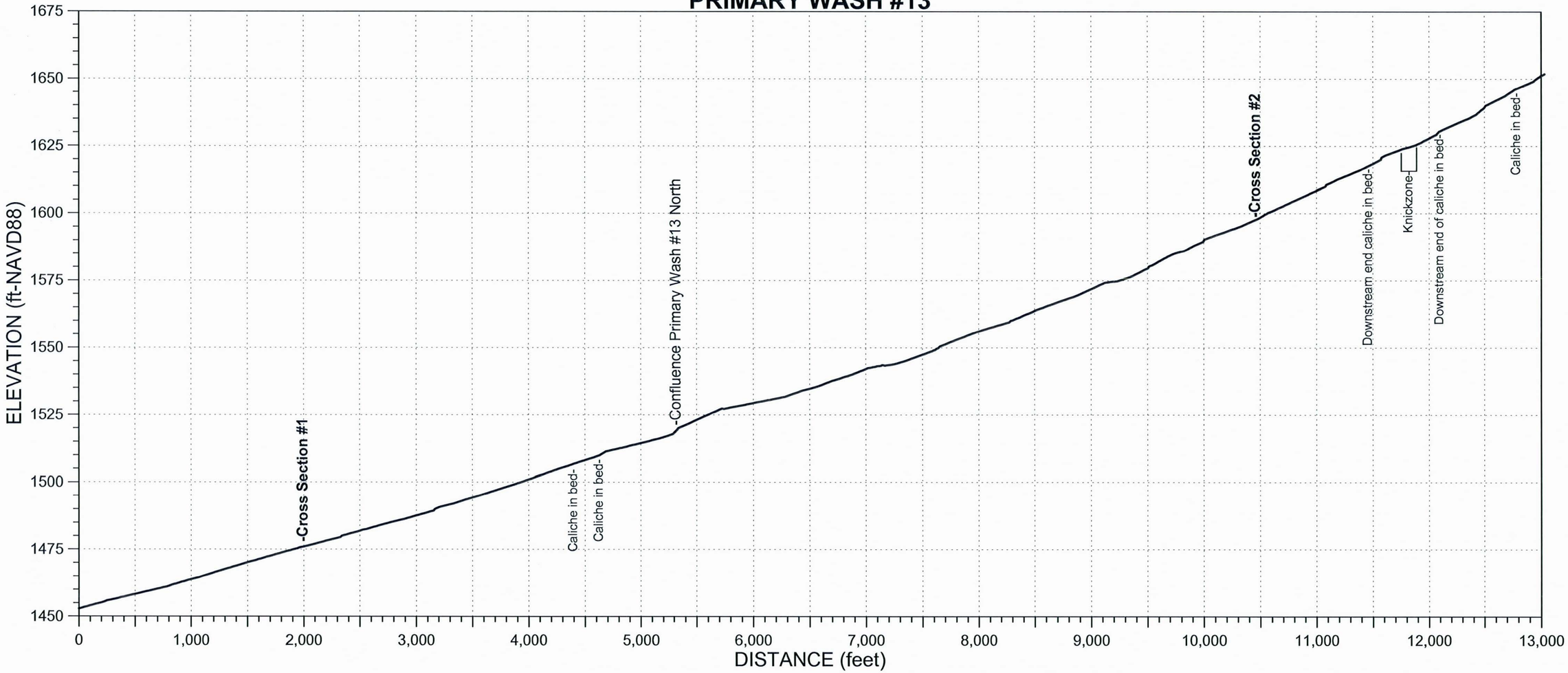


Notes:

AYRES ASSOCIATES

P9/20 Primary Wash #12 - Cross Section #1 – View looking downstream

PRIMARY WASH #13



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL: PW13

North: 961042.9 m
East: 468060.3 m

CROSS-SECTION: 1

WAYPOINT: 356

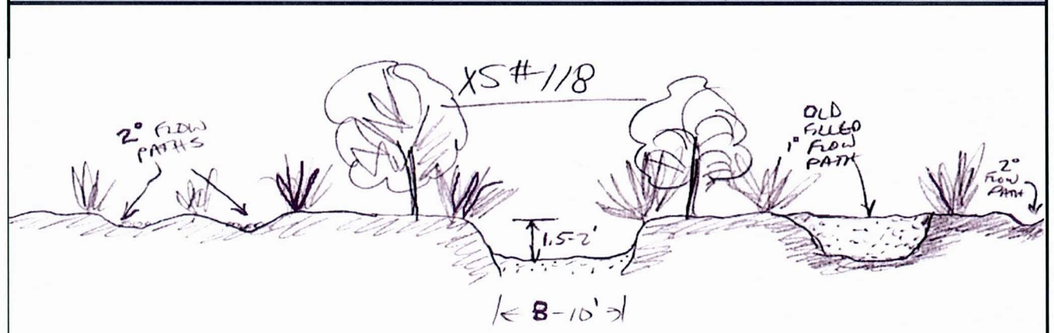
DATE: March 16, 2004

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		1:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel	in bed DS					
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/21 - View looking upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #118



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL: PW13

North: 959388.5 m
East: 475734.4 m

CROSS-SECTION: 2

WAYPOINT: 365

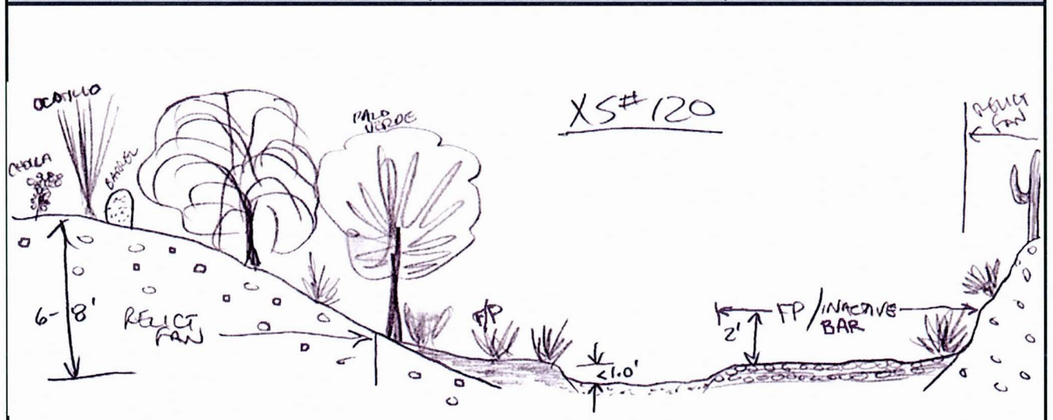
DATE: March 16, 2004

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		>6:1	2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<0.5 ft	<0.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/23 - View upstream						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #120



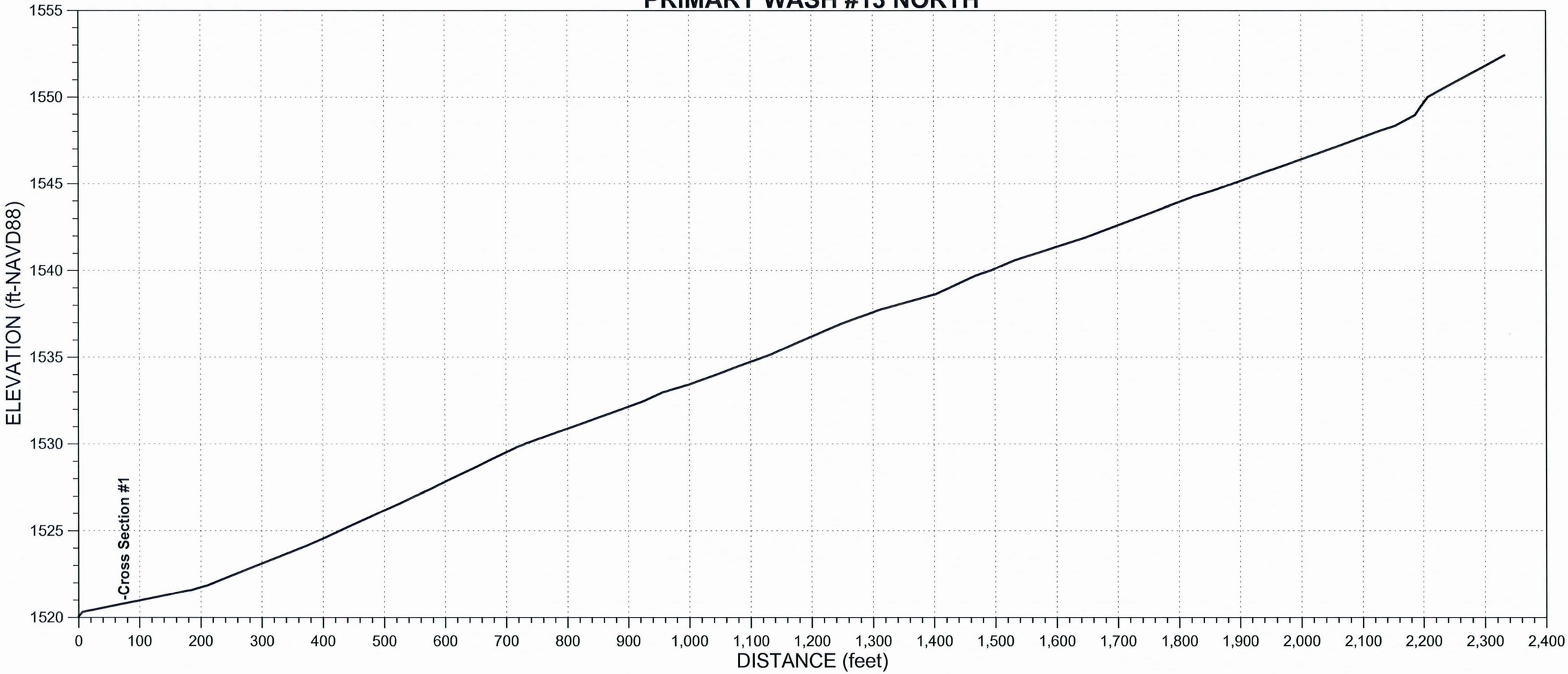
Notes:

AYRES ASSOCIATES

P9/21 Primary Wash #13 - Cross Section #1 – View looking upstream

P9/23 Primary Wash #13 - Cross Section #2 – View looking upstream

PRIMARY WASH #13 NORTH



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW13North	1	359	March 16, 2004

North: 960640.0 m
East: 471428.8 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	3.5-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

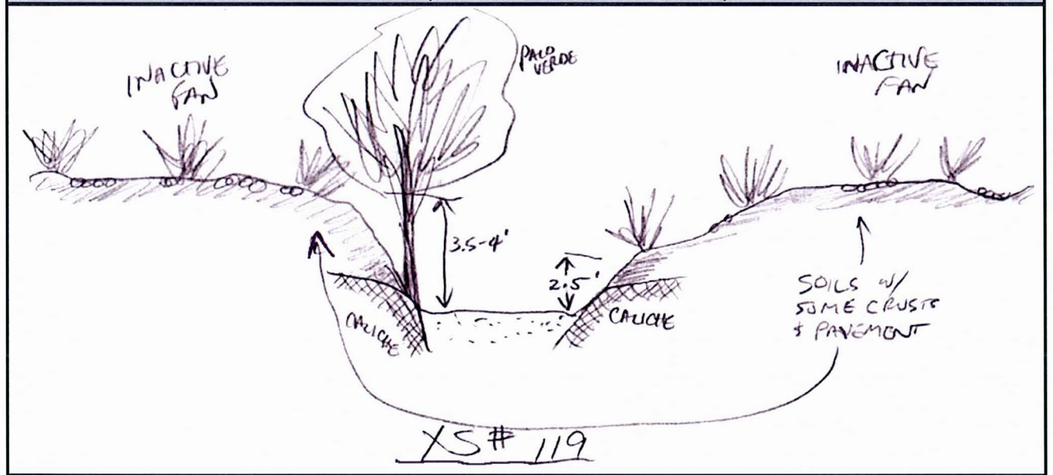
PHOTOS & DESCRIPTION:
P9/22 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	
	Absent
	Spotty
	Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #119

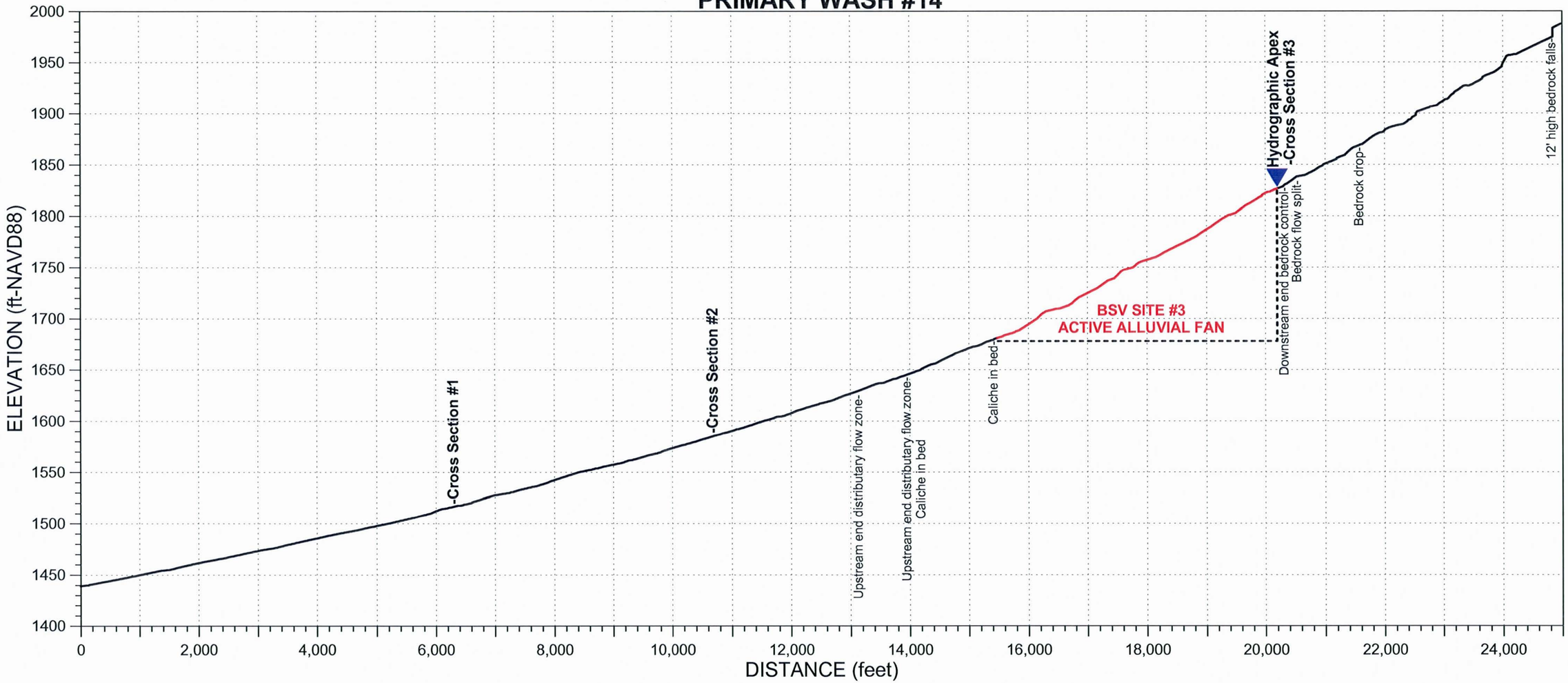


Notes:

AYRES ASSOCIATES

P9/22 Primary Wash #13 North - Cross Section #1 – View looking upstream

PRIMARY WASH #14



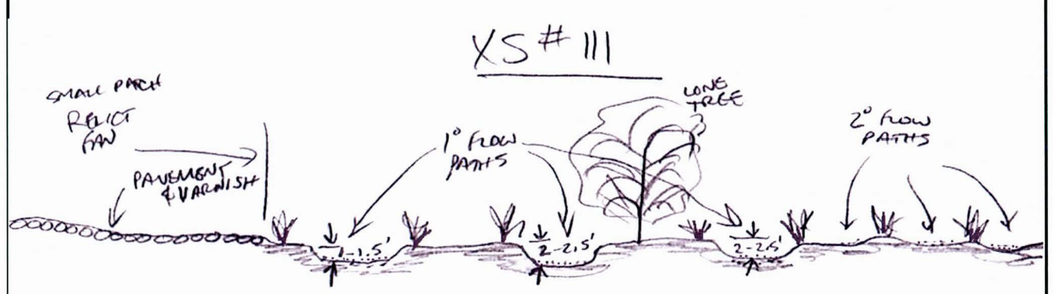
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW14 North: 959513.6 m East: 470667.6 m	1	333	March 16, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	2-2.5 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		1:1	2-2.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush			PHOTOS & DESCRIPTION:						
Bursage			P9/7 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				**Left Bank**	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Prickly Pear				**Right Bank**	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			**Spotty**	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #111



Notes: Channels get smaller and flow paths get more numerous in downstream direction.

AYRES ASSOCIATES

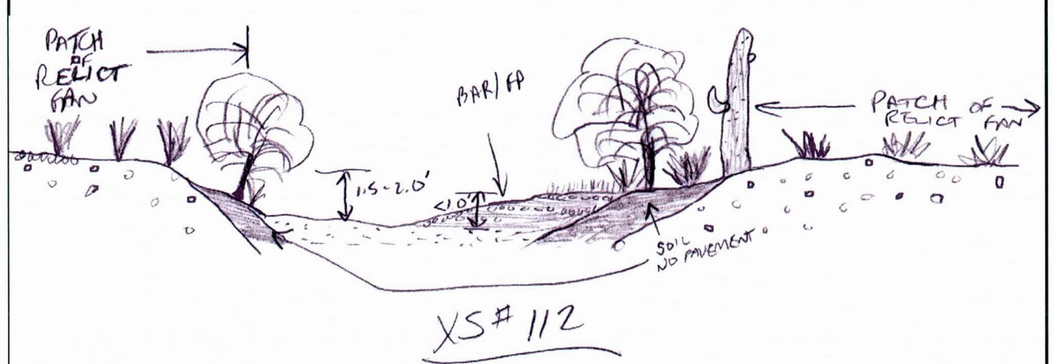
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW14 North: 958333.3 m East: 474666.2 m	2	334	March 16, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		>6:1	1-1.5 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	1-1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X	X	Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/8 - View downstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				**Left Bank**	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				**Right Bank**	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			**Absent**	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #112



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW14	3	339	March 16, 2004

North: 956163.0 m
East: 482995.8 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		>6:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X	X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	1 ft

PHOTOS & DESCRIPTION:
P9/9 - View downstream

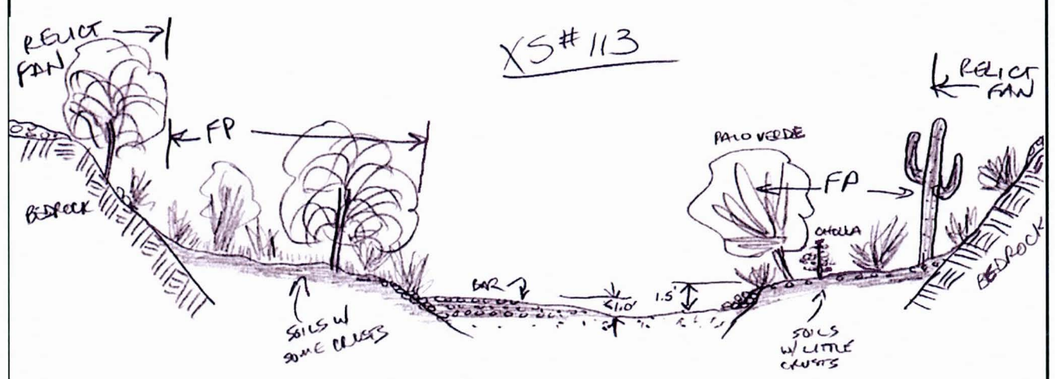
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	**Pediment**	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	**Pediment**	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #113



Notes: Area and cross section is just upstream of hydrographic apex of BSV Site 3 active fan.

AYRES ASSOCIATES

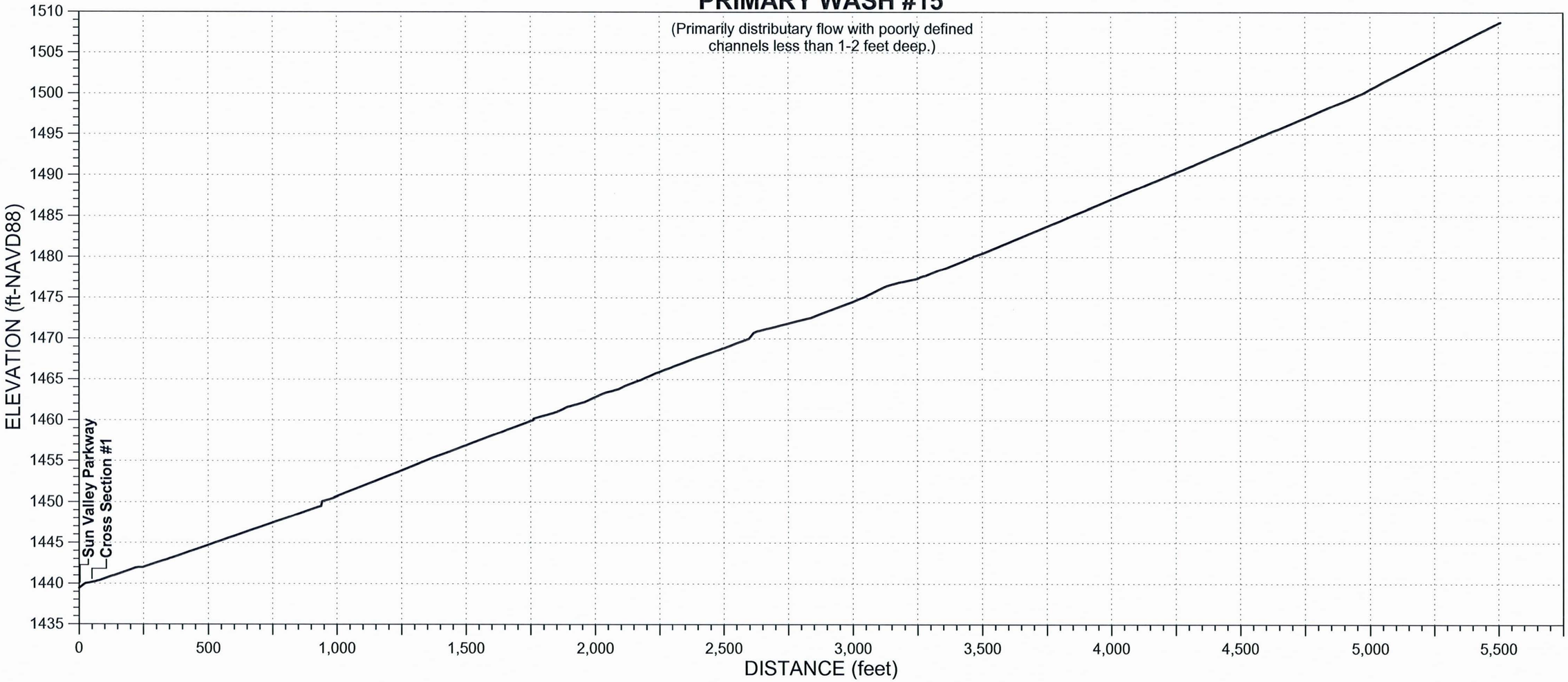
P9/7 Primary Wash #14 - Cross Section #1 – View looking downstream

P9/8 Primary Wash #14 - Cross Section #2 – View looking downstream

P9/9 Primary Wash #14 - Cross Section #3 – View looking downstream

PRIMARY WASH #15

(Primarily distributary flow with poorly defined channels less than 1-2 feet deep.)



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW15	1	NONE	March 16, 2004

North:
East:

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank			0-1.5 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank			0-1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush		
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

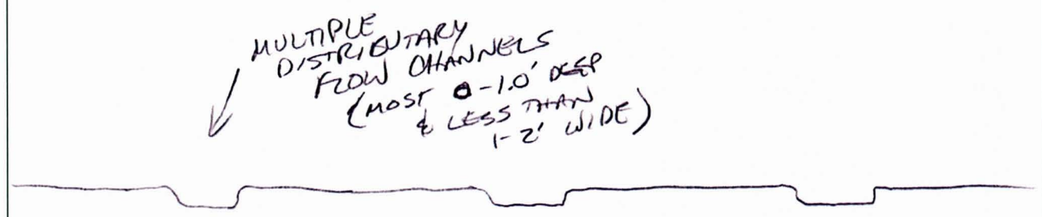
CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE: At / US / DS
Caliche Present: Yes No
Dimensions:

HEADCUT: At / US / DS
Caliche Present: Yes No
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #NA



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW15	March 16, 2004	D/S Face: U/S Face: 332
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	959285.85	---	3	4 ft	10 ft	US: 0 ft	DS: 0 ft		U/S: 0
Easting	464526.24	---	Depth of D/S Incision: 0 ft			#		No	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No			Sand_X_	Gravel_X_
Channel	No	Multiple	Yes	Right bank	No			Cobble____	Bldrs____

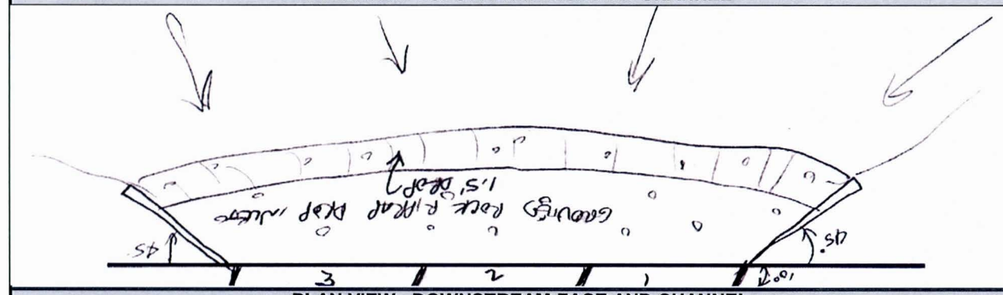
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No			Sand_X_	Gravel_X_
Channel	No	Multiple	No	Right bank	No			Cobble____	Bldrs____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel <0.5 ft	Ht. above Invert	In Barrel <0.5 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel ---	Ht. above Invert	In Barrel ---
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



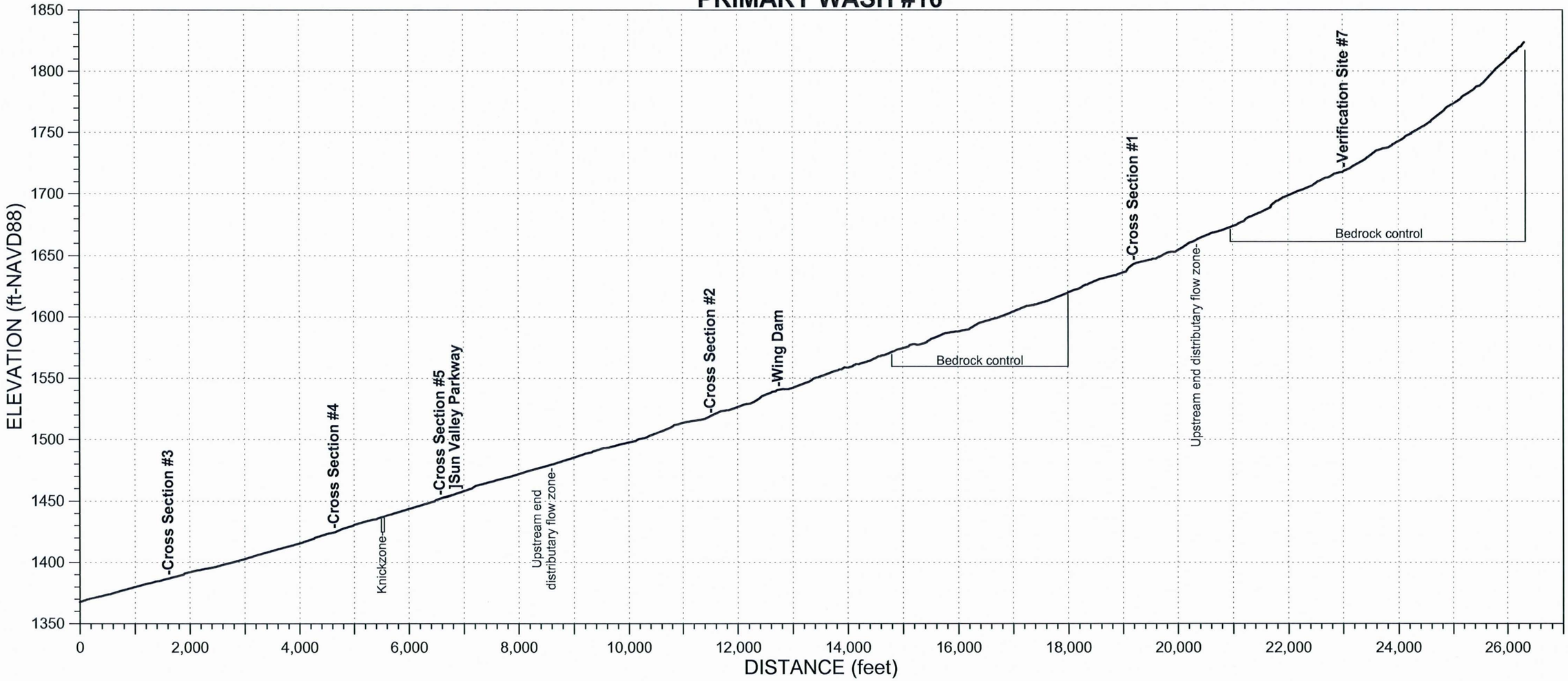
PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

PHOTO #:		NOTES: Dominant upstream channel - mainly multiple small ones
U/S Face	9-6	View south
View U/S		
D/S Face		
View D/S		
Other		

AYRES ASSOCIATES

P9/6 Primary Wash #15 – Sun Valley Parkway Bridge Culvert
Upstream Face - View looking downstream

PRIMARY WASH #16



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16 North: 953152.9 m East: 476902.9 m	1	304	March 15, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.	X	
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	X-?	
Right Bank	X-?	
Channel		

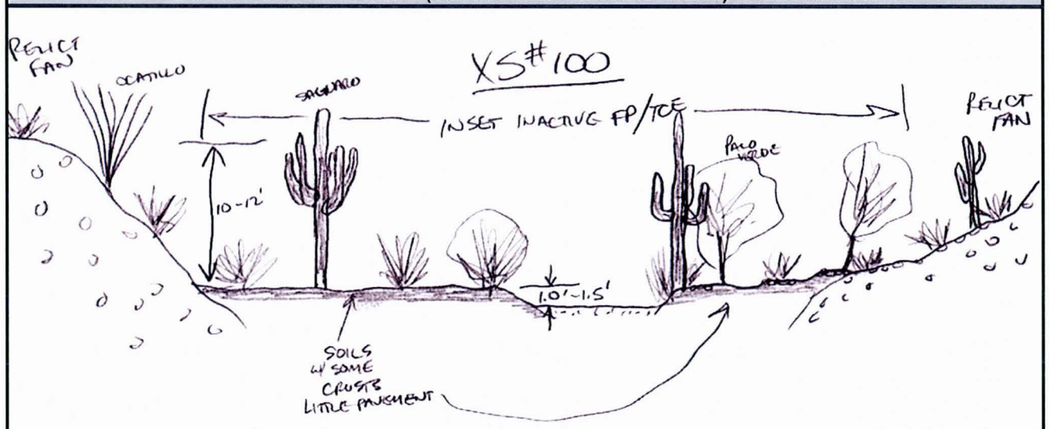
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	0.5 ft	0.5 ft	

PHOTOS & DESCRIPTION:

P8/35,36 Pan - View left to right bank looking upstreamshowing cross section.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #100



Notes: Stock tank and ring dike located on channel about 1/4 miles downstream.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16 North: 952152.0 m East: 469996.5 m	2	308	March 15, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde	X	
Creosote	X	
Brittlebush		
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

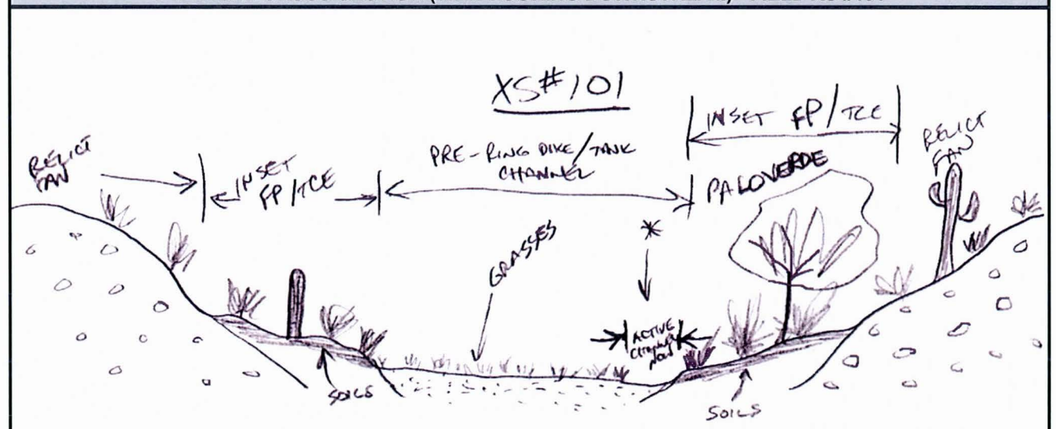
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

P8/42 - View upstream, note green grassed channel below

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #101



Notes:

AYRES ASSOCIATES

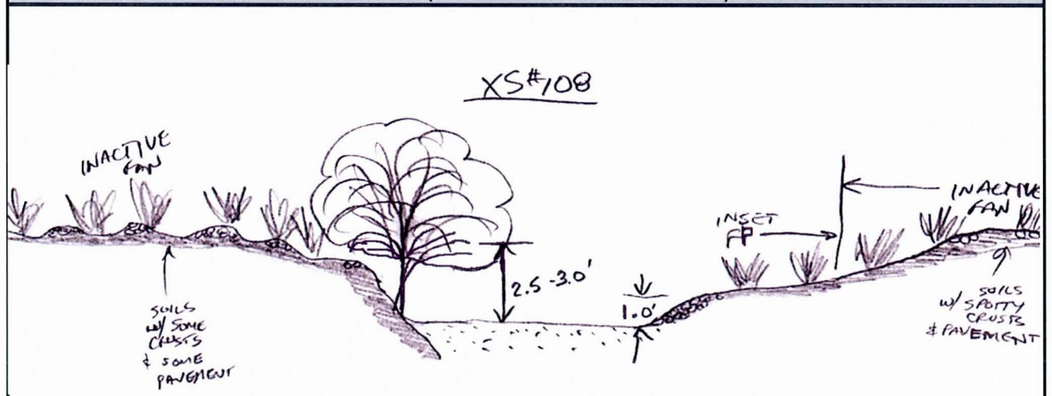
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16 North: 949753.0 m East: 460690.5 m	3	327	March 16, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		2:1	2.5-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		>6:1	2.5-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				0.5 ft	0.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/3 - View looking upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #108



Notes:

AYRES ASSOCIATES

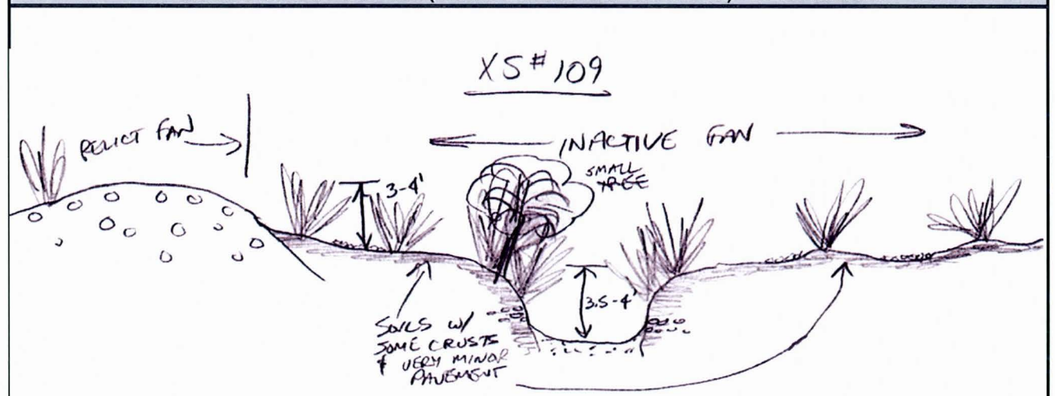
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16 North: 950034.1 m East: 463721.5 m	4	328	March 16, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	3.5-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal			Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/4 - View looking downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #109



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16	5	331	March 16, 2004
	North: 950796.8 m East: 465407.7 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		3:1	2.5-3 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		1:1	2.5-3 ft	Cobble_____	Bldrs_____

VEGETATION		INSET F/P
In-channel		
Marginal	X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

TERRACES (height-ft)		
Left Bank		
Right Bank		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	1 ft	1+ ft
Right Bank	1 ft	1+ ft
Channel	bed	

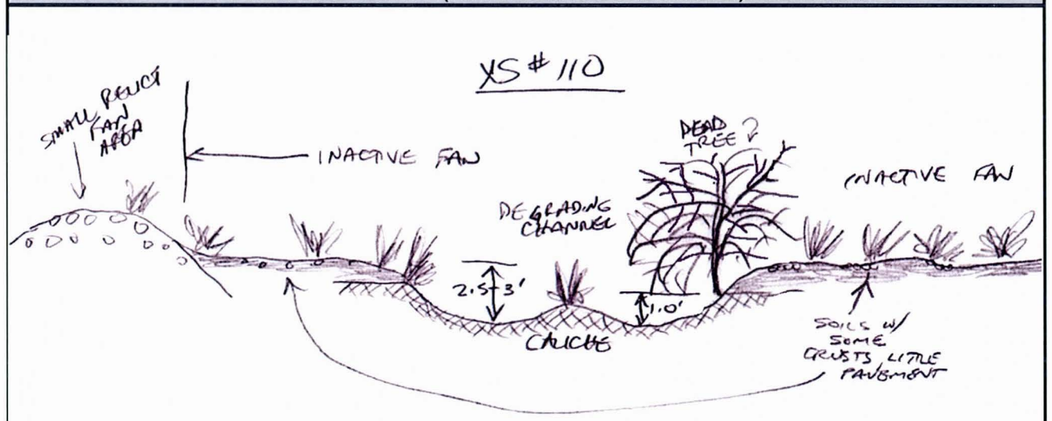
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	

PHOTOS & DESCRIPTION:
P9/5 - View upstream, note degradation in caliche bed and culvert upstream.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #



Notes:

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW16	March 15, 2004	D/S Face: 311 U/S Face: 310
		Field Crew:	W.J. Spitz, A.B. Alvarado

ROAD CROSSING - CULVERT DATA

CMP____ RCP____ RCBC__X__

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	950917.44	950895.41	7	4=3', 3=5'	4=10',3=12'	US:1.75 ft	DS: 1.2 ft		U/S: 0
Easting	465709.17	465575.12	Depth of D/S Incision: 0 ft			# 3 & 7	# 2	No	D/S: 0

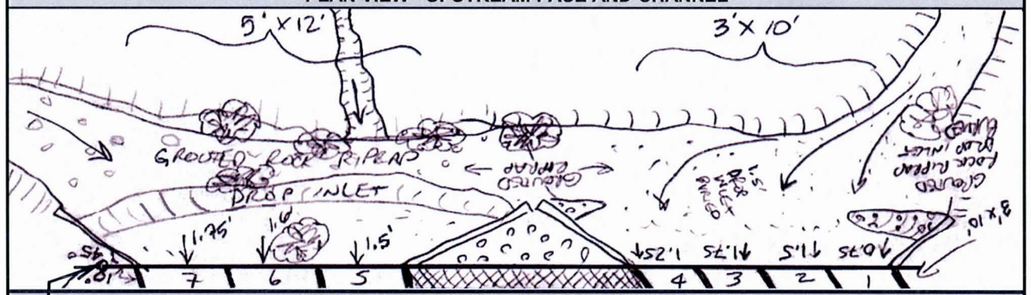
UPSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No			Sand__X__	Gravel__X__
Channel	No	Multiple	Yes	Right bank	No			Cobble__X__	Bldrs_____

DOWNSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes	Left bank	No		var.	Sand__X__	Gravel__X__
Channel	No	Multiple	No	Right bank	No		var.	Cobble_____	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 0.5 ft	Ht. above Invert	In Barrel 0.5 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 1.0 ft	Ht. above Invert	In Barrel 1.0 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

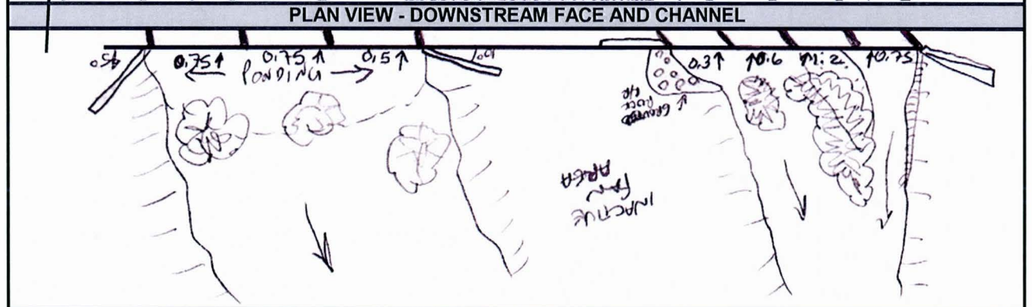


PHOTO #:		NOTES:
U/S Face	8-43,45	Left bank side looking north; looking south on right bank side
View U/S	8-44,46	Upstream at degrading left bank channel; upstream at right bank channel
D/S Face	8-48,49	Looking south on left bank side; looking north on right bank side
View D/S	8-47	Downstream at right bank side
Other		

P8/35-36 Primary Wash #16 - Cross Section #1 – Panorama view looking upstream

P8/42 Primary Wash #16 - Cross Section #2 – View looking upstream

P9/3 Primary Wash #16 - Cross Section #3 – View looking upstream

P9/4 Primary Wash #16 - Cross Section #4 – View looking downstream

P9/5 Primary Wash #16 - Cross Section #5 – View looking upstream

P8/43 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking north at upstream face of left channel bridge

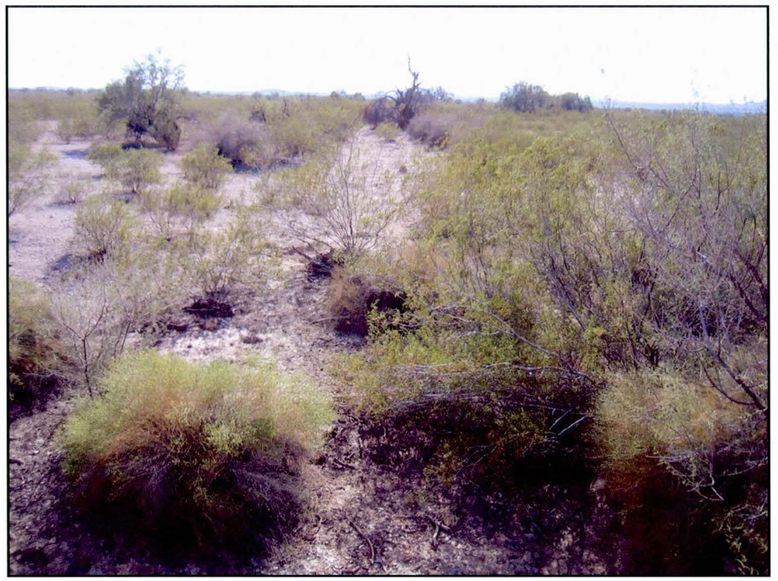
P8/45 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking south at upstream face of right channel bridge

P8/44 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking upstream at upstream left (south) channel

P8/46 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking upstream at upstream right (north) channel

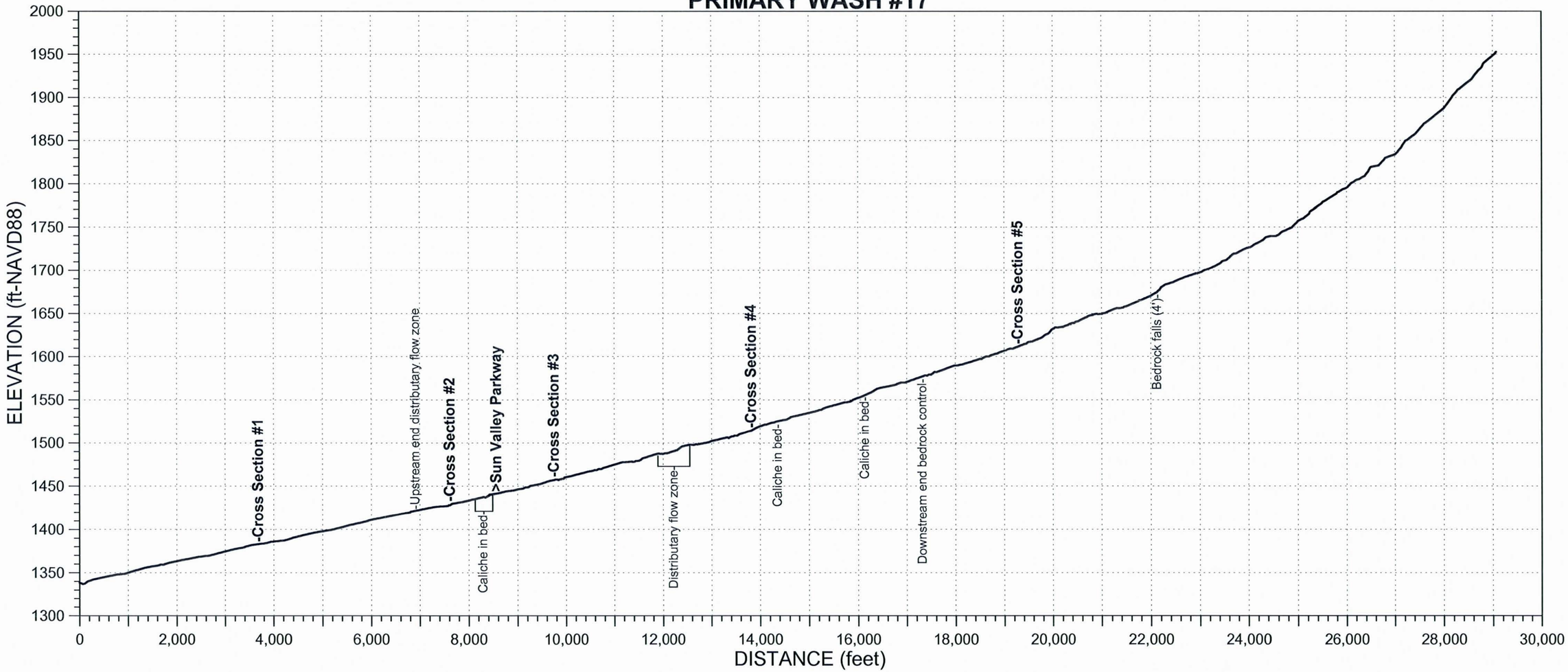
P8/49 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking north at downstream face of right (north) channel bridge

P8/48 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking south at downstream face of left (south) channel bridge



P8/47 Primary Wash #16 – Sun Valley Parkway Bridge Culvert
Looking downstream at downstream right (north) channel

PRIMARY WASH #17



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW17	1	326	March 16, 2004

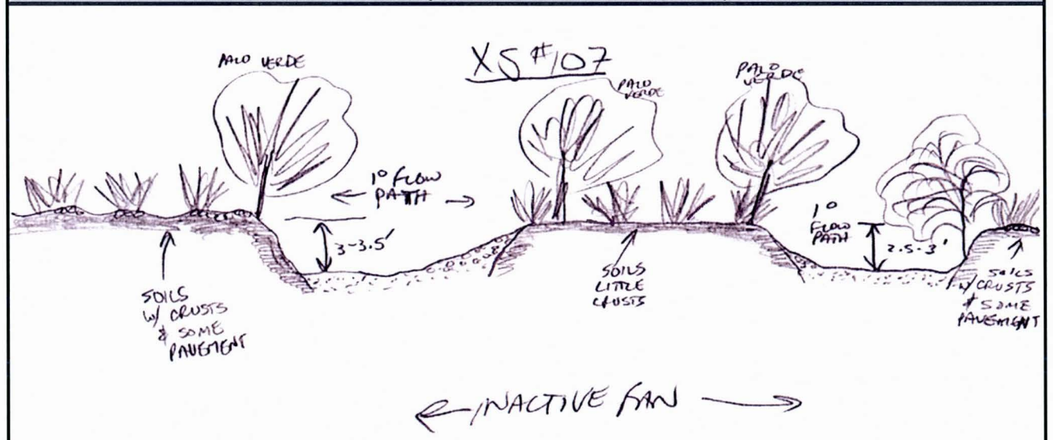
North: 946929.2 m
East: 461081.3 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	3-3.5 ft	Sand__X__	Gravel__X__
Channel	X	Multiple	X	Right Bank		6:1	2.5-3 ft	Cobble_____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/2 - View downstream showing major flow split						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #107



Notes: Large flow split just downstream of cross section.

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW17	2	324	March 16, 2004

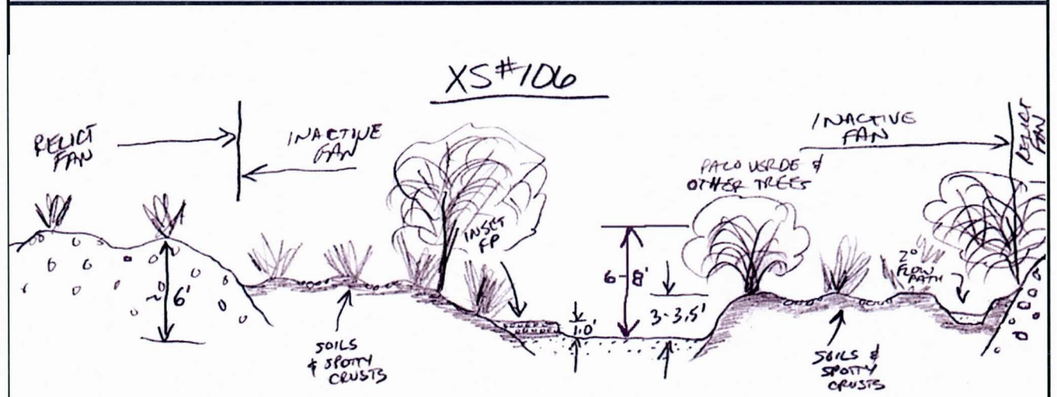
North: 945637.8 m
East: 464739.9 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	3-3.5 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		1:1	3-3.5 ft	Cobble_____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank	3-3.5 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	3-3.5 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P9/1 - View looking downstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #106



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW17	3	289	March 15, 2004

North: 946359.8 ft
East: 466562.2 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	2-4 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank	2-3 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	2-3 ft		Varnish			X
						Pavement		X	
						Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

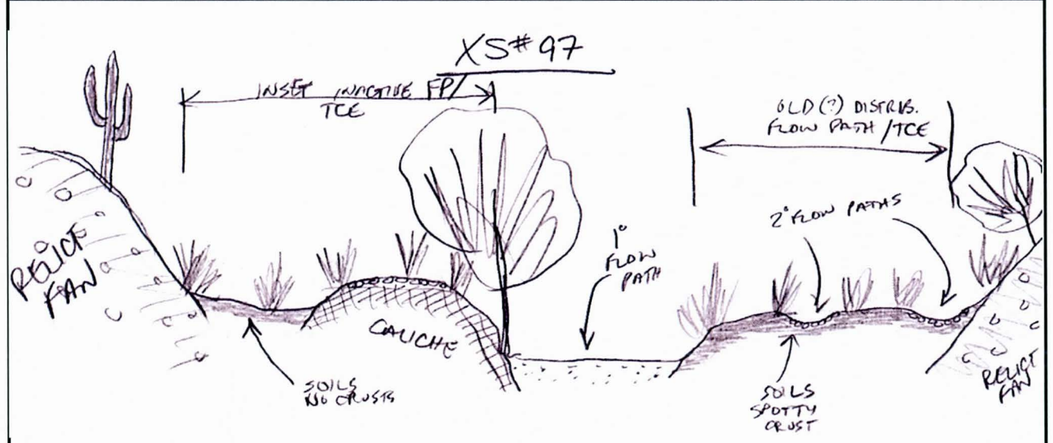
CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank	1.5-2 ft	1.5-2+ ft
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	

PHOTOS & DESCRIPTION:
P8/25 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #97



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW17	4	292	March 15, 2004

North: 947112.1 ft
East: 470292.4 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		1:1	1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank	1.5 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	1.5 ft		Varnish			X
						Pavement			X
						Soils		X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

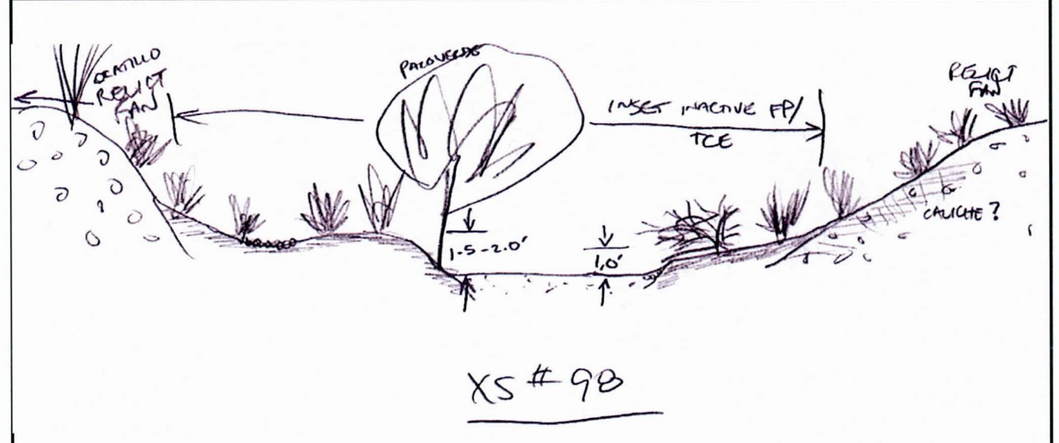
CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank	X-?	?
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P8/26 - View looking upstream, note low flow debris lines on sides of channel

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #98



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW17 North: 947011.4 ft East: 475371.4 ft	5	296	March 15, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		vertical	>18 ft	Cobble	Bldrs

VEGETATION		INSET F/P
In-channel		
Marginal	X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.	X	
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo	X	

TERRACES (height-ft)		
Left Bank	1.5 ft	
Right Bank		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	0.5 ft	1 ft	

PHOTOS & DESCRIPTION:
P8/27 - View upstream

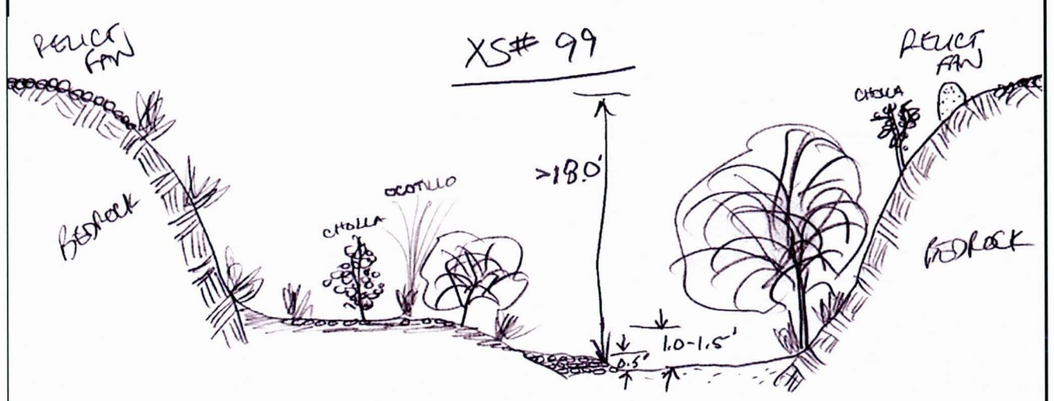
CRYPTOBIOTIC CRUST (floodway): Absent / **Spotty** / Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment?	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment?	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #99



Notes: Banks composed of pediment bedrock overlain by thin veneer of relict fan deposits.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW17	March 15, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 287 U/S Face: 288

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	945768.69	945681.69	3	6 ft	12 ft	US: 0.2 ft	DS: 0.2 ft		U/S: 0
Easting	465668.42	465521.17	Depth of D/S Incision: 2.5 ft			# 1	# 1	No	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No	>6:1	1-2 ft	Sand X	Gravel X
Channel	No	Multiple	No	Right bank	No	>6:1	1-2 ft	Cobble	Bldrs

DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	Yes	1:1	2.5-3 ft	Sand X	Gravel X
Channel	Yes	Multiple	No	Right bank	Yes	1:1	2.5-3 ft	Cobble	Bldrs

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		<1 ft		<1 ft

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		0.5 ft		0.5 ft

PLAN VIEW - UPSTREAM FACE AND CHANNEL

PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

PHOTO #:		NOTES:
U/S Face	8-23	
View U/S	8-24	
D/S Face	8-22	Note undermining and degradation
View D/S	8-21	View downstream showing incising channel
Other		

AYRES ASSOCIATES

P9/2 Primary Wash #17 - Cross Section #1 – View looking downstream

P9/1 Primary Wash #17 - Cross Section #2 – View looking downstream

P8/25 Primary Wash #17 - Cross Section #3 – View looking upstream

P8/26 Primary Wash #17 - Cross Section #4 – View looking upstream

P8/27 Primary Wash #17 - Cross Section #5 – View looking upstream

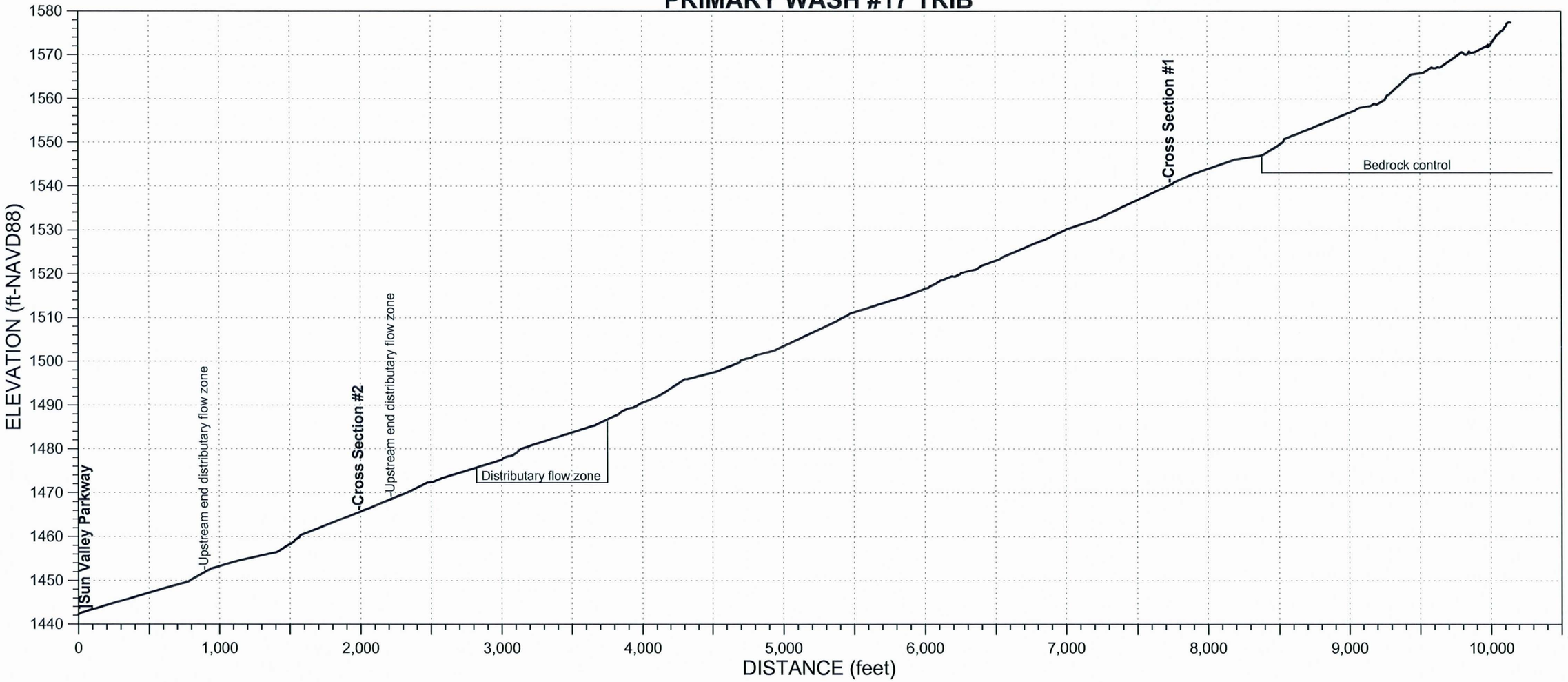
P8/23 Primary Wash #17 – Sun Valley Parkway Bridge Culvert
Looking south at upstream face of bridge

P8/24 Primary Wash #17 – Sun Valley Parkway Bridge Culvert
Looking upstream at upstream channel

P8/22 Primary Wash #17 – Sun Valley Parkway Bridge Culvert
Looking upstream at downstream face of bridge

P8/46 Primary Wash #17 – Sun Valley Parkway Bridge Culvert
Looking downstream at downstream channel

PRIMARY WASH #17 TRIB



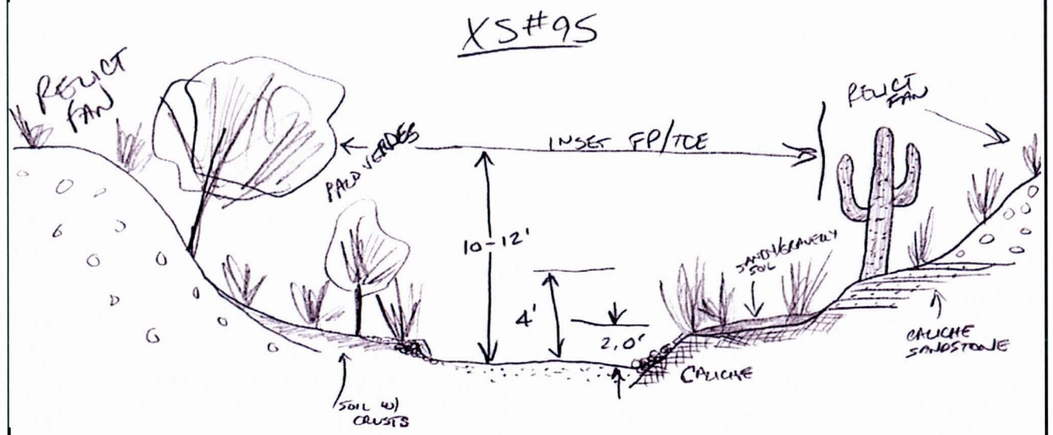
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW17 Trib	1	279	March 15, 2004
	North: 943992.6 m East: 472330.9 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1-1.5 ft	Sand__X__	Gravel__X__
Channel		Multiple		Right Bank		>6:1	2 ft	Cobble_____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank	X-?	?	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	X-?	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/13 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			**Spotty**	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #95



Notes:

AYRES ASSOCIATES

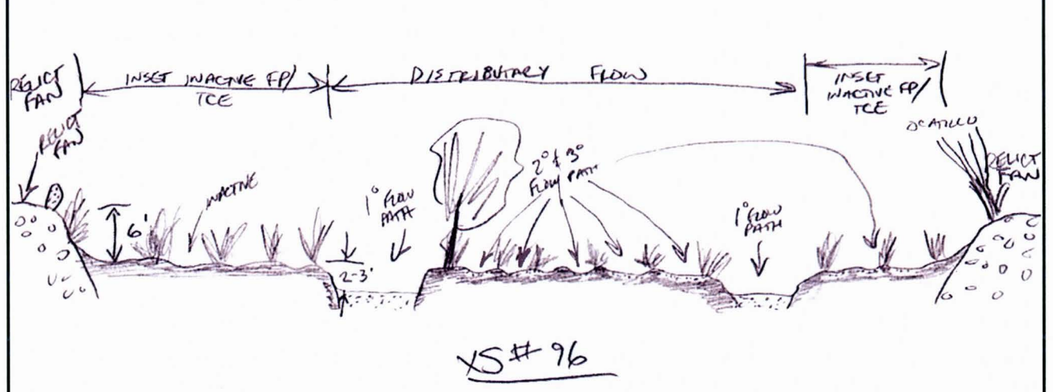
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW17 Trib	2	283	March 15, 2004
	North: 944765.6 m East: 467196.8 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	1-3 ft	Sand__X__	Gravel__X__
Channel		Multiple	X	Right Bank		1:1	1-3 ft	Cobble_____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank	3-4 ft			Extensive	Spotty	Absent
Marginal	X	X	Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/14,15,16 Pan - View from left bank to right bank looking downstream						
Mormon Tea	X		showing distributary flow.						
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			**Spotty**	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #96



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW17 Trib	March 15, 2004	D/S Face: 286 U/S Face: 285
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___
RCBC__X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	945406.05	945473.03	3	5 ft	10 ft	US: 0.3 ft	DS: 0		U/S: 0
Easting	465661.25	465528.05	Depth of D/S Incision: 2.5 ft			# 3	#	No	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No	>6:1	1-2 ft	Sand__X__	Gravel__X__
Channel	No	Multiple	No	Right bank	No	>6:1	1-2 ft	Cobble_____	Bldrs_____

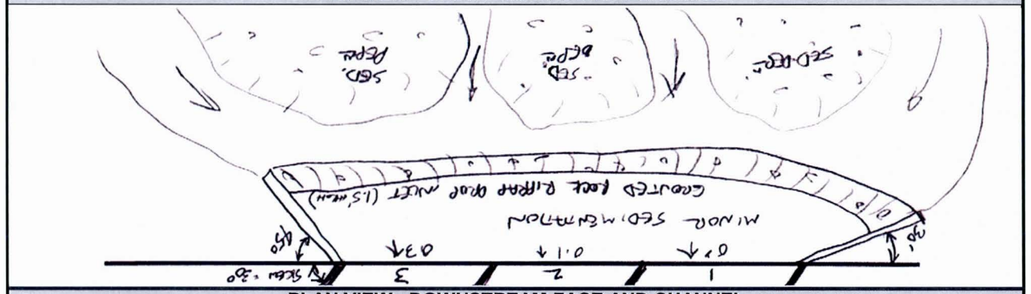
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	Yes	Vert.	2.5 ft	Sand__X__	Gravel__X__
Channel	Yes	Multiple	No	Right bank	Yes	Vert.	2.5 ft	Cobble__X__	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 0.5 ft	Ht. above Invert	In Barrel 0.5 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 1.0 ft	Ht. above Invert	In Barrel 1.0 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

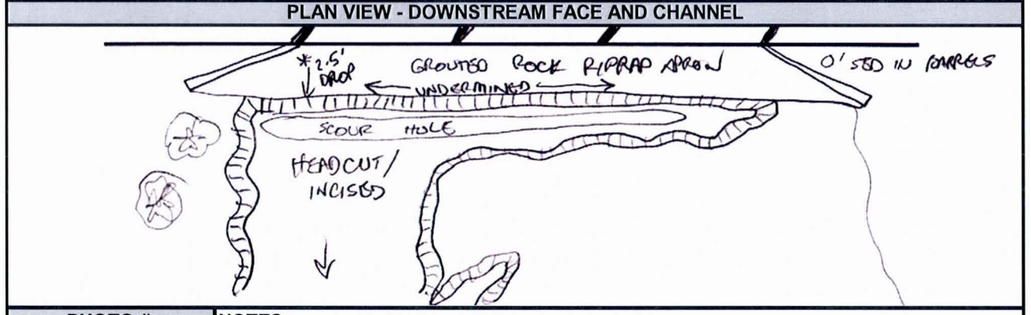


PHOTO #:		NOTES:
U/S Face	8-18	
View U/S	8-17	
D/S Face	8-20	View upstream showing downstream face and incision (2.5 ft) and undermining of apron
View D/S	8-19	View downstream showing incising channel
Other		

AYRES ASSOCIATES

P8/18 Primary Wash #17 Trib – Sun Valley Parkway Bridge Culvert
View looking at upstream face

P8/17 Primary Wash #17 Trib – Sun Valley Parkway Bridge Culvert
View looking upstream at upstream channel

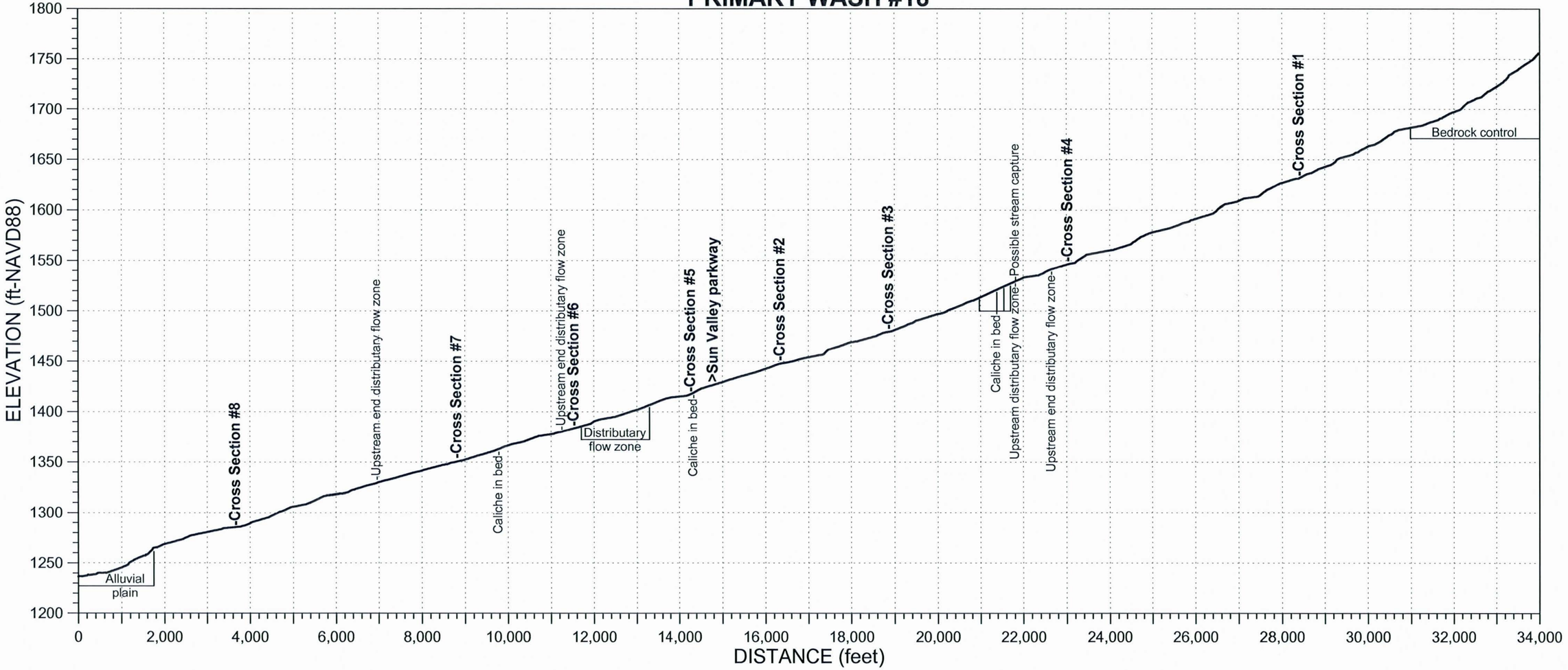
P8/20 Primary Wash #17 Trib – Sun Valley Parkway Bridge Culvert
View looking upstream at downstream face

P8/20 Primary Wash #17 Trib – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

P8/13 Primary Wash #17 Trib - Cross Section #1 – View looking downstream

P8/14,15,16 Primary Wash #17 Trib - Cross Section #2 – Panorama view looking downstream

PRIMARY WASH #18



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW18	1	265	March 14, 2004

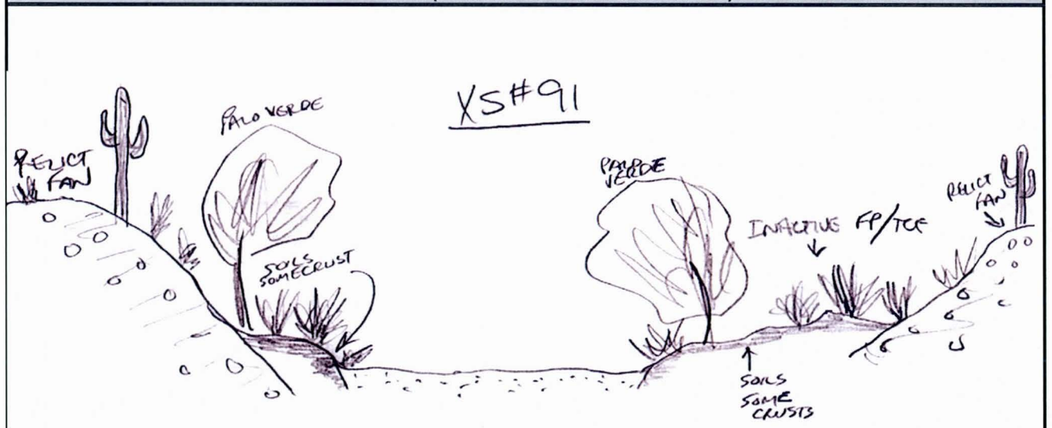
North: 943654.5 ft
East: 476983.9 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>6:1	1-1.5 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
Palo Verde	X		Left Bank			HIGH WATER MARKS/DEBRIS			
Creosote	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Brittlebush	X		Channel				<1 ft	<1 ft	
Bursage	X		PHOTOS & DESCRIPTION:						
Mormon Tea	X		P7/28 - View upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #91



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW18	2	268	March 15, 2004

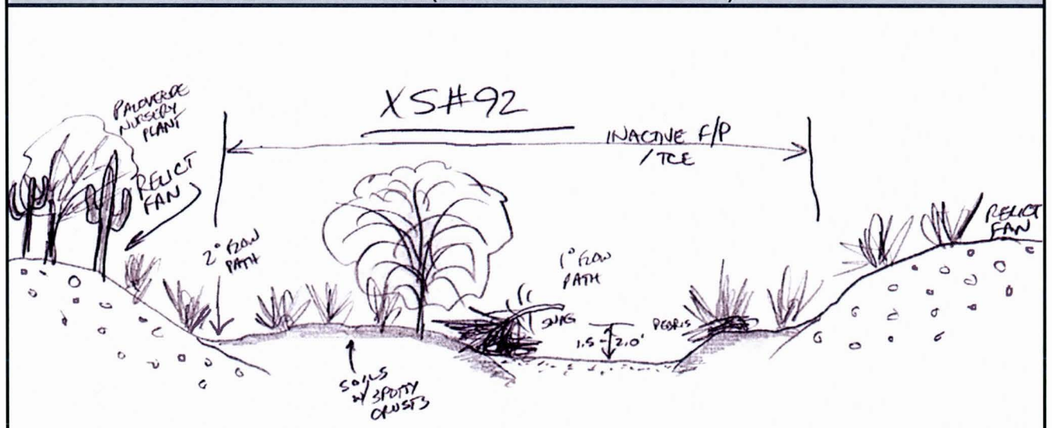
North: 939857.1 ft
East: 467043.2 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	1.5-2 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		3:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils		X	
Palo Verde	X		Left Bank			HIGH WATER MARKS/DEBRIS			
Creosote	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Brittlebush	X		Channel				1-1.5 ft	1-1.5 ft	
Bursage	X		PHOTOS & DESCRIPTION:						
Mormon Tea	X		P8/7 - View looking upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #92



Notes:

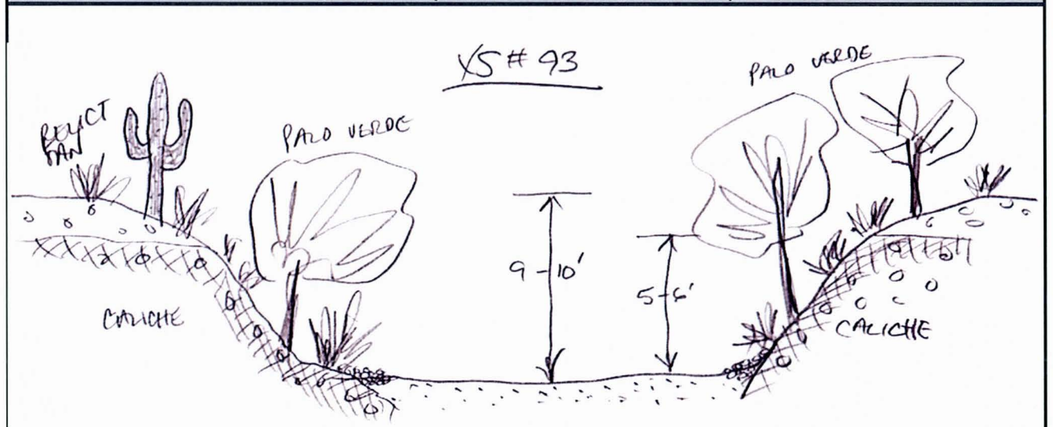
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW18 North: 940641.3 ft East: 469305.4 ft	3	269	March 15, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	9-10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	9-10 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	5-6 ft	5-6 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	5-6 ft	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1-1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/8 - View downstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #93



Notes:

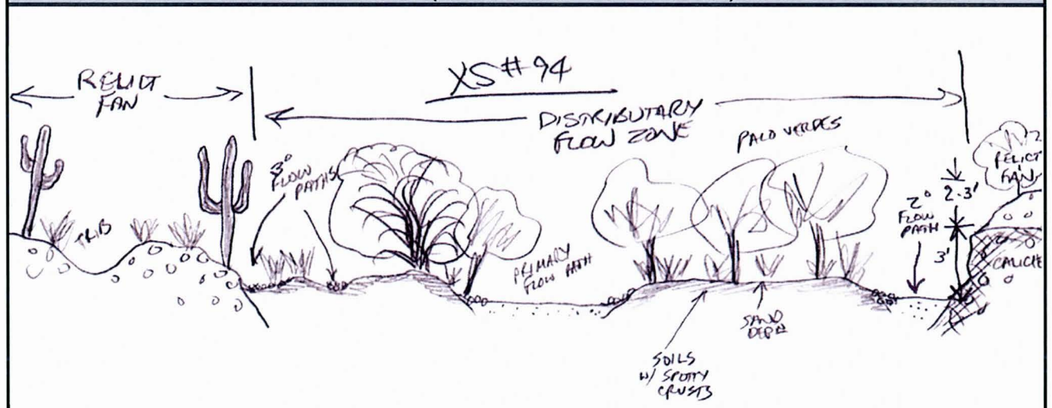
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW18 North: 941310.6 ft East: 473039.2 ft	4	276	March 15, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		>1:1	1-2 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>1:1	1-2 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	3 ft	3 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/9 - View downstream						
Mormon Tea	X		P8/10 - View upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #94



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW18 North: 939499.6 ft East: 465124.9 ft	5	313	March 15, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway	X	Single	X	Left Bank	X
Channel	X	Multiple		Right Bank	X

H:V	Height	BED MATERIAL	
vertical	2 ft	Sand X	Gravel X
vertical	2.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank	2 ft	
Marginal	X		Right Bank	2.5 ft	

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

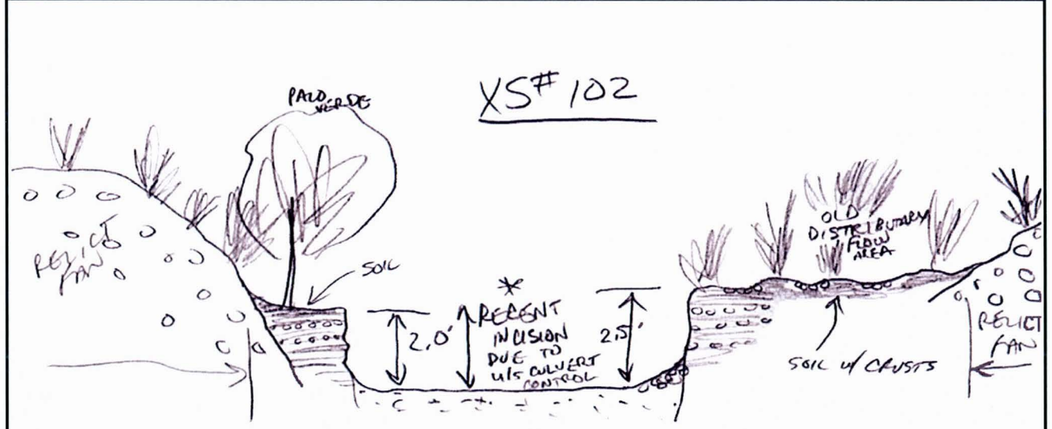
CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT: Upstream at Bridge		
Spotty	Caliche Present:			Caliche Present: YES		
Extensive	Dimensions:			Dimensions: 2.5 ft at DS side of culvert at apron		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #102



Notes: Recent downstream incision due to upstream culvert at Sun Valley Parkway crossing.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW18 North: 939029.1 ft East: 462536.7 ft	6	316	March 15, 2004
		Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion
Floodway	X	Single	X	Left Bank	
Channel	X	Multiple		Right Bank	

H:V	Height	BED MATERIAL	
1:1	1.5-2 ft	Sand X	Gravel X
2:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

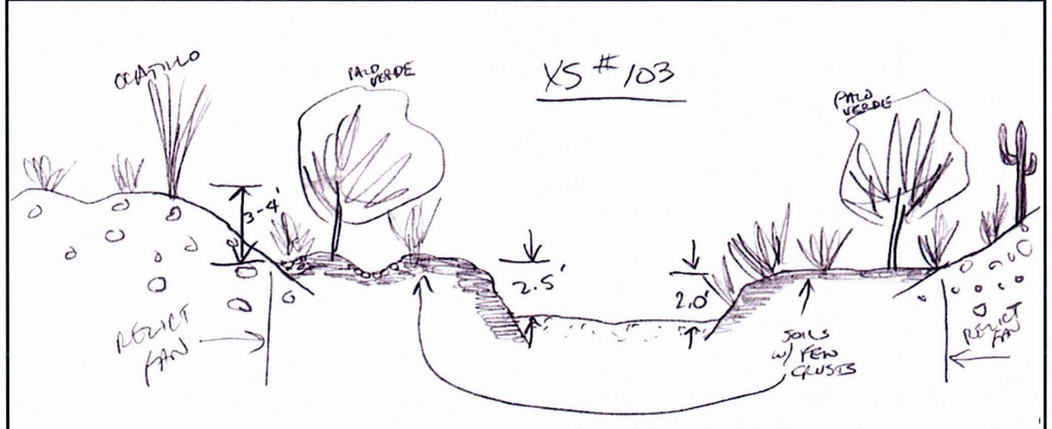
CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P8/51 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #103



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW18	7	319	March 15, 2004

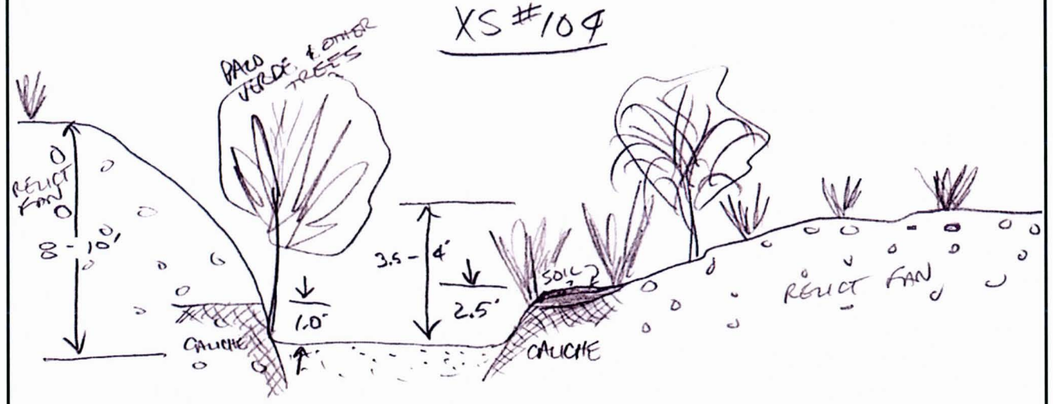
North: 938305.1 ft
East: 460220.1 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	8-10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils			X
			Left Bank	1 ft	1+ ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	1 ft	1+ ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/52 - View upstream						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #104



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW18	8	321	March 15, 2004

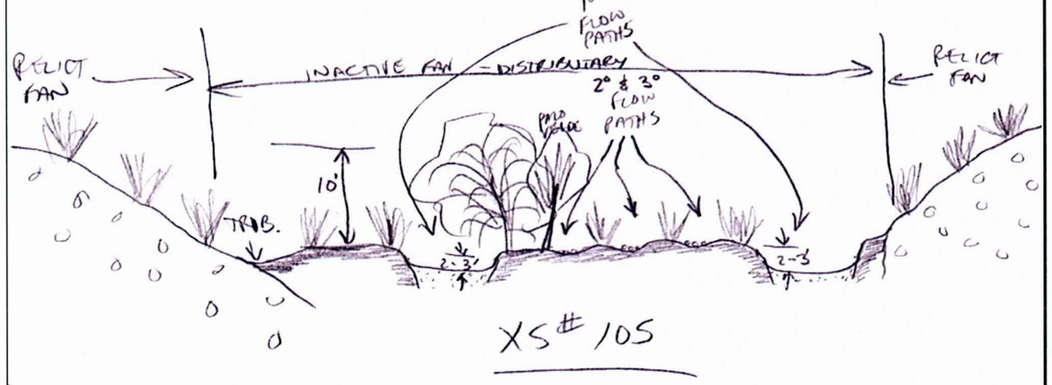
North: 937834.5 ft
East: 455532.5 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank	X	1:1	2-3 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X	1:1	2-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P8/53 - View looking upstream from right bank						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #105



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW18	March 15, 2004	D/S Face: 266 U/S Face: 267
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	939555.02	939523.83	6	5 ft	12 ft	US: 1.0 ft	DS:<0.1 ft		U/S: 0
Easting	465620.08	465485.59	Depth of D/S Incision: 3-4 ft			# 6	# All	No	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No		1.5-2 ft	Sand_X_	Gravel_X_
Channel	No	Multiple	Yes	Right bank	No		1.5-2 ft	Cobble_X_	Bldrs_____

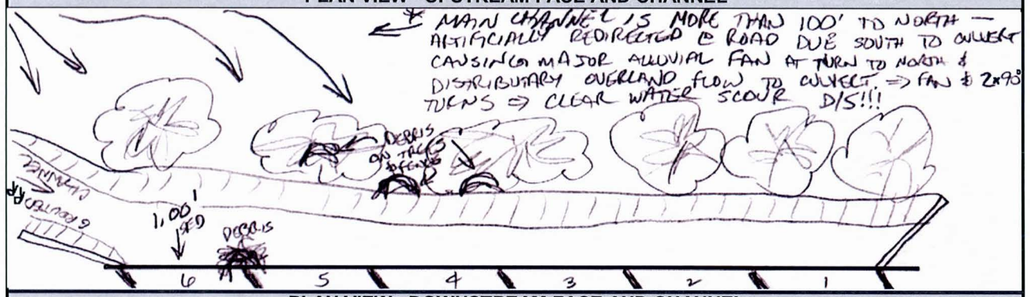
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	Yes	Vert.	3-4 ft	Sand_X_	Gravel_X_
Channel	Yes	Multiple	No	Right bank	Yes	Vert.	3-4 ft	Cobble_X_	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 1.5-2 ft	Ht. above Invert	In Barrel 1.5-2 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel <1 ft	Ht. above Invert	In Barrel <1 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

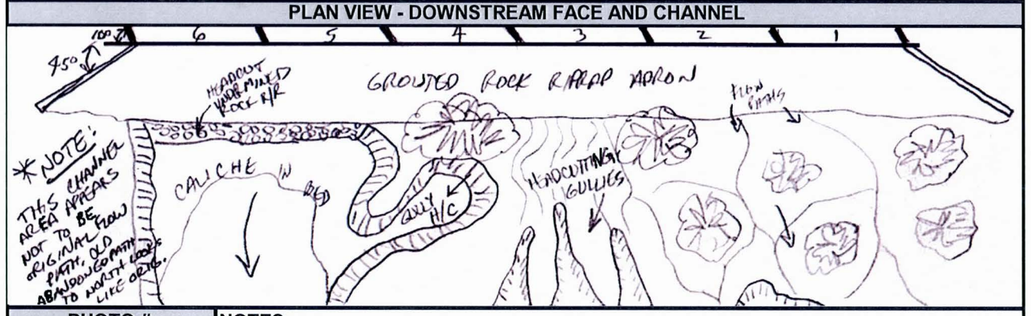


PHOTO #:		NOTES:
U/S Face	8-5,6	View downstream along grouted riprap channel section; View south showing upstream face
View U/S	8-4	View upstream of fan delta at road embankment at 90 degree turn to north of culvert
D/S Face	8-3	View south
View D/S	8-2	View of incising channel downstream
Other	8-1	View upstream showing undermined DS apron and barrels 4, 5, and 6

AYRES ASSOCIATES

P7/28 Primary Wash #18 - Cross Section #1 – View looking upstream

P8/7 Primary Wash #18 - Cross Section #2 – View looking upstream

P8/8 Primary Wash #18 - Cross Section #3 – View looking downstream

P8/9 Primary Wash #18 - Cross Section #4 – View looking downstream

P8/10 Primary Wash #18 - Cross Section #4 – View looking upstream

P8/51 Primary Wash #18 - Cross Section #6 – View looking upstream

P8/52 Primary Wash #18 - Cross Section #7 – View looking upstream

P8/53 Primary Wash #18 - Cross Section #8 – View looking upstream

P8/6 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking downstream at upstream bridge face

P8/5 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking south at upstream face and grouted riprap inlet

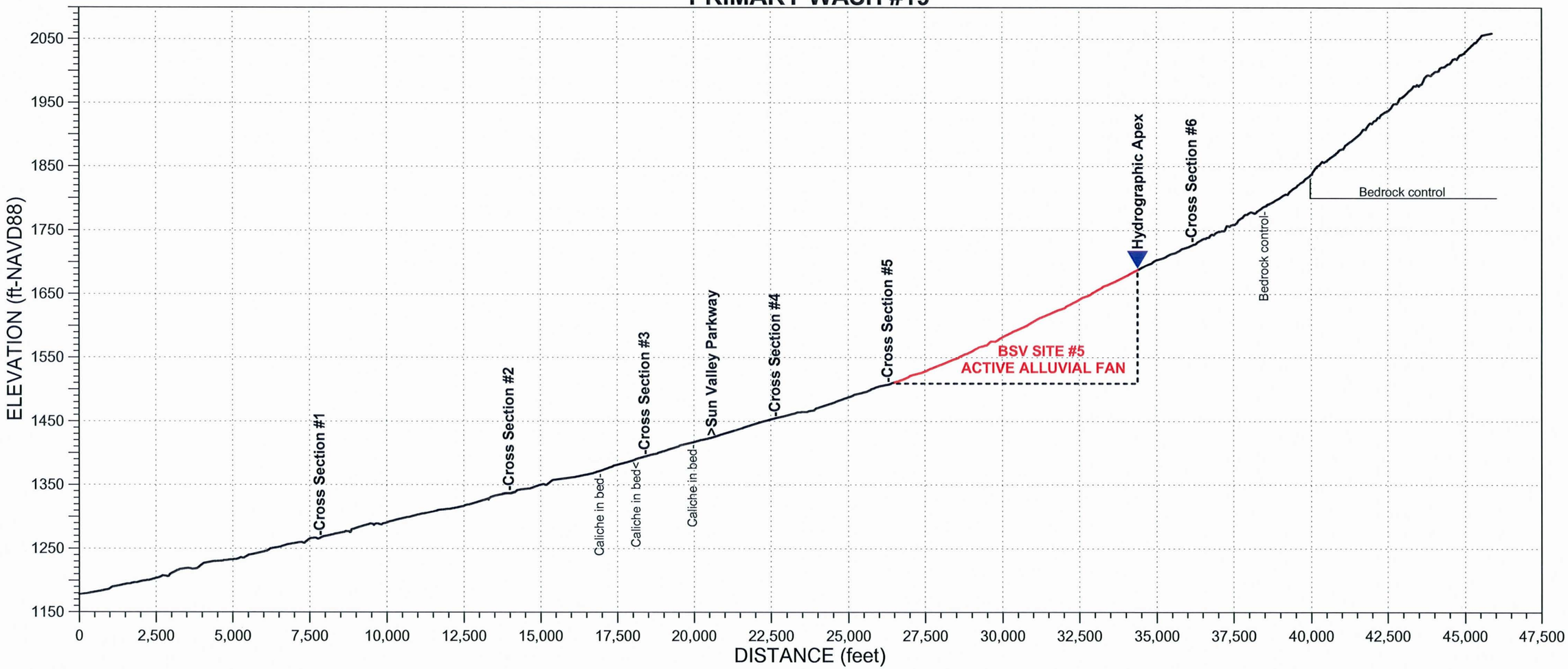
P8/4 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking upstream at upstream channel and delta at road embankment

P8/3 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking upstream and south at downstream face

P8/2 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

P8/1 Primary Wash #18 – Sun Valley Parkway Bridge Culvert
View looking upstream at undermined downstream grouted riprap apron

PRIMARY WASH #19



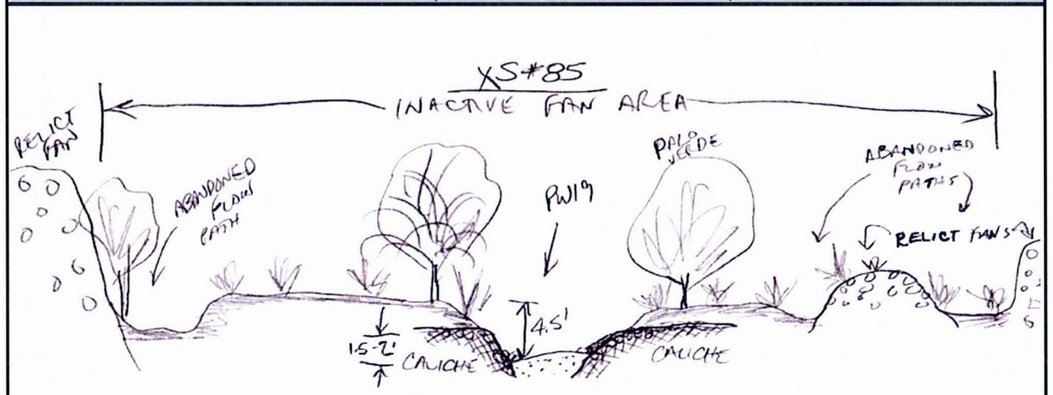
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 927889.4 ft East: 457579.1 ft	1	244	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	4.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	4.5 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank	4.5 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	4.5 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank	1.5-2 ft	>1.5-2 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	1.5-2 ft	>1.5-2 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P7/10 - View looking downstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #85



Notes:

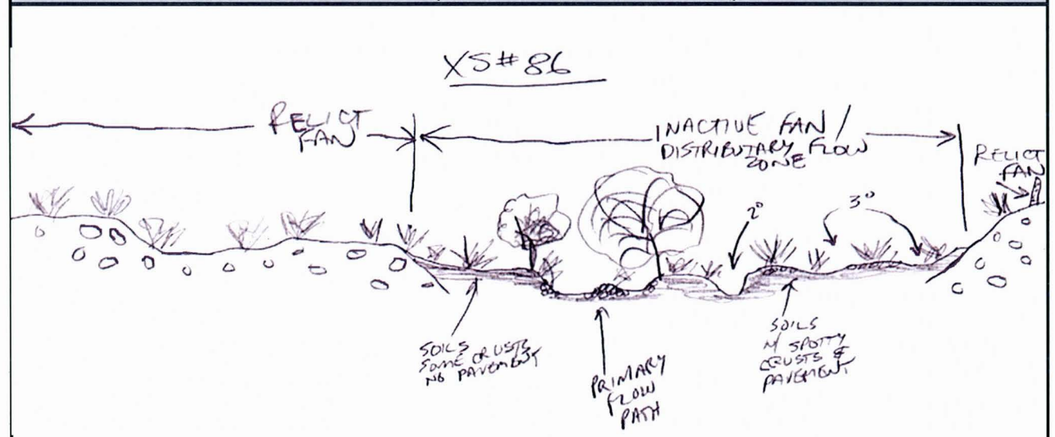
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 931605.4 ft East: 461909.5 ft	2	245	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	2-3 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		1:1	2-3 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		pP7/11 - View upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #86



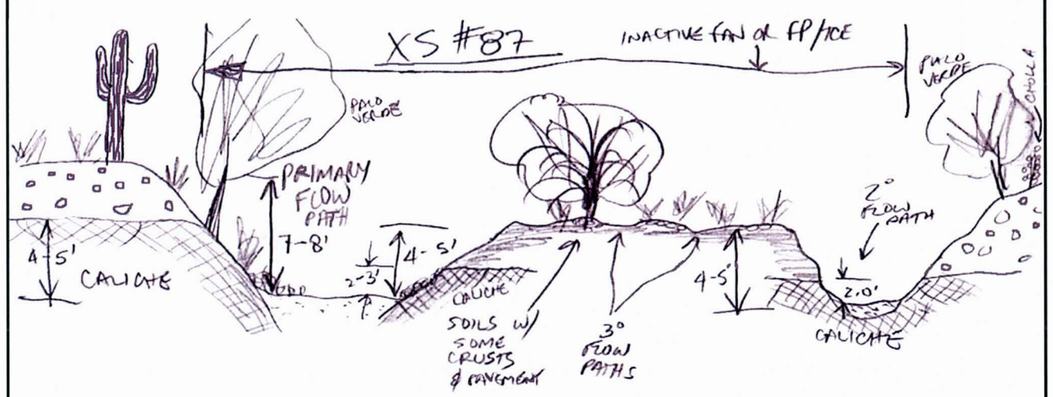
Notes:

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 936552.5 ft East: 466277.3 ft	3	249	March 14, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	7 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		4:1	4 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	4-5 ft	4-5 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank	2-3 ft	2-3 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote			Channel				<1 ft	<1 ft	
Brittlebush			PHOTOS & DESCRIPTION:						
Bursage			P7/12 - View downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #87



Notes:

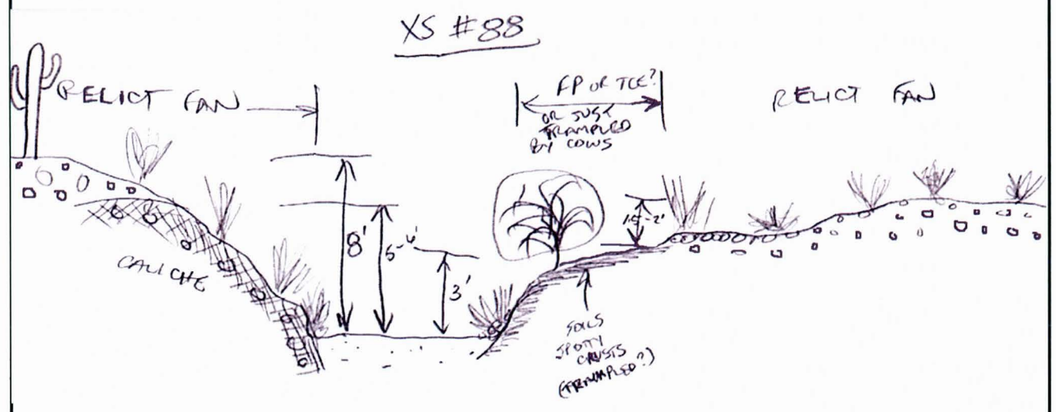
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 936946.0 ft East: 468421.7 ft	4	254	March 14, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		2:1	8 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	3 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank	3 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	6 ft	6 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1-1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P7/21 - View upstream, note left bank caliche						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #88



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 937162.2 ft East: 471772.3 ft	5	2551	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		4:1	6-8 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		4:1	8-10 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X
Palo Verde	X	X
Creosote	X	X
Brittlebush	X	X
Bursage	X	X
Mormon Tea	X	X
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank	X	?
Right Bank	X	?
Channel		

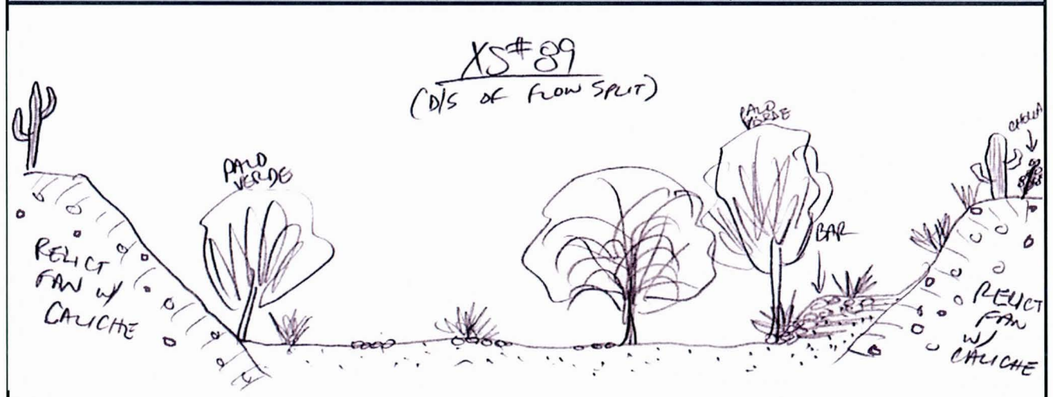
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	1 ft

PHOTOS & DESCRIPTION:
P7/22 - View looking downstream
P7/23 - View upstream showing flow split below active inset fan

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #89



Notes: ***Downstream of BSV Site #5 active fan***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 North: 939768.9 ft East: 480570.0 ft	6	2552	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	12 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		1:1	12 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X	X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	X
Brittlebush	X	X
Bursage	X	X
Mormon Tea	X	X
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank	?	?
Right Bank	?	?
Channel		

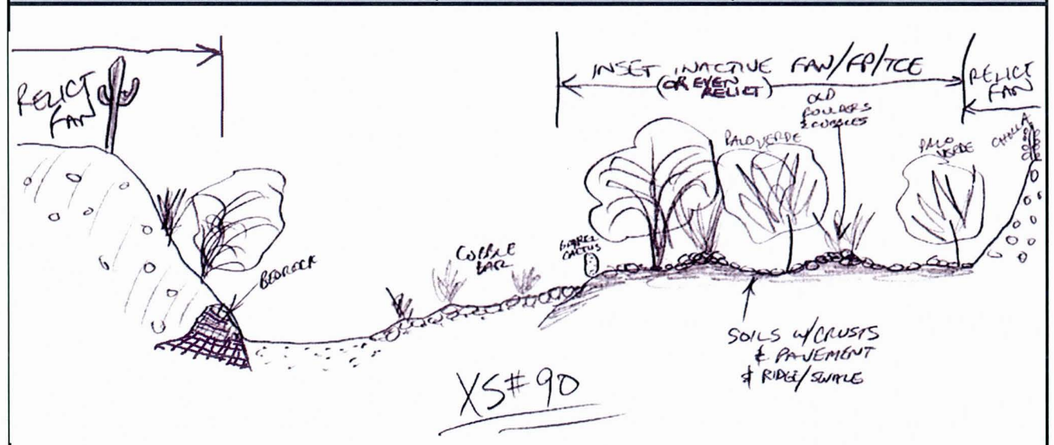
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement	X		
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5-2 ft	1.5-2 ft	

PHOTOS & DESCRIPTION:
P7/26 - View downstream
P7/27 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #90



Notes: ***Upstream of BSV Site #5 active fan***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW19 (New Alignment of PW19 plus other tribs.)	March 14, 2004	D/S Face: 252 U/S Face: 253
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC__X__

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	935832.49	935776.16	15	6 ft	10' (3 at 12')	US: 2.25ft	DS: 2.25ft		U/S: 40%
Easting	466228.79	466109.53	Depth of D/S Incision: 1.5-2 ft			# 2,3,4,6	# 6	Yes	D/S: 30%

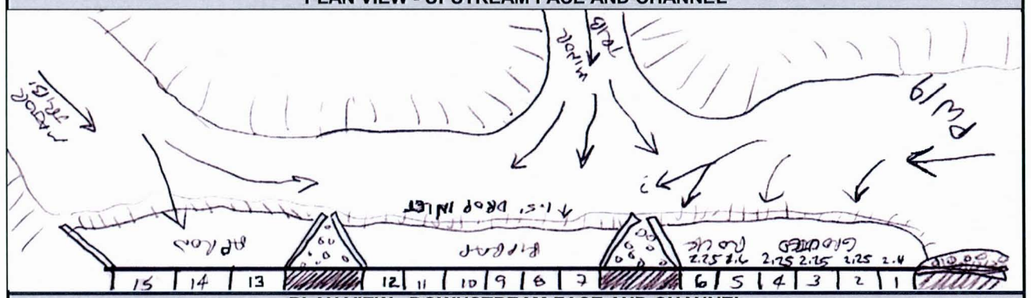
UPSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	No	Left bank	No	3:1	7-8 ft	Sand__X__	Gravel__X__
Channel	Yes	Multiple	Yes	Right bank	No	3:1	7-8 ft	Cobble__X__	Bldrs_____

DOWNSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	No	Left bank	Yes	Vert.	3-3.5 ft	Sand__X__	Gravel__X__
Channel	Yes	Multiple	Yes	Right bank	Yes	Vert.	3-3.5 ft	Cobble__X__	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel ~1 ft	Ht. above Invert	In Barrel ~1 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel >1 ft	Ht. above Invert	In Barrel >1 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

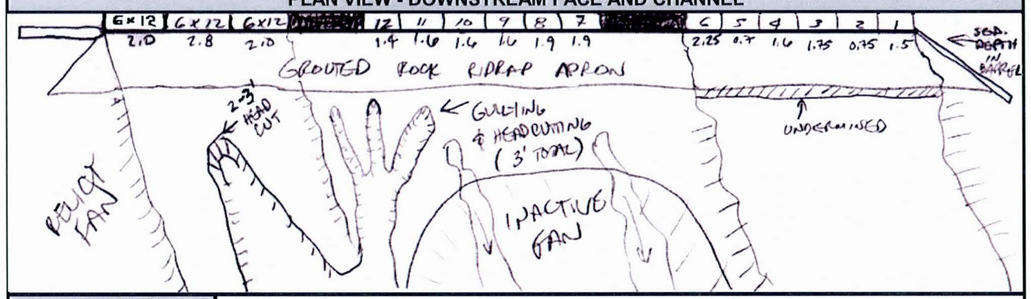


PHOTO #:		NOTES: **3 sets of culverts with separating wingwall bulkheads on upstream side**
U/S Face	7-19	View downstream showing left bank and middle culvert
View U/S	7-18	View upstream toward new re-routed PW19 channel along road
D/S Face	7-15,16	View of PW19 culverts
View D/S	7-17	Note incised channel downstream and undermined apron
Other	7-20	View US at diversion point; fill and road on right; erosion of road embankment

AYRES ASSOCIATES

P7/10 Primary Wash #19 - Cross Section #1 – View looking downstream

P7/11 Primary Wash #19 - Cross Section #2 – View looking upstream

P7/12 Primary Wash #19 - Cross Section #3 – View looking downstream

P7/21 Primary Wash #19 - Cross Section #4 – View looking upstream

P7/22 Primary Wash #19 - Cross Section #5 – View looking downstream

P7/23 Primary Wash #19 - Cross Section #5 – View looking upstream

P7/26 Primary Wash #19 - Cross Section #6 – View looking downstream

P7/27 Primary Wash #19 - Cross Section #6 – View looking upstream

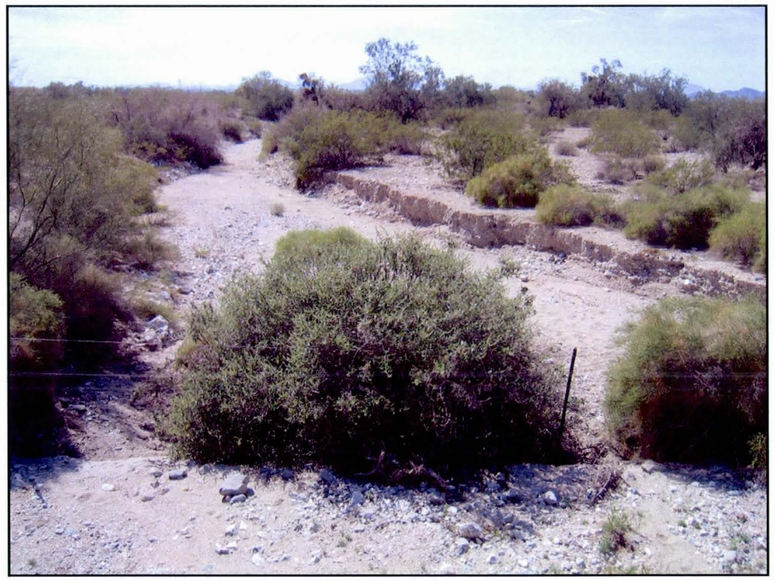
P7/20 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking upstream at upstream channel where re-routed to north

P7/18 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking upstream/south at new re-routed channel and southern culverts

P7/19 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking downstream at upstream face of southern and middle set of culverts

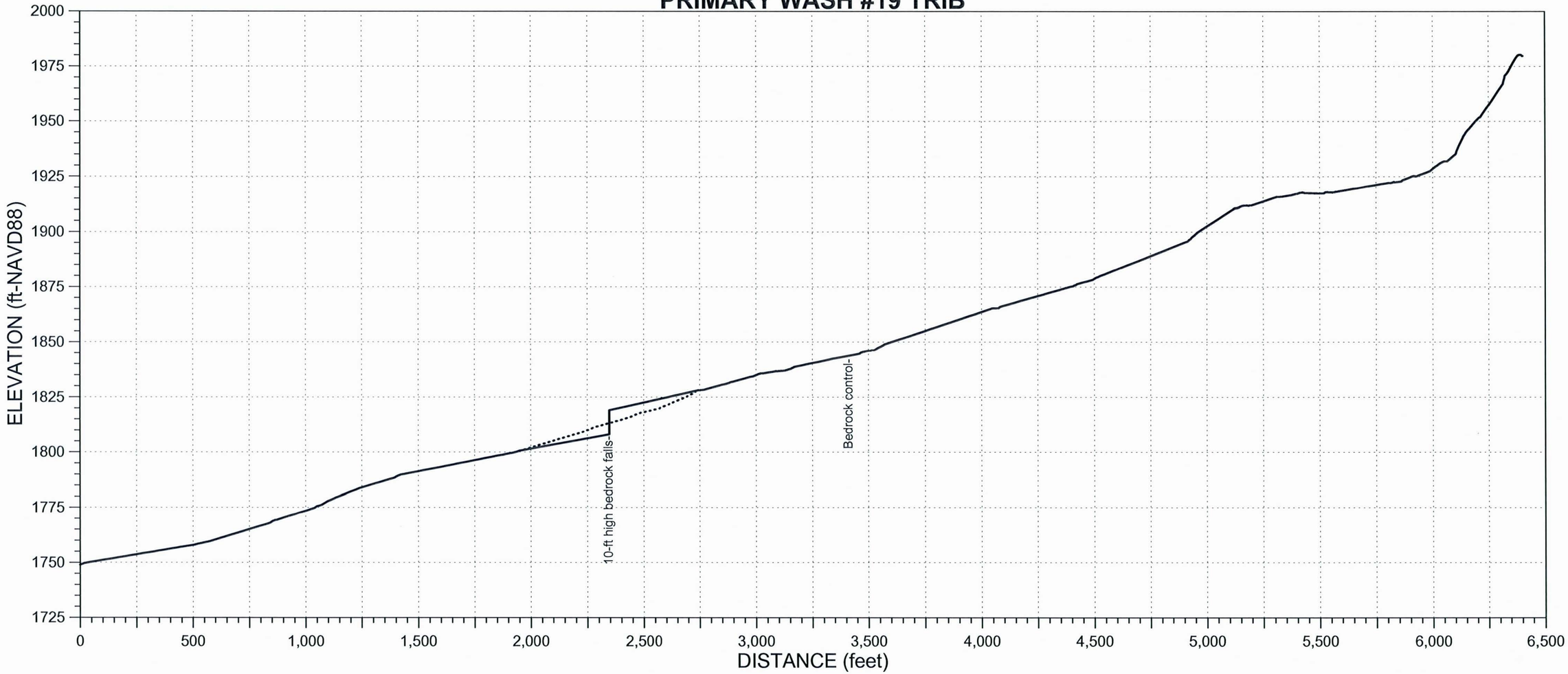
P7/15 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking north at downstream face of bridge culverts

P7/16 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking upstream at upstream face and undermined downstream grouted rock riprap apron

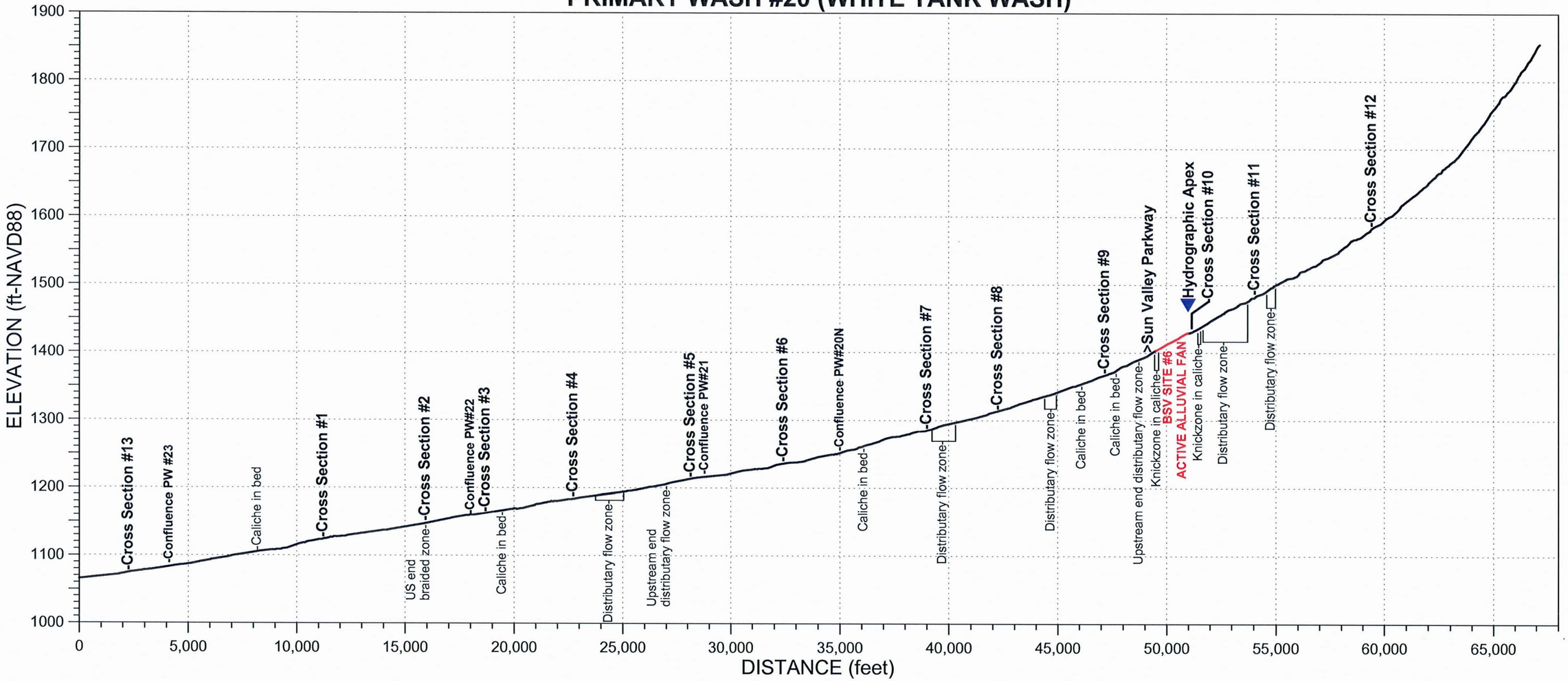


P7/17 Primary Wash #19 – Sun Valley Parkway Bridge Culvert
View looking downstream at incised downstream channel

PRIMARY WASH #19 TRIB



PRIMARY WASH #20 (WHITE TANK WASH)



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 903848.3 ft East: 451201.2 ft	1	162	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	2-2.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	2.5-3 ft	Cobble minor	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
	Left Bank	Right Bank	Channel
Ht. Above Thalweg	2-2.5ft	2.5-3 ft	

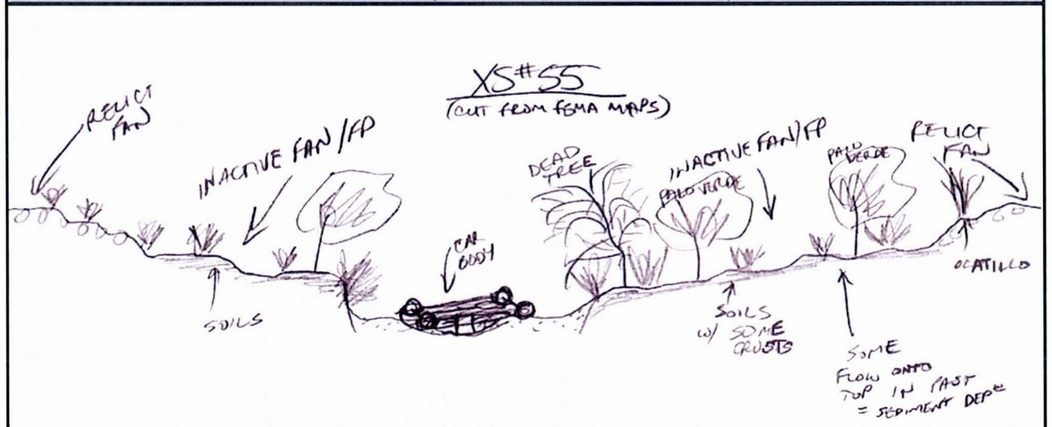
PHOTOS & DESCRIPTION:

P5/14 - View downstream at bend, note car body and eroding right bank in bend

P5/15 - View upstream, note flow split around vegetation

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
	NICKZONE:			**HEADCUT:**		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #55



Notes:	***WHITE TANK WASH***
Cross section is about 1 mile from PW22 confluence.	

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 907995.1 ft East: 452598.3 ft	2	163	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		>4:1	1-2 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>4:1	1-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X	X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	X
Bursage	X	X
Mormon Tea		X
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
	Left Bank	Right Bank	Channel
Ht. Above Thalweg	1-1.5 ft	1-1.5 ft	1-1.5 ft

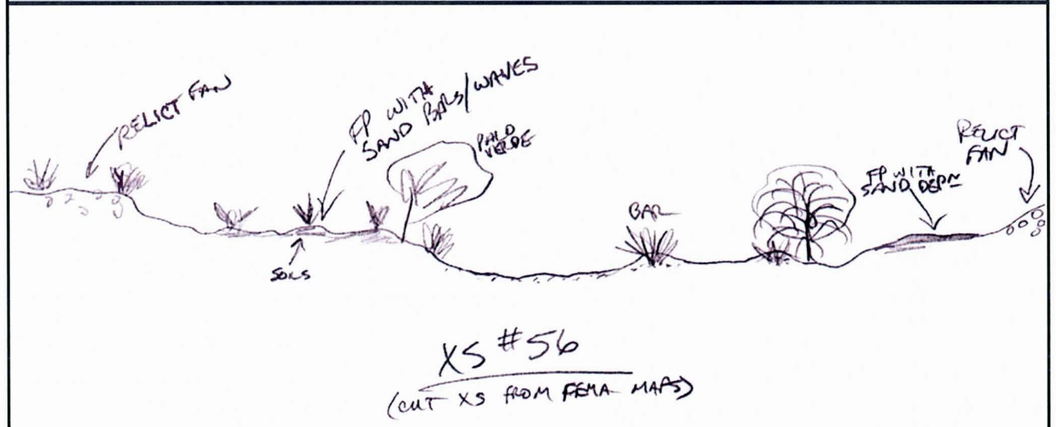
PHOTOS & DESCRIPTION:

P5/16 - View downstream

P5/17 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			**HEADCUT:**		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #56



Notes:	***WHITE TANK WASH***
Cross section at upstream end of braided reach with heavy sand and gravel load. Upstream reach is single channel.	

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW20	3	194	March 13, 2004

North: 910364.8 ft
East: 452790.0 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		6:1	10 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	2-2.5 ft	2-2.5 ft	

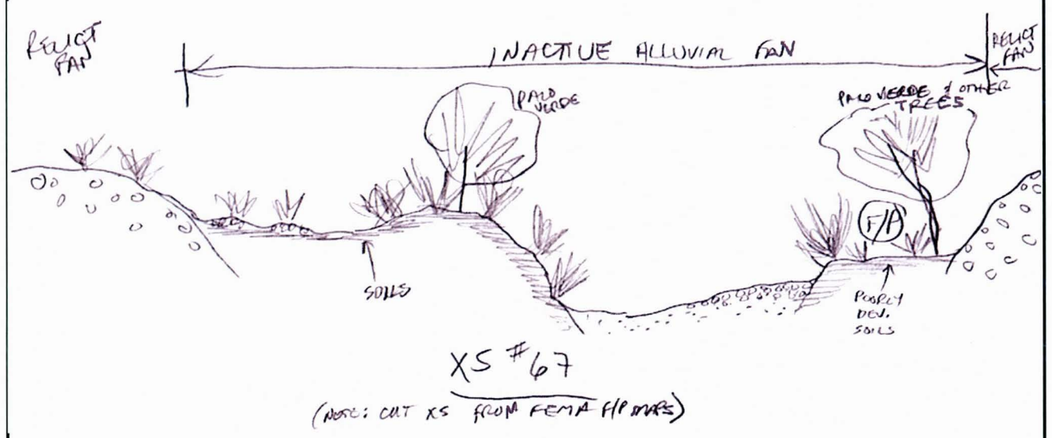
PHOTOS & DESCRIPTION:
P6/9 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	
Absent	
Spotty	
Extensive	

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	**Relict Fan**	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #67



Notes: ***WHITE TANK WASH***

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW20	4	196	March 13, 2004

North: 913783.7 ft
East: 454284.0 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		>6:1	6 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	X
Bursage	X	X
Mormon Tea	X	X
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

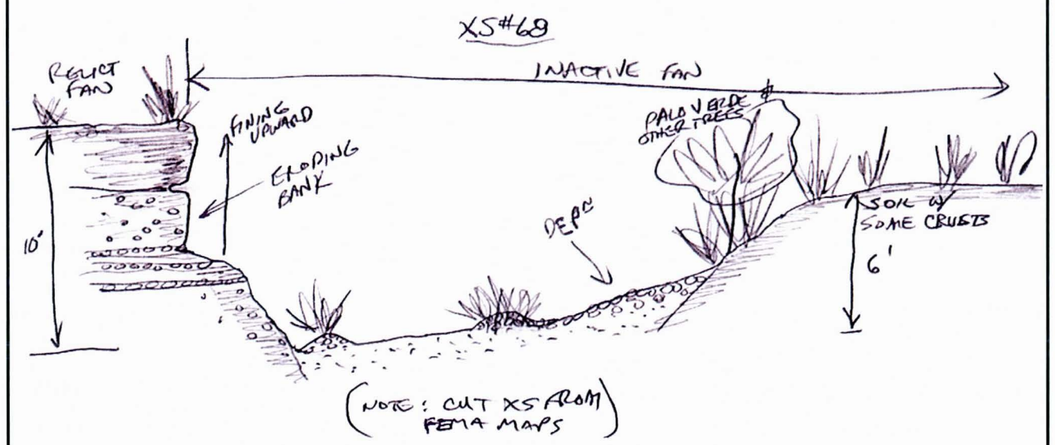
PHOTOS & DESCRIPTION:
P6/10 - View looking downstream, note eroding bank

CRYPTO-BIOTIC CRUST (floodway)	
Absent	
Spotty	
Extensive	

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #68



Notes: ***WHITE TANK WASH***

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 918432.2 ft East: 454398.0 ft	5	200	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	3-3.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		6:1	3-3.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde		
Creosote		
Brittlebush		
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

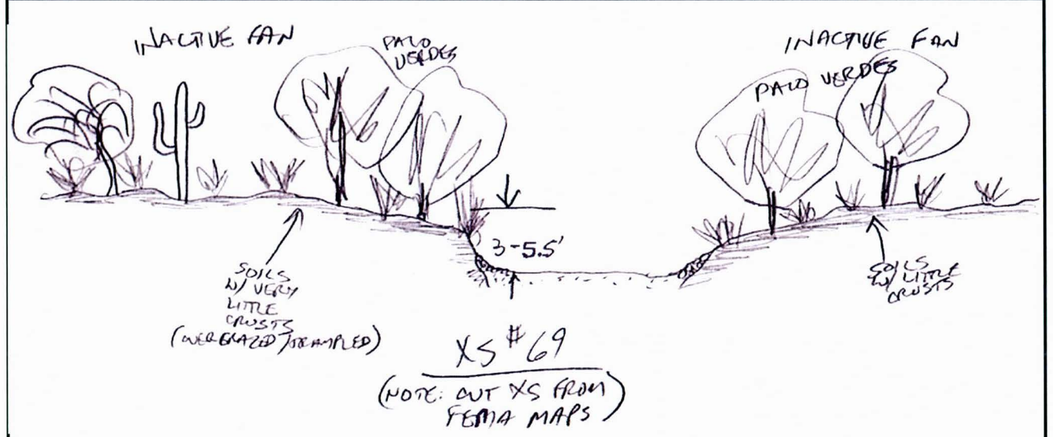
CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5-2 ft	1.5-2 ft	

PHOTOS & DESCRIPTION:
P6/11 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #69



Notes:	***WHITE TANK WASH***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 922519.1 ft East: 455234.1 ft	6	201	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X			Sand X	Gravel X
Channel	X	Multiple		Right Bank				Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde		
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

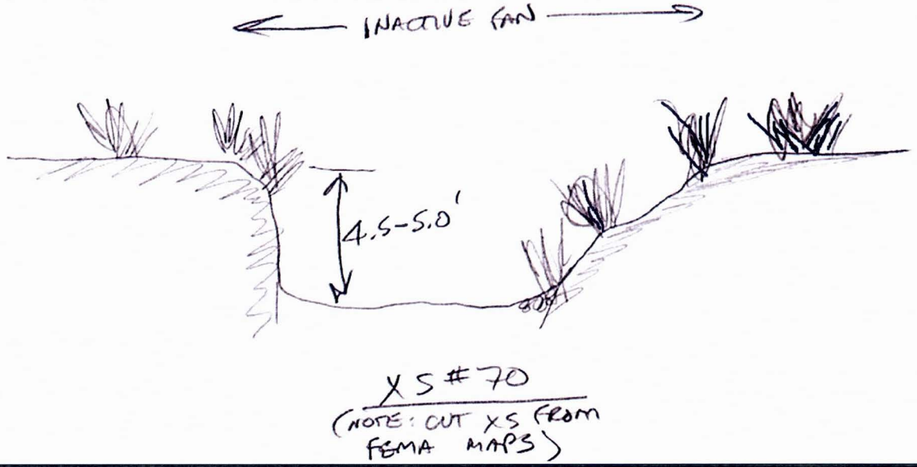
CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P6/12 - View downstream.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #70



Notes:	***WHITE TANK WASH***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW20	7	203	March 13, 2004

North: 925423.5 ft
East: 460458.3 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

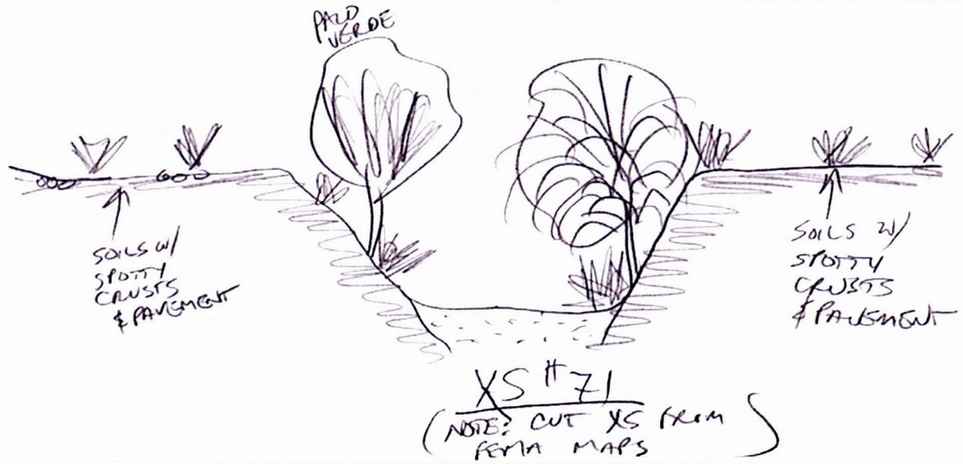
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P6/13 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #71



Notes:	***WHITE TANK WASH***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW20	8	207	March 13, 2004

North: 925559.8 ft
East: 463483.1 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	2.5-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	2.5-3 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

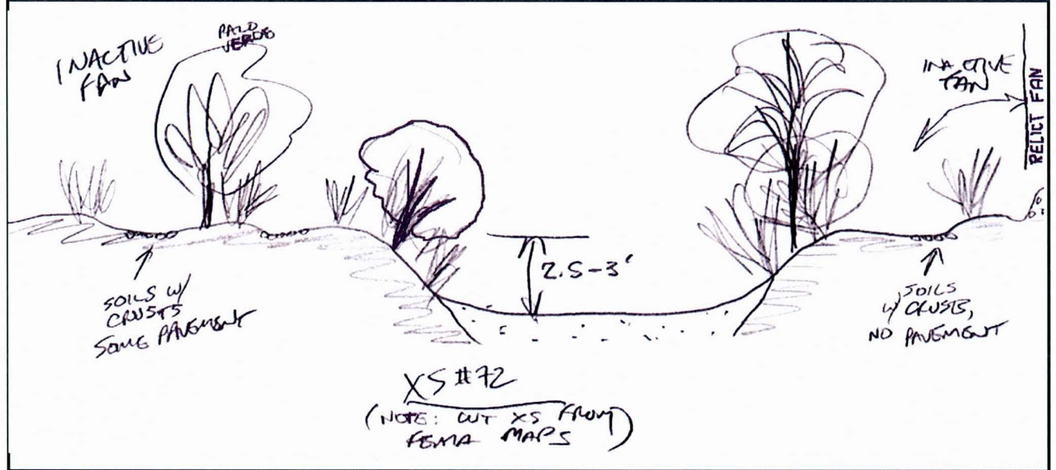
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P6/14 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #72



Notes:	***WHITE TANK WASH***

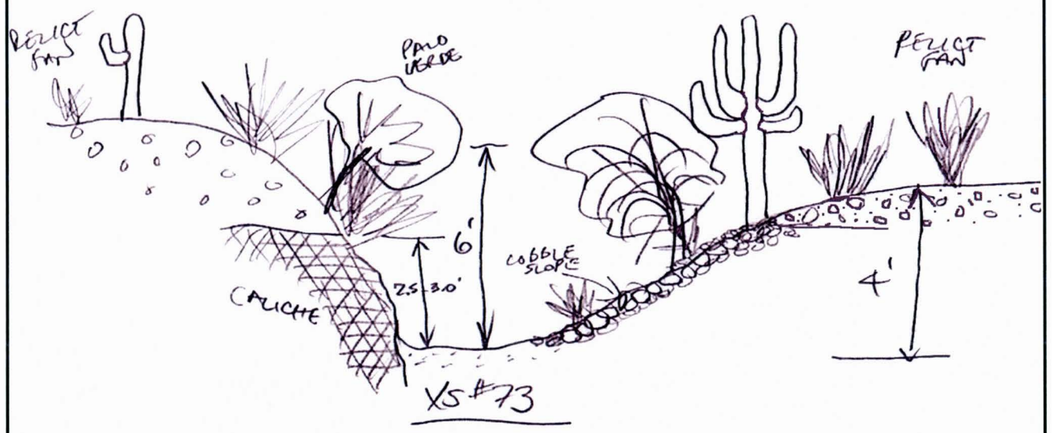
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 929146.2 ft East: 466369.0 ft	9	211	March 13, 2004
	Field Crew:	W.J. Spitz, A.B. Alvarado		

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		<1:1	6 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		>6:1	4 ft	Cobble__X__	Bldrs_small_

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	2-2.5 ft	2-2.5 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	?	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft		
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P6/15 - View upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #73



Notes:	***WHITE TANK WASH***

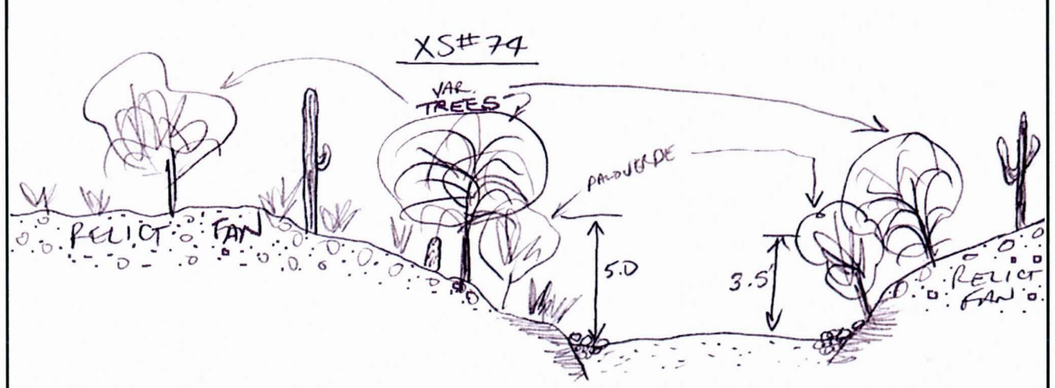
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 930082.2 ft East: 469491.5 ft	10	218	March 13, 2004
	Field Crew:	W.J. Spitz, A.B. Alvarado		

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		>6:1	5 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		4:1	3.5 ft	Cobble__X__	Bldrs_few__

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X								
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #74



Notes:	***WHITE TANK WASH***

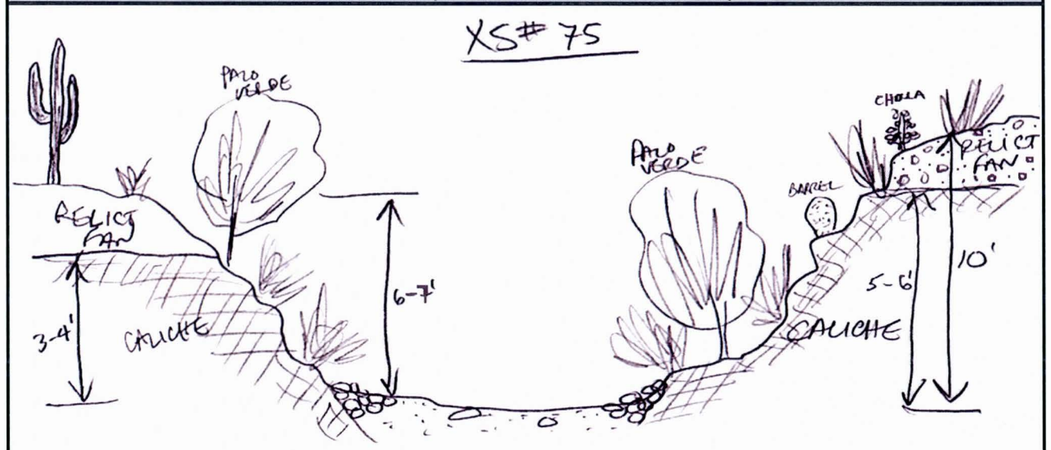
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 932098.8 ft East: 472056.5 ft	11	223	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	6-7 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		1:1	10 ft	Cobble__X__	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	3-4 ft	3-4 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	5-6 ft	4-5 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1-1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P6/32 - View upstream, note caliche control of both banks						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #75



Notes:	***WHITE TANK WASH***

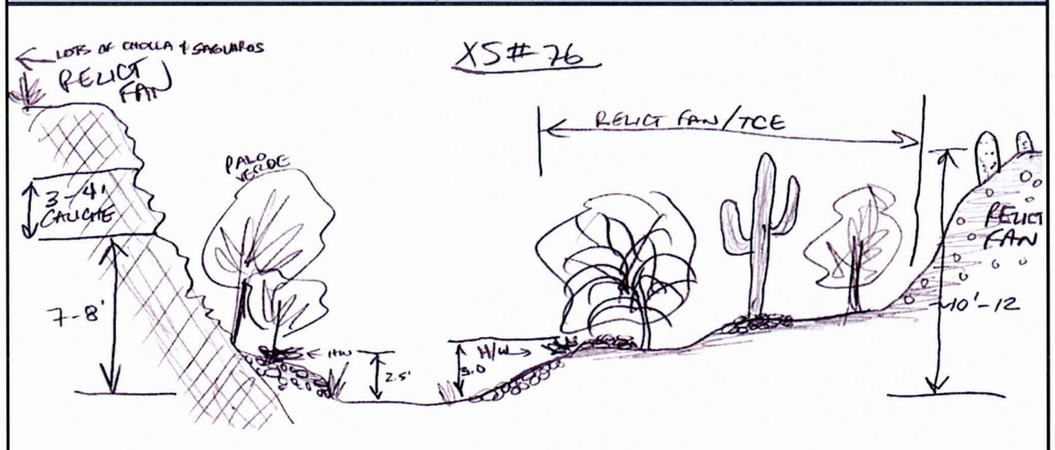
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 934310.0 ft East: 476496.7 ft	12	226	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	16-18 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		>6:1	2.5-3 ft	Cobble__X__	Bldrs__X__

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	7-8 ft	3-4 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	?	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				2-2.5 ft	2.5-3 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P6/34 - View looking downstream						
Mormon Tea	X	X	P6/35 - View of top of left bank relict fan surface, looking E-SE						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #76



Notes:	***WHITE TANK WASH***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North: 895453.0 ft East: 453146.2 ft	13	430	March 19, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	6 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		>6:1	4-5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X	X	Left Bank	6 ft	
Marginal	X		Right Bank	4-5 ft	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank	?	?
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

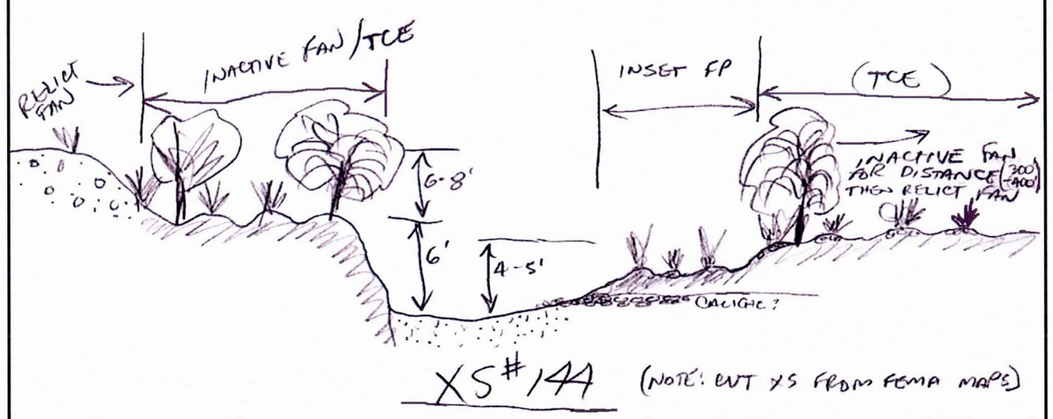
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	2 ft	2 ft	

PHOTOS & DESCRIPTION:

P12/5 - View looking downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #144



Notes:	***WHITE TANK WASH***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 (White Tank Wash)	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 214 U/S Face: 215

ROAD CROSSING - CULVERT DATA

CMP____ RCP____ RCBC X

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	919813.09	929702.46	6	3 ft	10 ft	US:1.75 ft	DS: 0.3 ft		U/S: 75%
Easting	468173.63	468039.14	Depth of D/S Incision: 1-1.5 ft			# 2 & 3	# 5	Yes	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No	>6:1	1-2 ft	Sand X	Gravel X
Channel	No	Multiple	Yes	Right bank	No	>6:1	1-2 ft	Cobble X	Bldrs X

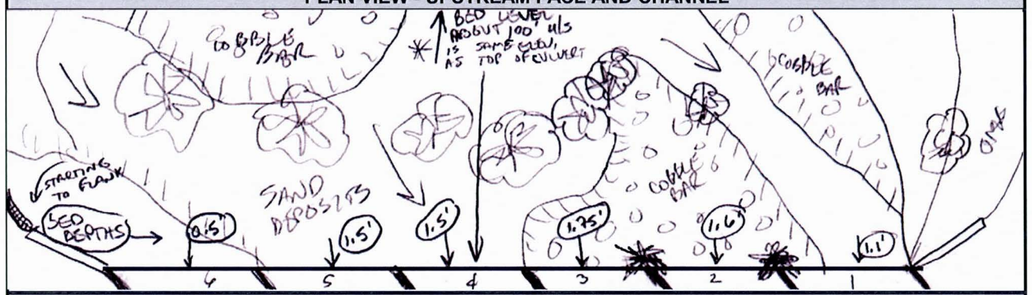
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes	Left bank	No	1:1	3-4 ft	Sand X	Gravel X
Channel	Yes	Multiple	No	Right bank	Yes	1:1	3-4 ft	Cobble X	Bldrs X

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 1.0 ft	Ht. above Invert	In Barrel 3.0 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel >1.0 ft	Ht. above Invert	In Barrel ~1.0 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

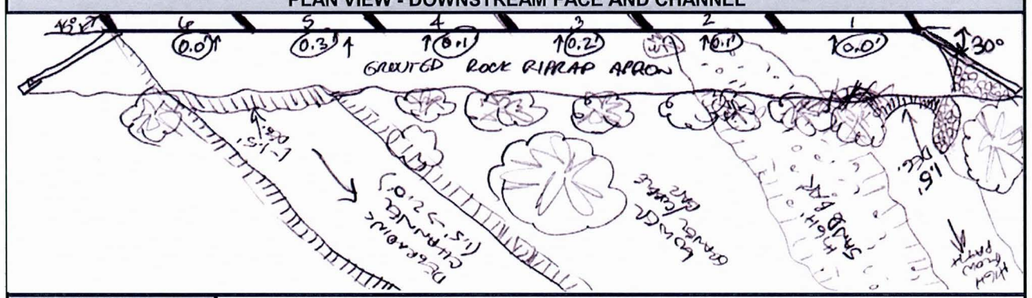


PHOTO #:		NOTES: ****CULVERT IS IN TROUBLE!****
U/S Face	6-25,26	View looking north (TL to TR) and view downstream looking at barrels 2 and 3
View U/S	6-22,23,24	Pan TR to TL looking upstream showing extensive sediment trapping upstream of culvert
D/S Face	6-21	View TR to TL to south
View D/S	6-20	View downstream showing degrading channel
Other	6-19	View of 1.5 ft of undermining of downstream bridge apron at barrel 1

AYRES ASSOCIATES

P5/14 Primary Wash #20 (White Tank Wash) - Cross Section #1
View looking downstream

P5/15 Primary Wash #20 (White Tank Wash) - Cross Section #1
View looking upstream

P5/16 Primary Wash #20 (White Tank Wash) - Cross Section #2
View looking downstream

P5/17 Primary Wash #20 (White Tank Wash) - Cross Section #2
View looking upstream

P6/9 Primary Wash #20 (White Tank Wash) - Cross Section #3
View looking downstream

P6/10 Primary Wash #20 (White Tank Wash) - Cross Section #4
View looking downstream

P6/11 Primary Wash #20 (White Tank Wash) - Cross Section #5
View looking downstream

P6/12 Primary Wash #20 (White Tank Wash) - Cross Section #6
View looking downstream

P6/13 Primary Wash #20 (White Tank Wash) - Cross Section #7
View looking upstream

P6/14 Primary Wash #20 (White Tank Wash) - Cross Section #8
View looking downstream

P6/15 Primary Wash #20 (White Tank Wash) - Cross Section #9
View looking upstream

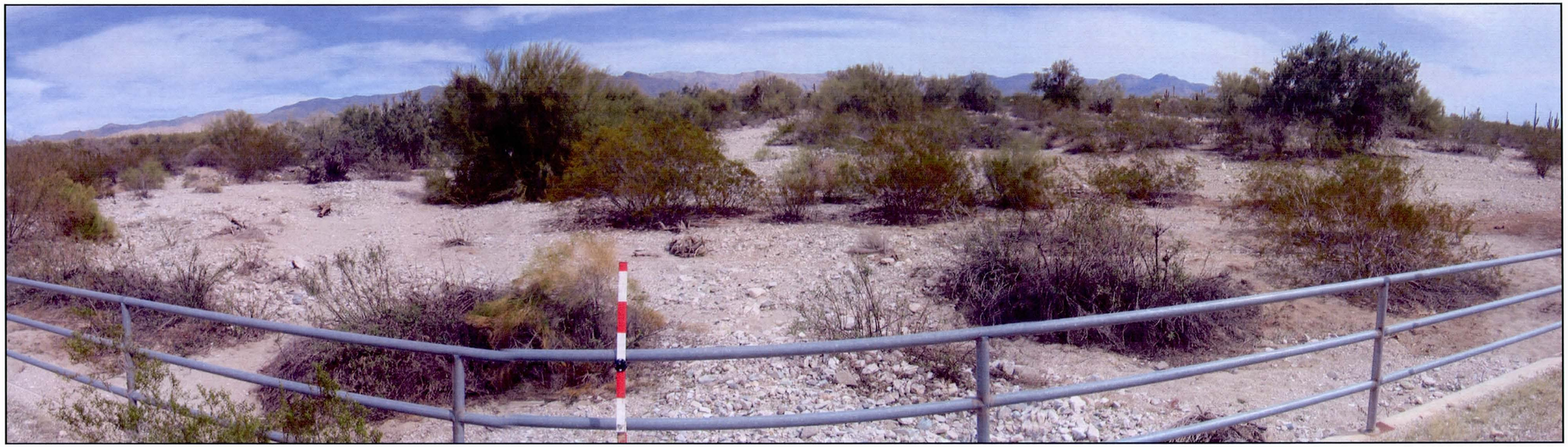
P6/32 Primary Wash #20 (White Tank Wash) - Cross Section #11
View looking upstream

P6/34 Primary Wash #20 (White Tank Wash) - Cross Section #12
View looking downstream

P6/5 Primary Wash #20 (White Tank Wash) - Cross Section #12
View looking south-southeast from top left bank

P12/5 Primary Wash #20 (White Tank Wash) - Cross Section #13
View looking downstream

P6/25 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
View looking downstream/north at obstructed upstream face of bridge



P6/22,23,24 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
Panorama view looking upstream at upstream channel and BSV Site#6 active alluvial fan area upstream of bridge

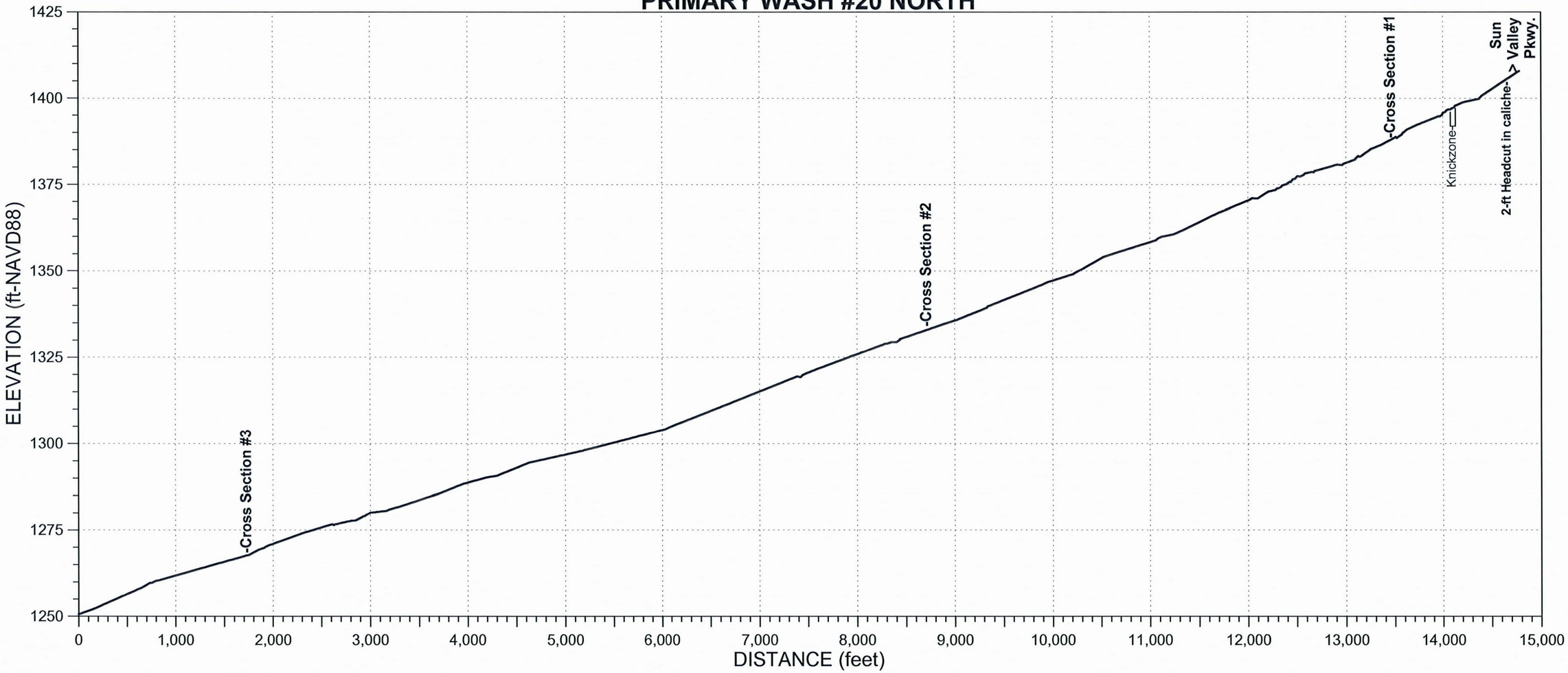
P6/26 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
View looking downstream at obstructed upstream face of bridge at barrels 2 and 3

P6/21 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
View looking upstream/south at partially silted-in downstream face of bridge

P6/19 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
View looking upstream at downstream face of bridge and undermined grouted rock riprap apron

P6/20 Primary Wash #20 (White Tank Wash) – Sun Valley Parkway Bridge Culvert
View looking downstream at degrading downstream channel

PRIMARY WASH #20 NORTH



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20North	1	241	March 14, 2004
	North: 931807.3 ft East: 466797.0 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	12 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

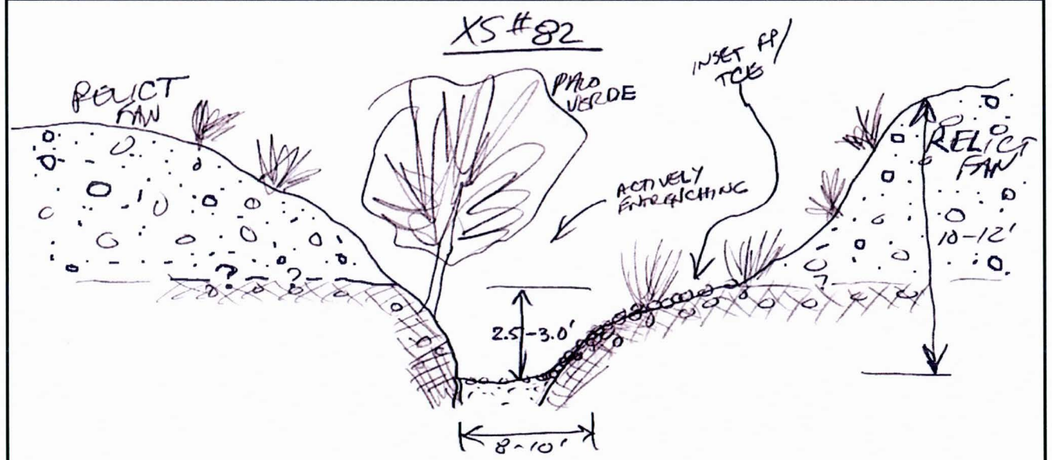
CALICHE STRATA	Height (top) Above Bed	Thickness
Left Bank	3 ft	3 ft
Right Bank	3 ft	3 ft
Channel		

HIGH WATER MARKS/DEBRIS	Left Bank	Right Bank	Channel
Ht. Above Thalweg	<1 ft	<1 ft	<1 ft

PHOTOS & DESCRIPTION:
P7/6 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #82



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20North	2	242	March 14, 2004
	North: 929810.0 ft East: 462813.6 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	12 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3-4 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank	3-5 ft	entrenched meanders
Marginal	X		Right Bank	3-5 ft	

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

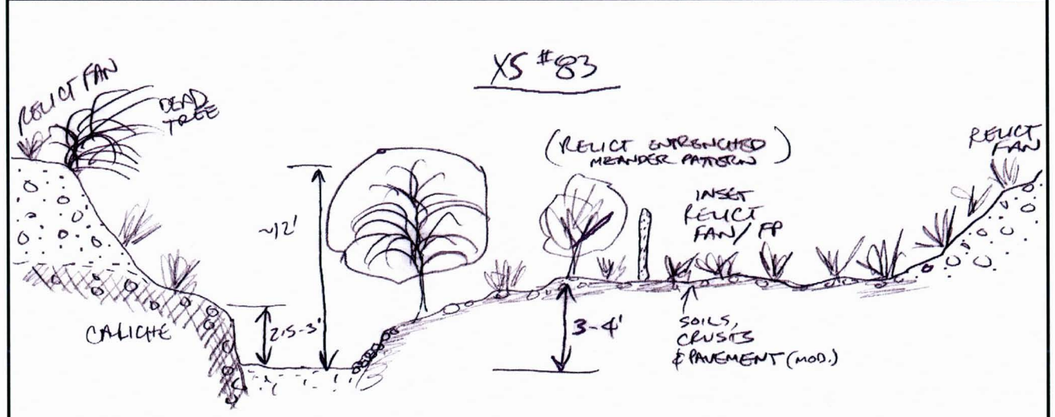
CALICHE STRATA	Height (top) Above Bed	Thickness
Left Bank	3 ft	3 ft
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS	Left Bank	Right Bank	Channel
Ht. Above Thalweg	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P7/7,8 Pan - View looking upstream from right bank

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #83



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20North North: 925349.5 ft East: 457923.0 ft	3	243	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	3 ft	Sand__X__	Gravel__X__
Channel	X	Multiple		Right Bank		3:1	3 ft	Cobble__X__	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank	3-3.5 ft	
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	1-1.5 ft	>1-1.5 ft
Right Bank	1-1.5 ft	>1-1.5 ft
Channel	shallow	

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

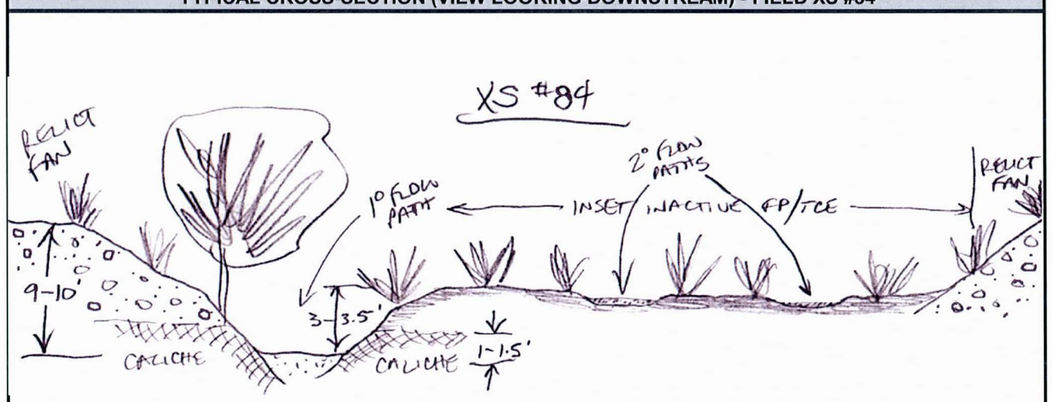
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P7/9 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Absent	Caliche Present:	Caliche Present:
Spotty	Dimensions:	Dimensions:
Extensive		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #84



Notes:

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW20 North	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 236 U/S Face: 237

ROAD CROSSING - CULVERT DATA

CMP____ RCP____ RCBC__X__

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	932536.23	932393.29	1	4 ft	8 ft	US: 0 ft	DS: 0 ft		U/S: <10%
Easting	467727.27	467654.99	Depth of D/S Incision: 1-1.5 ft			#	#	Yes	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No	1:1	10 ft	Sand__X__	Gravel__X__
Channel	Yes	Multiple	No	Right bank	No	1:1	10 ft	Cobble__X__	Bldrs_____

DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	Yes	1:1	2.5-3 ft	Sand__X__	Gravel__X__
Channel	Yes	Multiple	No	Right bank	Yes	1:1	2.5-3 ft	Cobble__X__	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 0.5 ft	Ht. above Invert	In Barrel 0.5 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel 0.5 ft	Ht. above Invert	In Barrel 0.5 ft
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - UPSTREAM FACE AND CHANNEL

PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

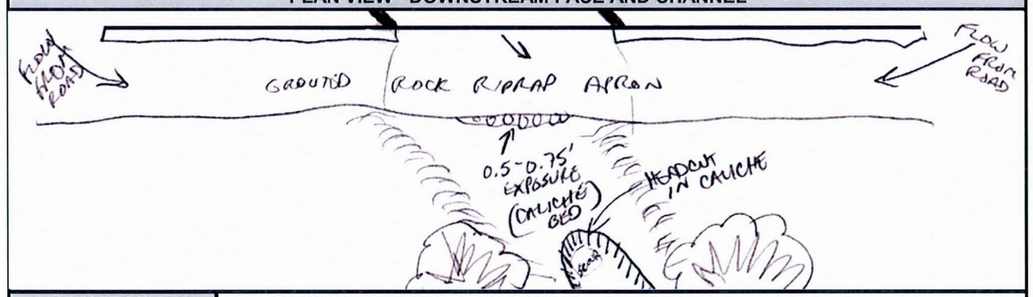


PHOTO #:		NOTES: ****Headcut at WPT #238****
U/S Face	7-2	View looking downstream
View U/S	7-3	View looking east - not much sediment in channel (banks = caliche)
D/S Face	7-5	View looking upstream showing culver and headcut
View D/S	7-4	View looking downstream - note Anthony standing in headcut in caliche
Other		

P7/6 Primary Wash #20 North - Cross Section #1 – View looking upstream

P7/9 Primary Wash #20 North - Cross Section #3 – View looking upstream

P7/7 & 8 Primary Wash #20 North - Cross Section #2 – Panorama view looking upstream

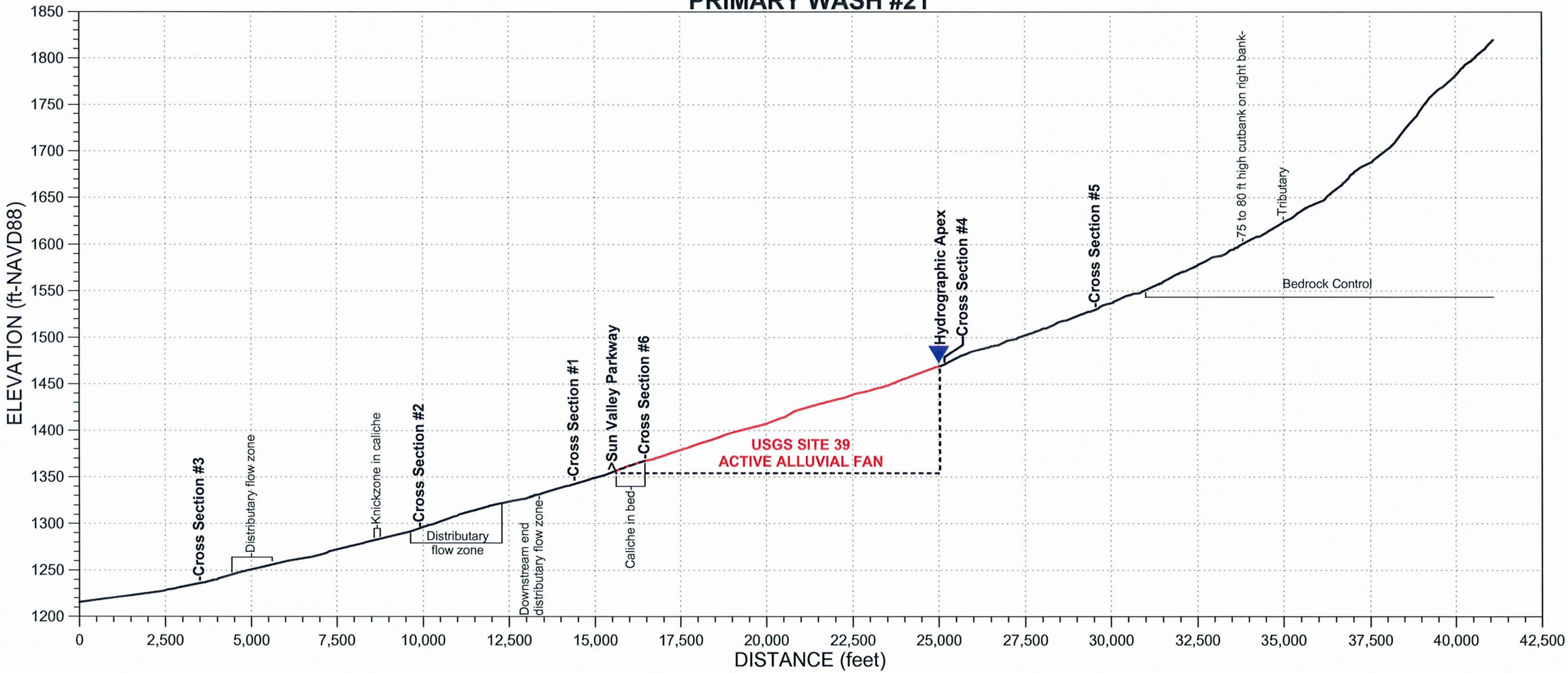
P7/3 Primary Wash #20 North – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P7/2 Primary Wash #20 North – Sun Valley Parkway Bridge Culvert
View looking downstream/south at upstream bridge face

P7/5 Primary Wash #20 North – Sun Valley Parkway Bridge Culvert
View looking upstream at downstream bridge face, apron and 2' headcut

P7/4 Primary Wash #20 North – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel and person at headcut

PRIMARY WASH #21

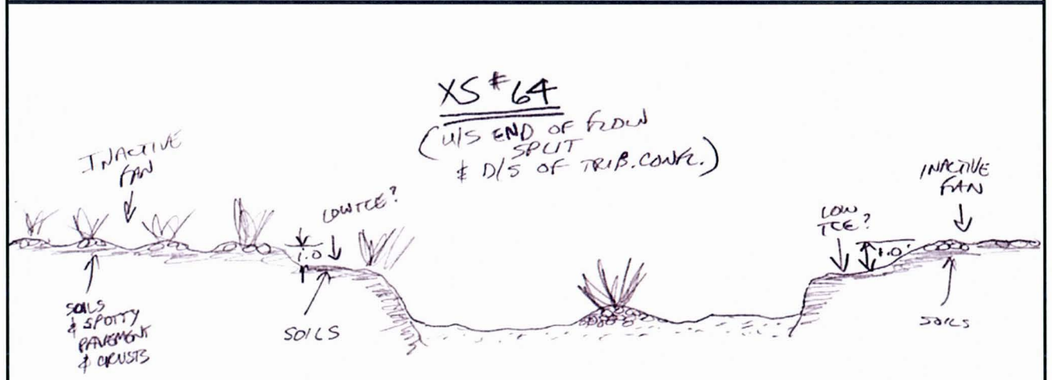


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 924054.9 ft East: 466970.2 ft	1	184	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		3:1	3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3 ft	Cobble minor	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal			Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel						1 ft
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P6/5 - View downstream showing flow split						
Mormon Tea		X	P6/6 - View upstream showing distributary channel confluence						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #64



Notes:	***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***
Cross section at upstream end of flow split and downstream of tributary confluence.	

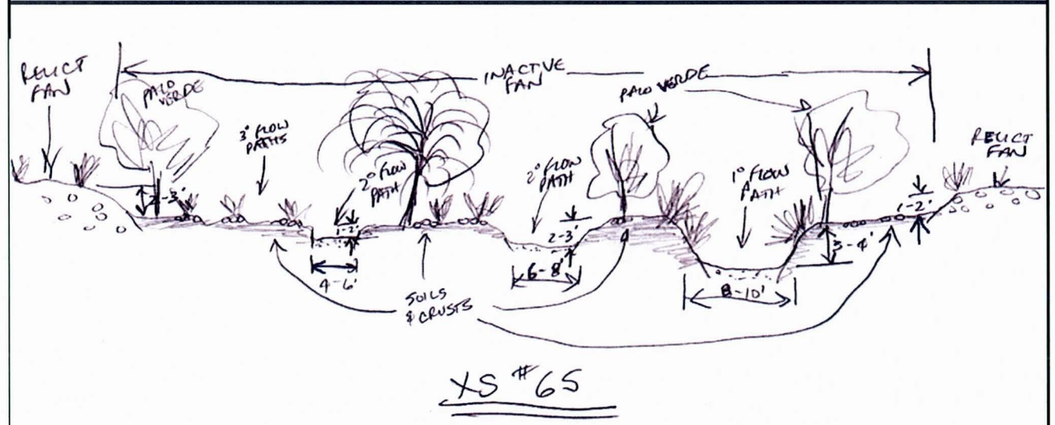
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 923229.8 ft East: 462595.4 ft	2	187	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	1-3 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		1:1	1-3 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X		Left Bank				Extensive	Spotty	Absent
Marginal	X	X	Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P6/7 - View upstream showing split flow confluence of primary and secondary						
Mormon Tea	X		channels.						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #65



Notes:	***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 920703.4 ft East: 456967.4 ft	3	193	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

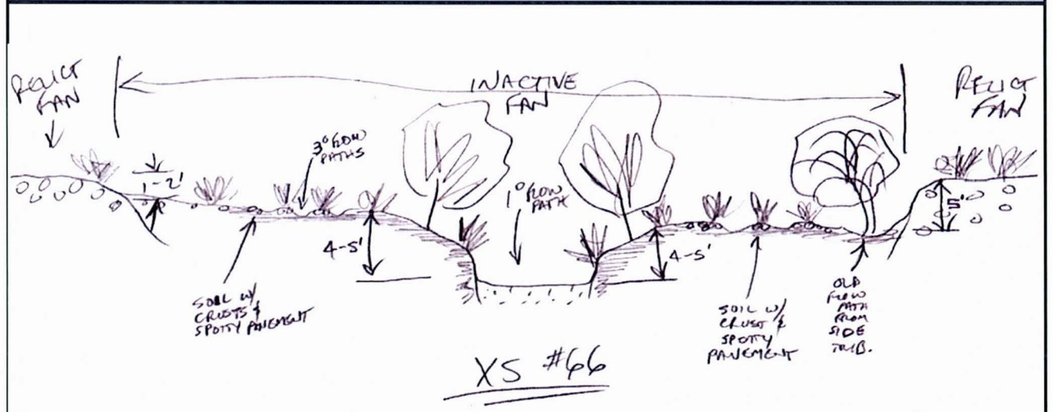
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	4-5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	4-5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P6/8 - View upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			**Spotty**	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #66



Notes:	***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 926340.4 ft East: 476581.3 ft	4	229	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

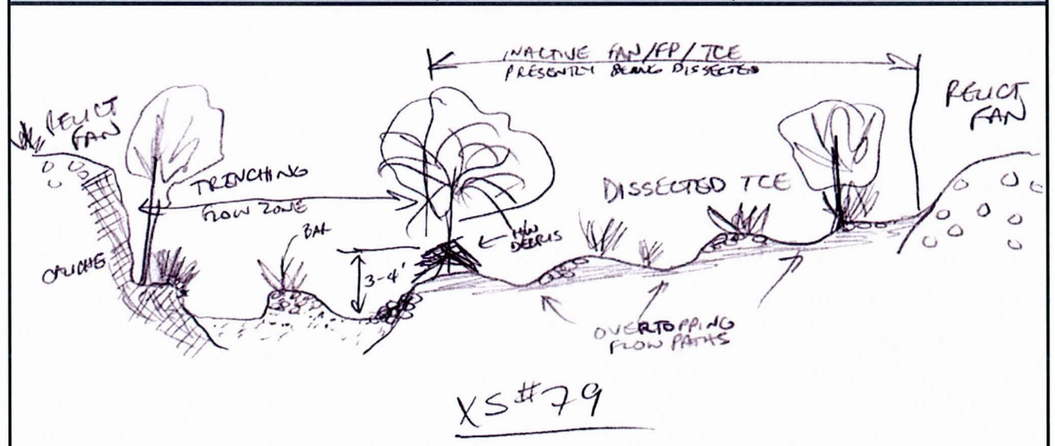
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank	X	<1:1	6 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		3:1	3-4 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top) Above Bed		Thickness	Soils			X
			Left Bank	6 ft	6 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				2-3 ft	3-4 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P6/41 - View upstream showing entrenchment and dissection of inner terrace.						
Mormon Tea	X	X							
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			**Absent**	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #79



Notes:	***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***

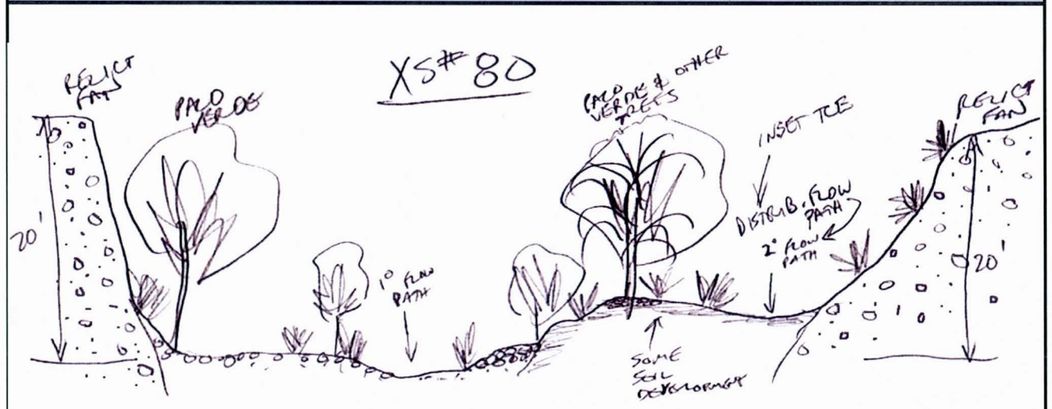
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 926216.5 ft East: 480764.9 ft	5	230	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	20 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	20 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	X	?	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	X	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				2-3 ft	2-3 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P6/42 - View upstream						
Mormon Tea	X	X							
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #80



Notes: ***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***

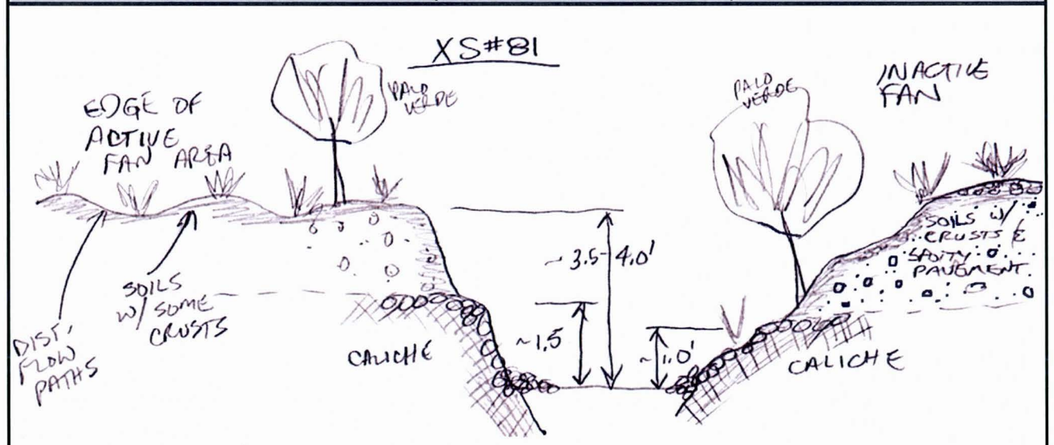
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21 North: 924649.1 ft East: 468885.3 ft	6	235	March 14, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	<1:1	3.5-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	1.5 ft	1.5 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	1 ft	1 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1.5 ft	1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P7/1 - View looking downstream						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #81



Notes: ***DOWNSTREAM OF USGS SITE 39 ALLUVIAL FAN***

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21	March 13, 2004	D/S Face: 183 U/S Face: 182
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	924238.60	468085.38	4	4 ft	10 ft	US: 2.5 ft	DS: 2.0 ft		U/S: 50 %
Easting	924207.17	467954.94	Depth of D/S Incision: 0 ft			# 3	# 3	Yes	D/S: 0

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes (at bridge)	Left bank	No	>3:1	3-4 ft	Sand_X_	Gravel_X_
Channel	Yes	Multiple	Yes (US)	Right bank	No	>3:1	3-4 ft	Cobble_X_	Bldrs_____

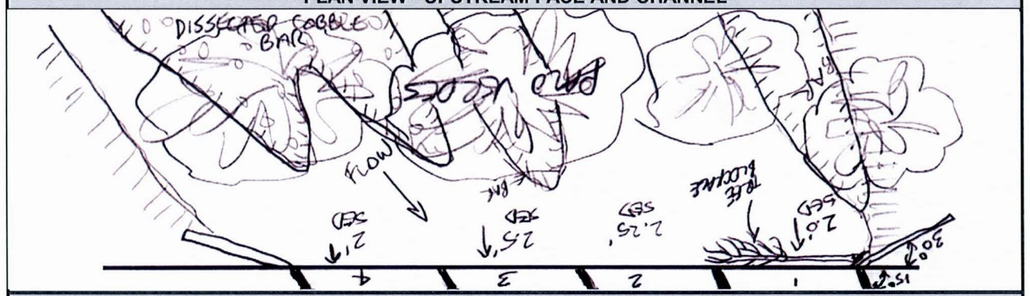
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes (DS)	Left bank	No	>6:1	2-3 ft	Sand_X_	Gravel_X_
Channel	No	Multiple	Yes (at bridge)	Right bank	No	>6:1	2-3 ft	Cobble_X_	Bldrs_____

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		1.5-2 ft		

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		1-2 ft		2-3 ft

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

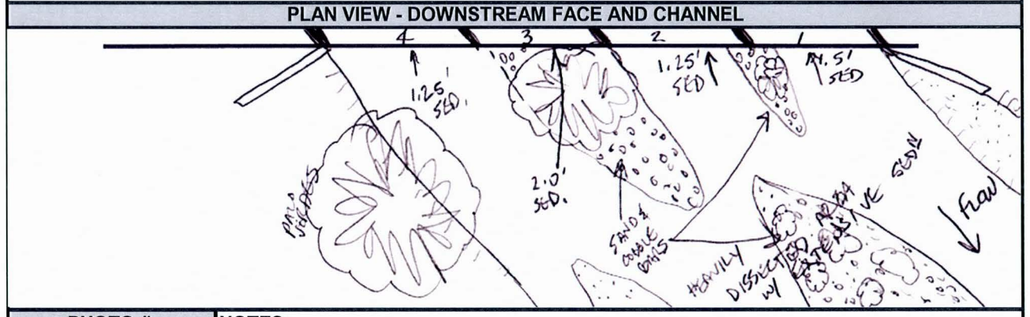


PHOTO #:		NOTES:
U/S Face	6-1	View to south - note debris in barrel 1
View U/S	6-2	View upstream showing downstream end of USGS Site 39 alluvial fan
D/S Face	6-4	View looking upstream - note veg and sediment
View D/S	6-3	View looking downstream - downstream channel appears to be incising even though there is significant sediment dposits immediately below bridge

P6/5 Primary Wash #21 - Cross Section #1 – View looking downstream

P6/6 Primary Wash #21 - Cross Section #1 – View looking upstream

P6/7 Primary Wash #21 - Cross Section #2 – View looking upstream

P6/8 Primary Wash #21 - Cross Section #3 – View looking upstream

P6/40 Primary Wash #21 - Cross Section #4 – View looking upstream

P6 /41Primary Wash #21 - Cross Section #5 – View looking upstream

P7/1 Primary Wash #21 - Cross Section #6 – View looking upstream

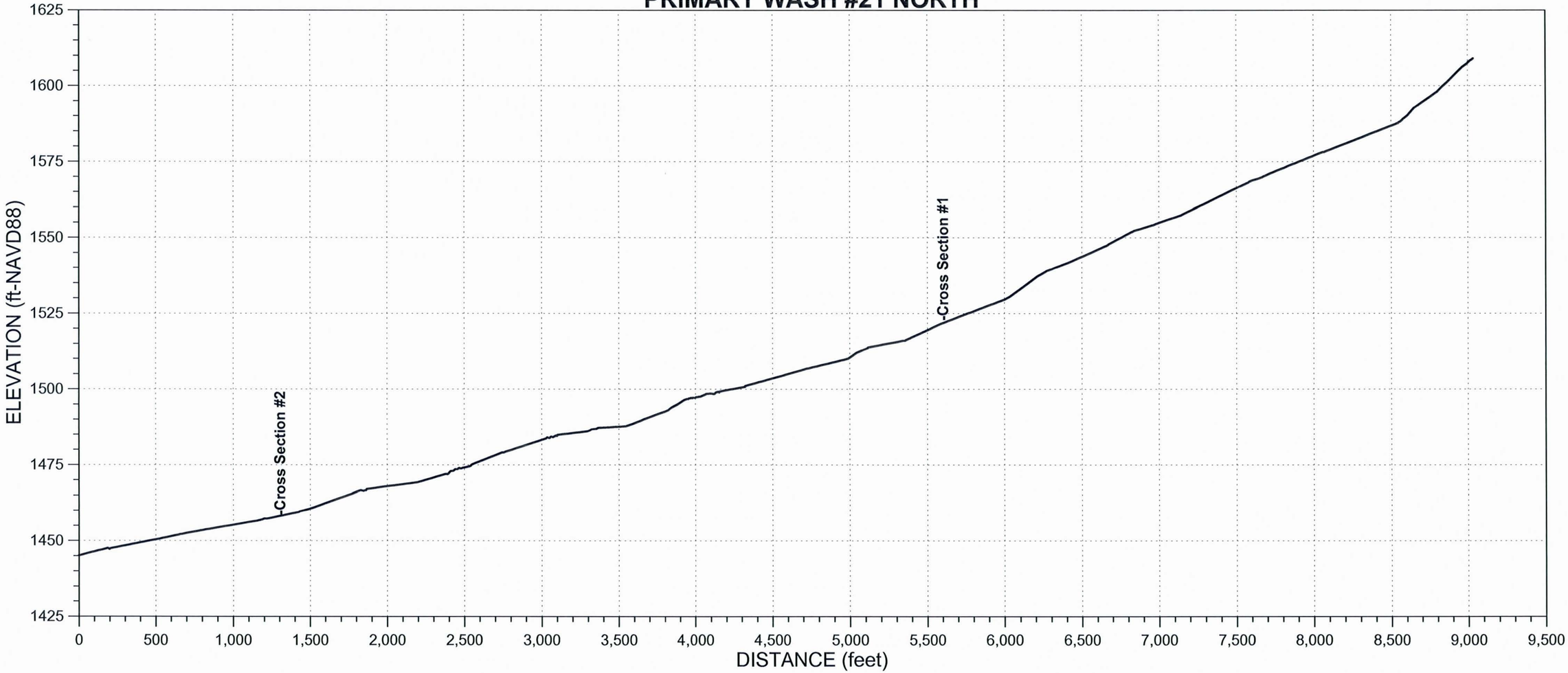
P6/2 Primary Wash #21 – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P6/1 Primary Wash #21 – Sun Valley Parkway Bridge Culvert
View looking downstream/south at upstream bridge face

P6/4 Primary Wash #21 – Sun Valley Parkway Bridge Culvert
View looking upstream at downstream bridge face

P6/3 Primary Wash #21 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

PRIMARY WASH #21 NORTH

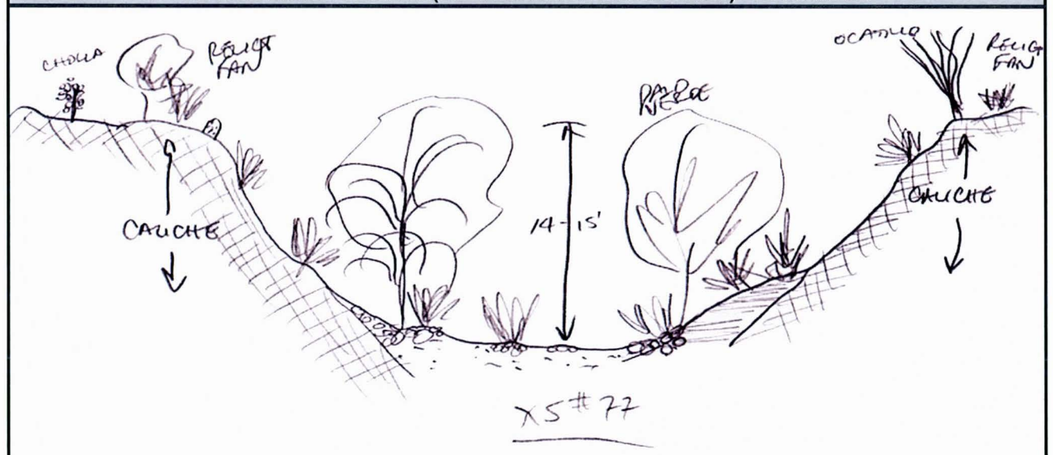


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21North North: 931794.9 ft East: 476250.9 ft	1	227	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	14-15 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	14-15 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X		Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	X	?	HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank	X	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel						1 ft
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P6/38 - View looking downstream						
Mormon Tea	X	X							
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #77



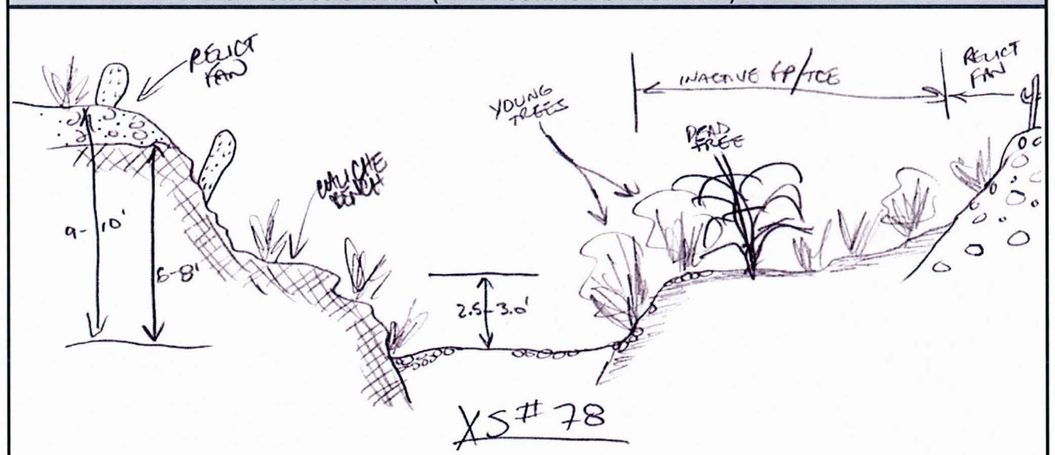
Notes:

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW21North North: 928221.5 ft East: 475065.7 ft	2	228	March 13, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	9-10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	2.5-3 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank	2.5-3 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	6-8 ft	6-8 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel					<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P6/39 - View upstream						
Mormon Tea									
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #78

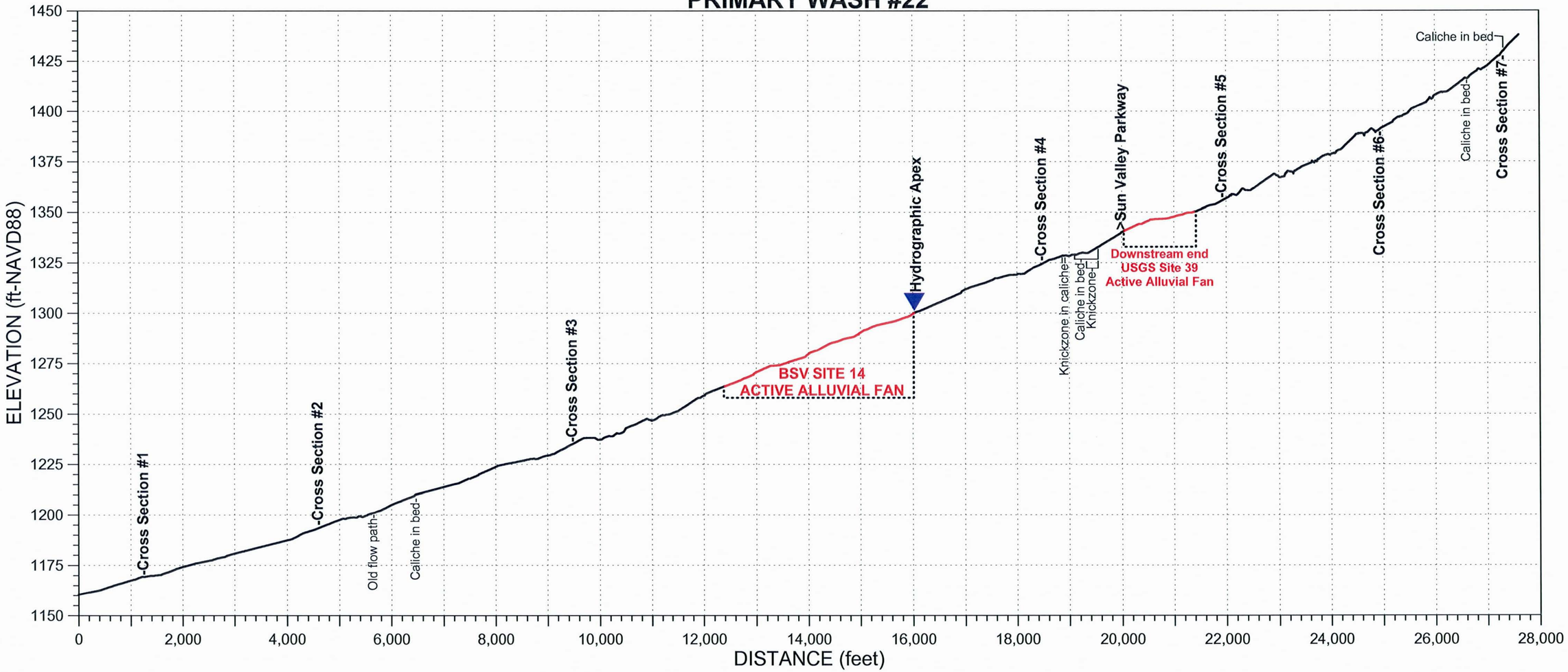


Notes:

P6/38 Primary Wash #21 North - Cross Section #1 – View looking downstream

P6/39 Primary Wash #21 North - Cross Section #2 – View looking upstream

PRIMARY WASH #22



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22 North: 910798.5 ft East: 453821.6 ft	1	164	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	2:1	4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	2:1	4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA	
Height (top) Above Bed	Thickness
Left Bank	
Right Bank	
Channel	

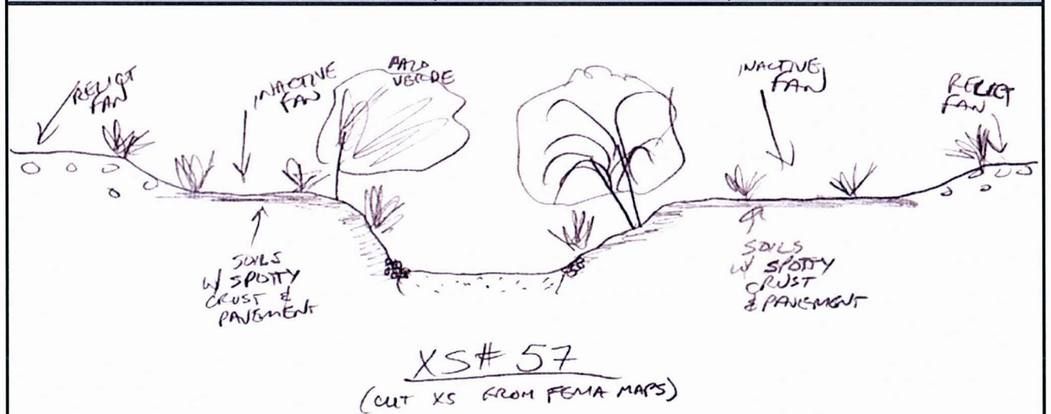
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	0.5 ft	0.5 ft	

PHOTOS & DESCRIPTION:
P5/18 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #57



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22 North: 913097.3 ft East: 456146.6 ft	2	165	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>6:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA	
Height (top) Above Bed	Thickness
Left Bank	
Right Bank	
Channel	

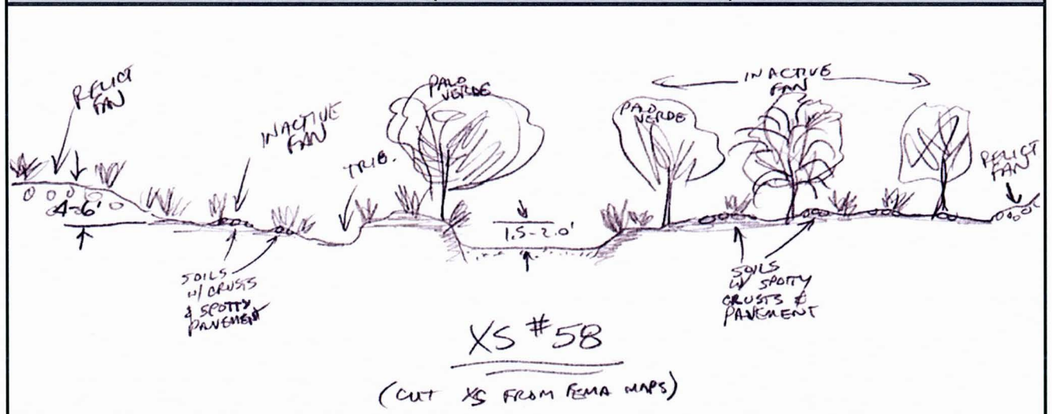
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:
P5/19 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #58



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22 North: 916258.3 ft East: 459647.1 ft	3	168	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank				Sand X	Gravel X
Channel		Multiple	X	Right Bank				Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

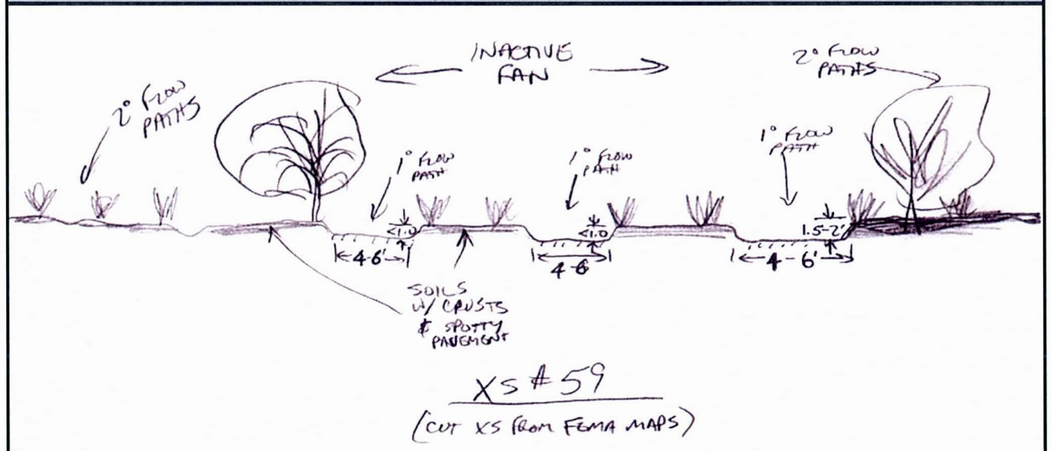
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P5/20 - View from right bank to left bank showing multiple shallow flow paths

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #59



Notes: Flow is split into 2 separate flow paths, other path is to NW.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22 North: 921330.9 ft East: 466686.3 ft	4	176	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	US	Left Bank		>6:1	3.5 ft	Sand X	Gravel X
Channel	X	Multiple	DS	Right Bank	X	2:1	4.5 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

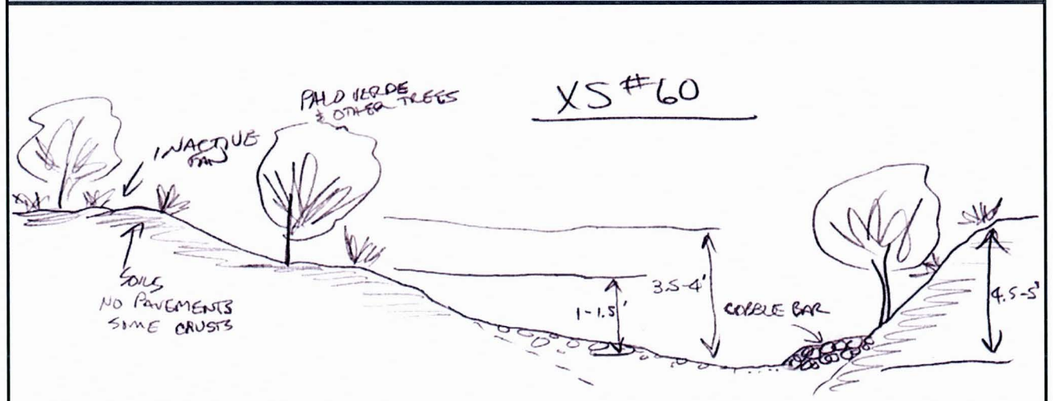
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1-1.5 ft	1-1.5 ft	1.5-2 ft

PHOTOS & DESCRIPTION:
P5/26 - View looking downstream showing wide shallow split flow area.
P5/27 - View upstream showing channel

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE: Upstream			HEADCUT:		
Spotty	Caliche Present: YES			Caliche Present:		
Extensive	Dimensions: several + 1x3-4ftx200 ft; 1x2-3ftx30-40ft			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #60



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22	5	177	March 11, 2004
	North: 921884.8 ft East: 469847.6 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	2.5-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	3.5-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

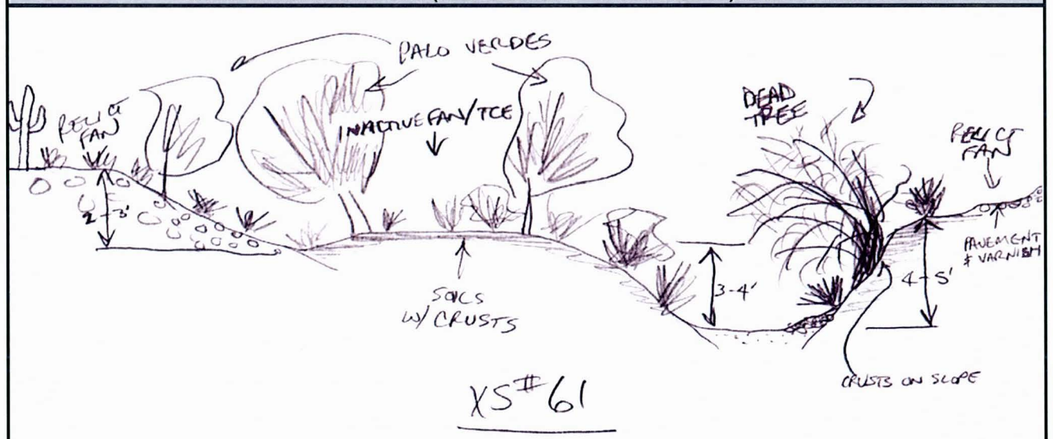
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed	Thickness
Palo Verde	X		Left Bank	
Creosote	X		Right Bank	
Brittlebush	X		Channel	
Bursage	X			
Mormon Tea				
Tamarisk				
Saguaro C.				
Cholla C.				
Barrel C.				
Prickly Pear				
X-mas C.				
Hedgehog C.				
Fishhook C.				
Ocotillo				

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1-1.5 ft	1-1.5 ft	

PHOTOS & DESCRIPTION:
P5/28 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #61



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22	6	178	March 11, 2004
	North: 922660.9 ft East: 475769.3 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	12-14 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	12-14 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

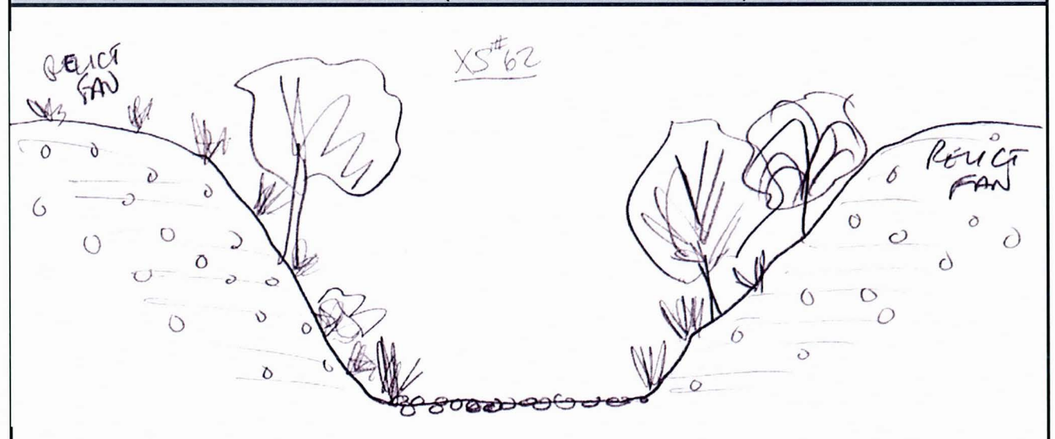
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed	Thickness
Palo Verde	X		Left Bank	?
Creosote	X		Right Bank	?
Brittlebush	X		Channel	
Bursage	X			
Mormon Tea				
Tamarisk				
Saguaro C.				
Cholla C.				
Barrel C.				
Prickly Pear				
X-mas C.				
Hedgehog C.				
Fishhook C.				
Ocotillo				

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5 ft	1.5 ft	

PHOTOS & DESCRIPTION:
P5/29 - View upstream showing area upstream of road crossing

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #



Notes: Locaiton is just downstream of road and power line crossing.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22 North: 923761.8 ft East: 474638.0 ft	7	181	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank				Sand X	Gravel X
Channel	X	Multiple		Right Bank				Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde		
Creosote		
Brittlebush		
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top)	Above Bed	Thickness
Left Bank		X	
Right Bank		X	
Channel		X	

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

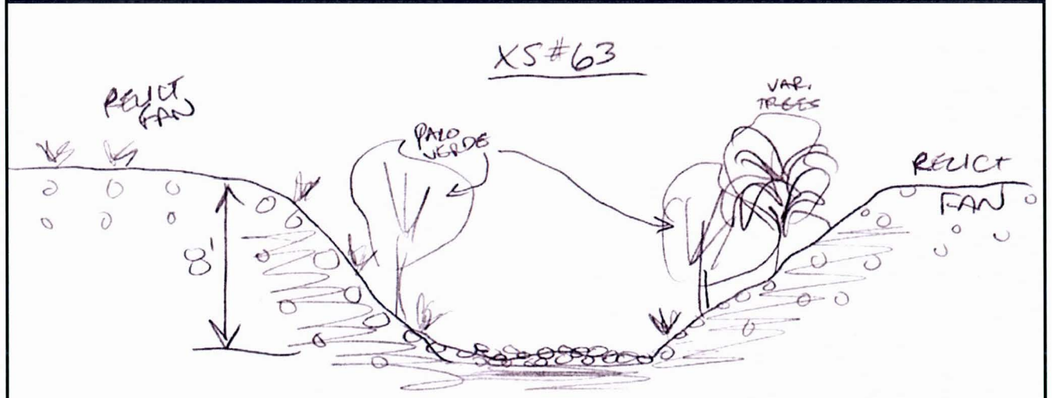
P5/30 - View looking upstream to flow split, upstream channels get small

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

Absent / Spotty / Extensive

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #63



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW22	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 169 U/S Face: 170

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC X

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	921544.68	921582.30	3	4 ft	10 ft	US:1.75 ft	DS:1.75 ft		U/S: 0
Easting	468129.35	467996.32	Depth of D/S Incision: 1-3 ft			# 2	# 1	Yes	D/S: 25 %

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No	6:1	3-4 ft	Sand X	Gravel X
Channel	Yes	Multiple	No	Right bank	No	6:1	3-4 ft	Cobble X	Bldrs

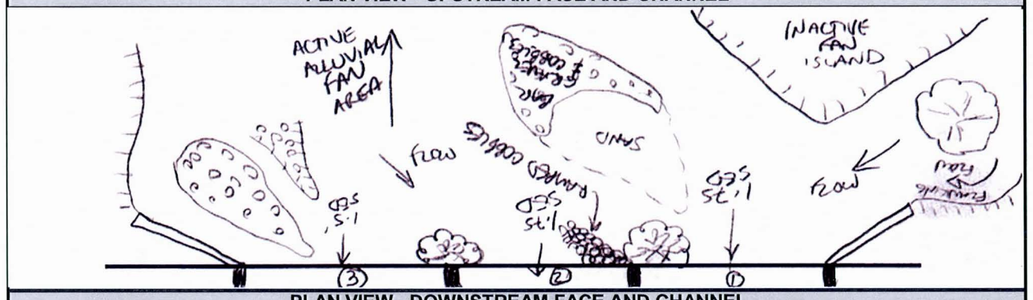
DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No	6:1	2-3 ft	Sand X	Gravel X
Channel	No	Multiple	No	Right bank	No	6:1	2-3 ft	Cobble X	Bldrs

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		<1.0 ft		2.0 ft

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				?

PLAN VIEW - UPSTREAM FACE AND CHANNEL



PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

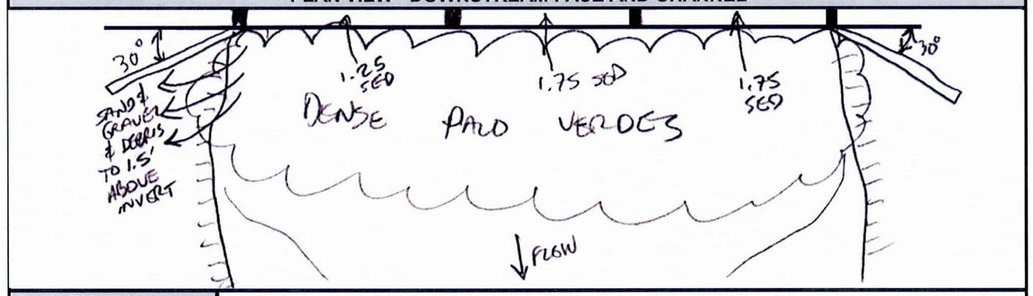


PHOTO #:		NOTES: Downtream channel appears to be degrading
U/S Face	5-22	View of face
View U/S	5-23	View upstream - note upstream active alluvial fan area
D/S Face	5-21	View south (TR to TL) showing barrels
View D/S	5-24	View downstream in area cleared of trees below power line crossing
Other		

AYRES ASSOCIATES

P5/18 Primary Wash #22 - Cross Section #1 – View looking upstream

P5/19 Primary Wash #22 - Cross Section #2 – View looking upstream

P5/20 Primary Wash #22 - Cross Section #3 – View looking upstream from right bank to left bank

P5/26 Primary Wash #22 - Cross Section #4 – View looking downstream

P5/27 Primary Wash #22 - Cross Section #4 – View looking upstream

P5/28 Primary Wash #22 - Cross Section #5 – View looking downstream

P5/29 Primary Wash #22 - Cross Section #6 – View looking upstream

P5/30 Primary Wash #22 - Cross Section #7 – View looking upstream

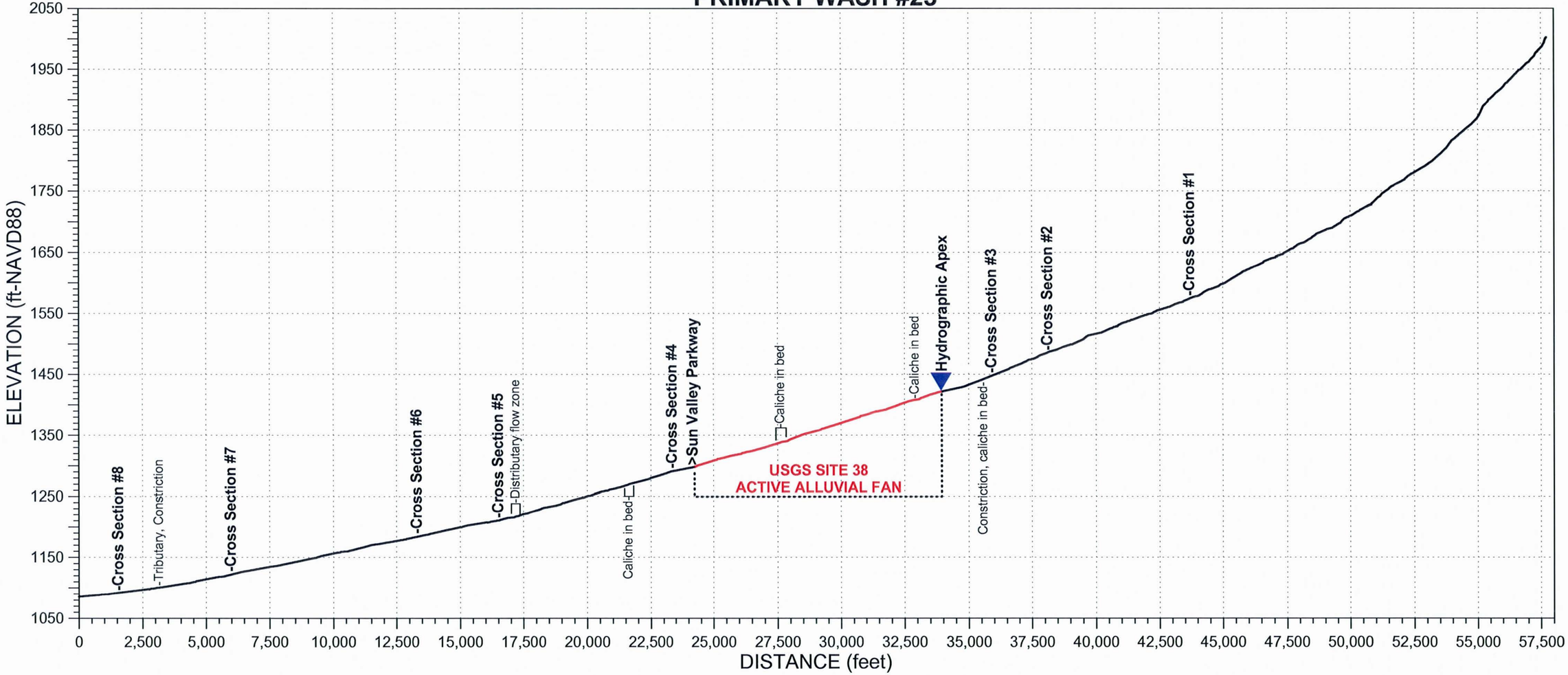
P5/23 Primary Wash #22 – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P5/22 Primary Wash #22 – Sun Valley Parkway Bridge Culvert
View looking downstream/west at upstream bridge face

P5/21 Primary Wash #22 – Sun Valley Parkway Bridge Culvert
View looking upstream/south at downstream bridge face

P5/24 Primary Wash #22 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

PRIMARY WASH #23



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 923349.1 ft East: 483924.2 ft	1	138	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	30-35 ft	Cobble X	Bldrs X

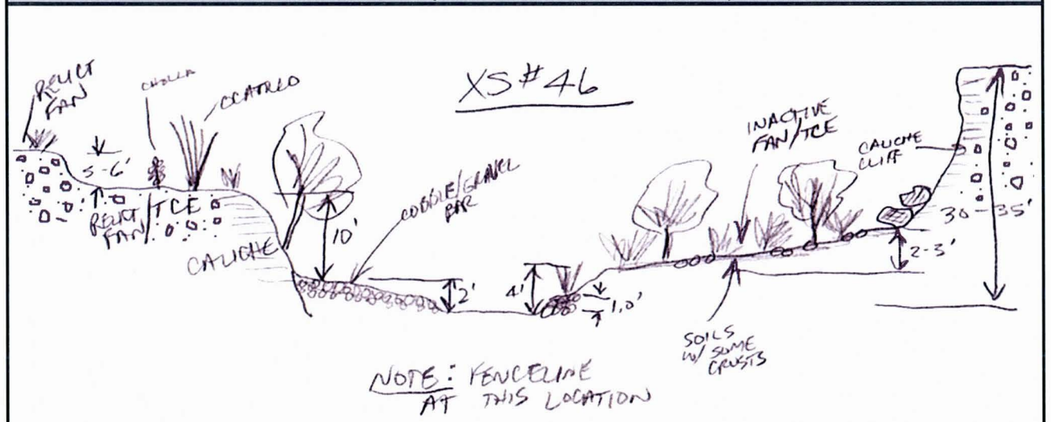
VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank	4-5 ft		Varnish			X
						Pavement			X
						Soils		X	

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness
			Left Bank	full bank	
Palo Verde	X		Right Bank	full bank	
Creosote	X		Channel		
Brittlebush	X		PHOTOS & DESCRIPTION:		
Bursage	X		P4/34 - View upstream		
Mormon Tea	X		P4/35 - View downstream		
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
			1-3 ft

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #46



Notes: Fenceline at this location. The channel upstream and downstream is steep with boulder/cobble bed and oversteepened areas. Boulder terraces along reach control grade.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 921636.8 ft East: 479484.6 ft	2	139	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	3.5-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		4:1	12 ft	Cobble X	Bldrs X

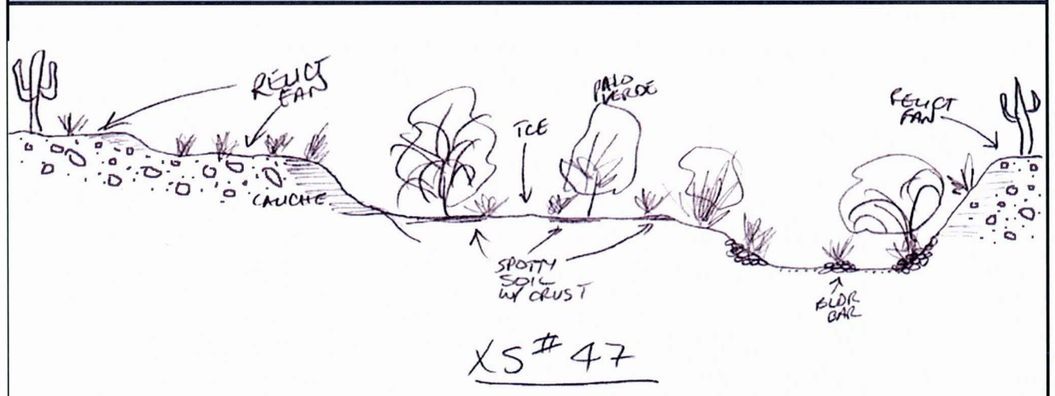
VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X		Left Bank	4 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils		X	

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness
			Left Bank		
Palo Verde	X		Right Bank	full bank	
Creosote	X		Channel		
Brittlebush	X		PHOTOS & DESCRIPTION:		
Bursage	X		P4/36 - View upstream		
Mormon Tea	X		P4/37 - View downstream		
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #47



Notes: Very steep upstream and downstream with boulder bars on banks and in bed - overtopped terraces in places due to debris/boulder deposits.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 921192.3 ft East: 477486.9 ft	3	140	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

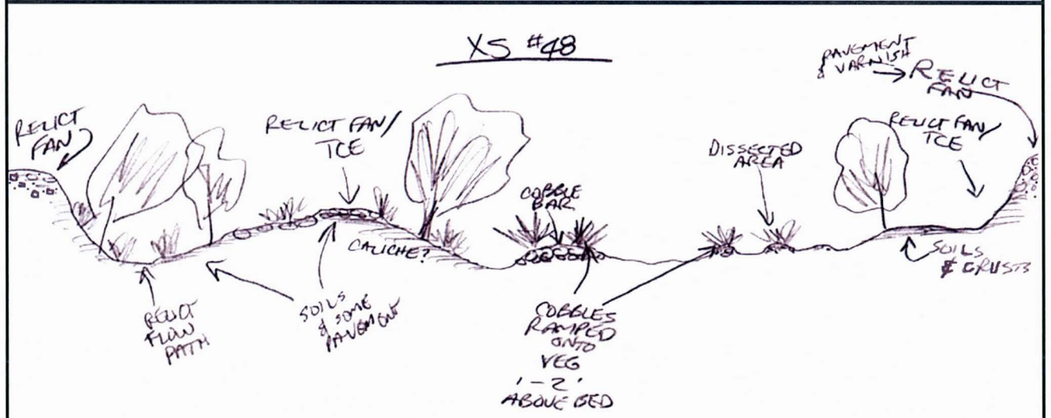
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		2:1	6 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	4-5 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X		Left Bank	6 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	4 ft		Varnish			X
						Pavement			X
						Soils			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			HIGH WATER MARKS/DEBRIS			
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness				
			Left Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Palo Verde	X		Right Bank				1.5- 2 ft	1.5-2 ft	2-3 ft
Creosote	X		Channel						
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P4/38 - View upstream						
Mormon Tea	X	X	P4/39,40,41 Pan - Looking downstream; note boulder bars, sediment ramping,						
Tamarisk			and bar dissection.						
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #48



Notes: Located about 1/4 mile upstream of hydrographic apex of fan at USGS Site 38. Just downstream from cross section have boulder bar/deposition that is being dissected.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 914260.1 ft East: 467439.4 ft	4	148	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

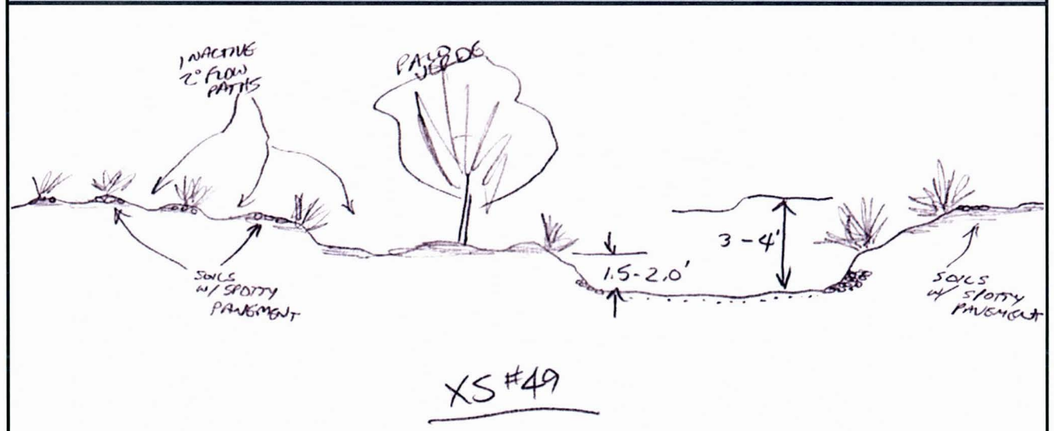
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		3:1	1.5-2 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		3:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			HIGH WATER MARKS/DEBRIS			
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness				
			Left Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Palo Verde	X		Right Bank				<1 ft	<1 ft	
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P5/1 - View upstream						
Mormon Tea			P5/2 - View downstream						
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #49



Notes: Reach/cross section is about 300 feet downstream of downstream end of eroding reach below Sun Valley Parkway culvert.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 909297.4 ft East: 462949.3 ft	5	154	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		4:1	3 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5 ft	1-1.5 ft	1-1.5 ft

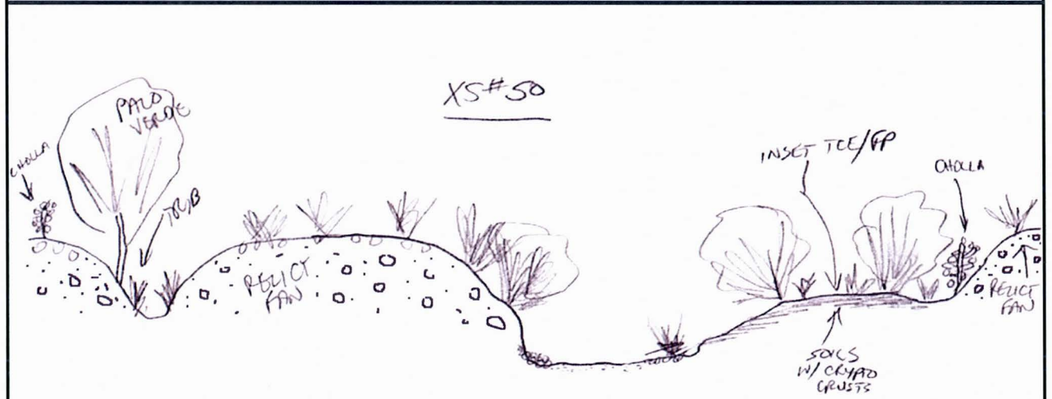
PHOTOS & DESCRIPTION:

P5/3 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Absent	Caliche Present:
Spotty	Dimensions:
Extensive	

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #50



Notes: Upstream to next cross section - channel has extensive divided flow and flow splits within entrenched floodway.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 North: 907767.5 ft East: 460385.1 ft	6	156	March 11, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	4-5 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		1:1	4-5 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:

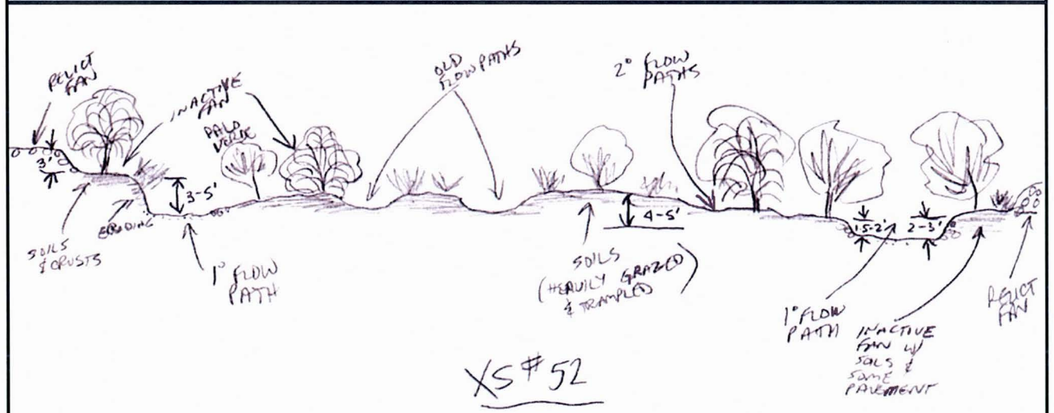
P5/5 - View looking downstream on left bank primary flow path

P5/6 - View looking upstream on right bank primary flow path

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Absent	Caliche Present:
Spotty	Dimensions:
Extensive	

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #52



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW23	7	157	March 11, 2004

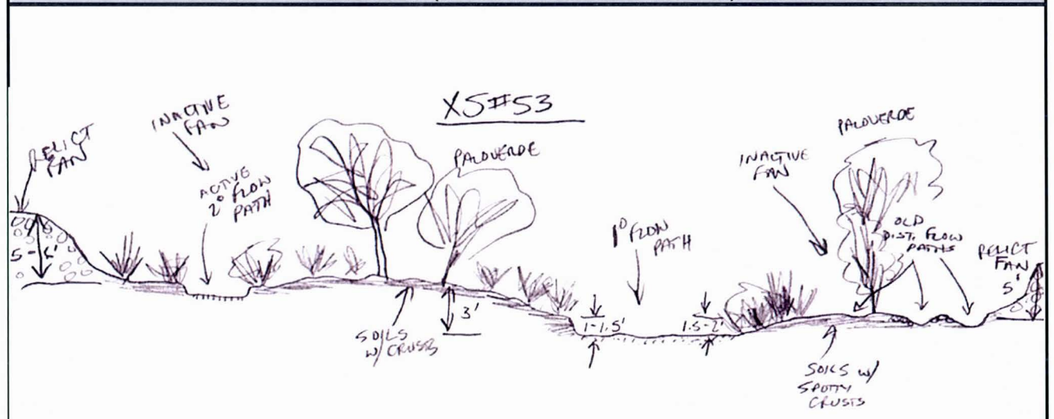
North: 901922.6 ft
East: 456352.6 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		>3:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		>6:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P5/7 - View looking downstream showing another flow split around vegetation						
Mormon Tea	X	X	P5/8 - View upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #53



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW23	8	159	March 11, 2004

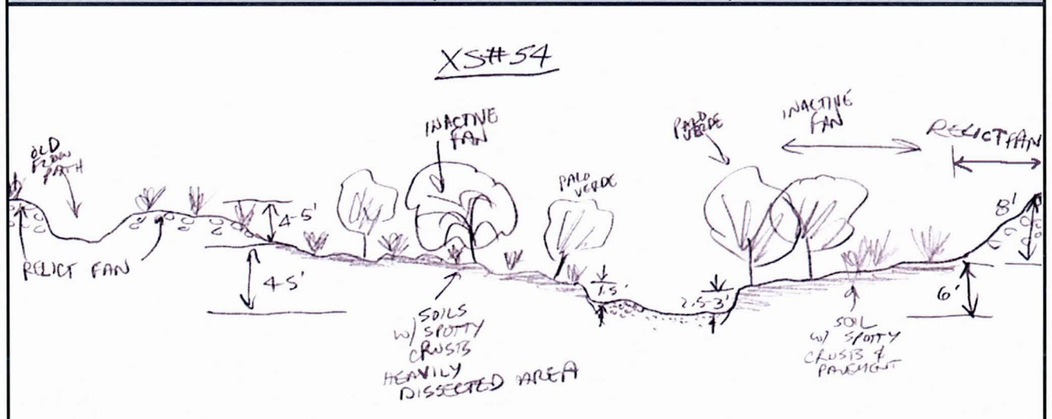
North: 898800.5 ft
East: 453588.4 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	2.5-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1-1.5 ft	1-1.5 ft
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P5/10 - View downstream, note snag on left bank side of channel						
Mormon Tea	X	X	P5/11 - View upstream toward right bank tributary confluence						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #54



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23 (Downstream of USGS Site 38 Alluvial Fan)	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 147 U/S Face: 146

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC__X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	914860.48	914793.34	6	4 ft	10 ft	US:2.75 ft	DS:1.4 ft		U/S: 75%
Easting	468079.72	467949.08	Depth of D/S Incision: 0 ft			# 2	# 6	Yes	D/S: 30%

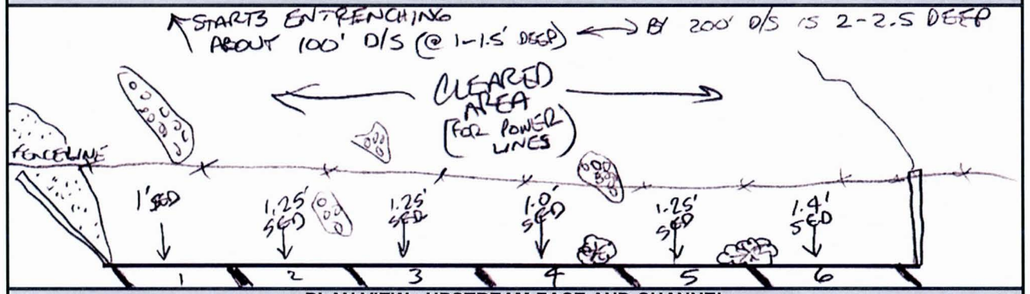
UPSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	No	Left bank	No	---	---	Sand__X__	Gravel__X__
Channel	No	Multiple	Yes	Right bank	No	---	---	Cobble__X__	Bldrs_____

DOWNSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes	Left bank	No	>6:1	1-2 ft	Sand__X__	Gravel__X__
Channel	No	Multiple	No	Right bank	No	>6:1	1-2 ft	Cobble__X__	Bldrs__X__

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				>2.75 ft

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		1-1.5 ft		2.75 ft

PLAN VIEW - DOWNSTREAM FACE AND CHANNEL



PLAN VIEW - UPSTREAM FACE AND CHANNEL

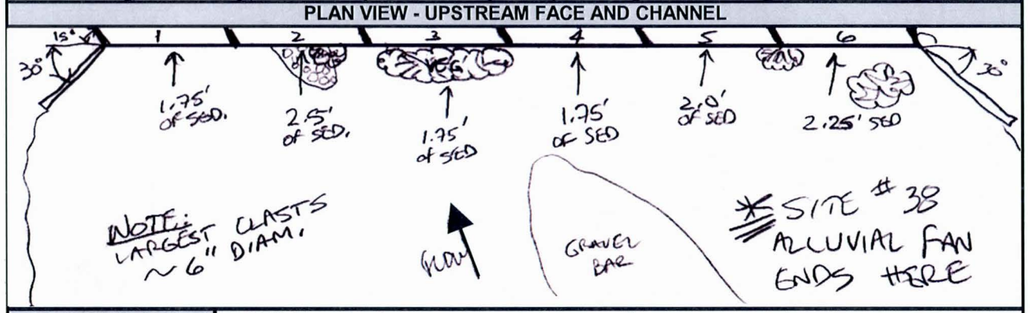


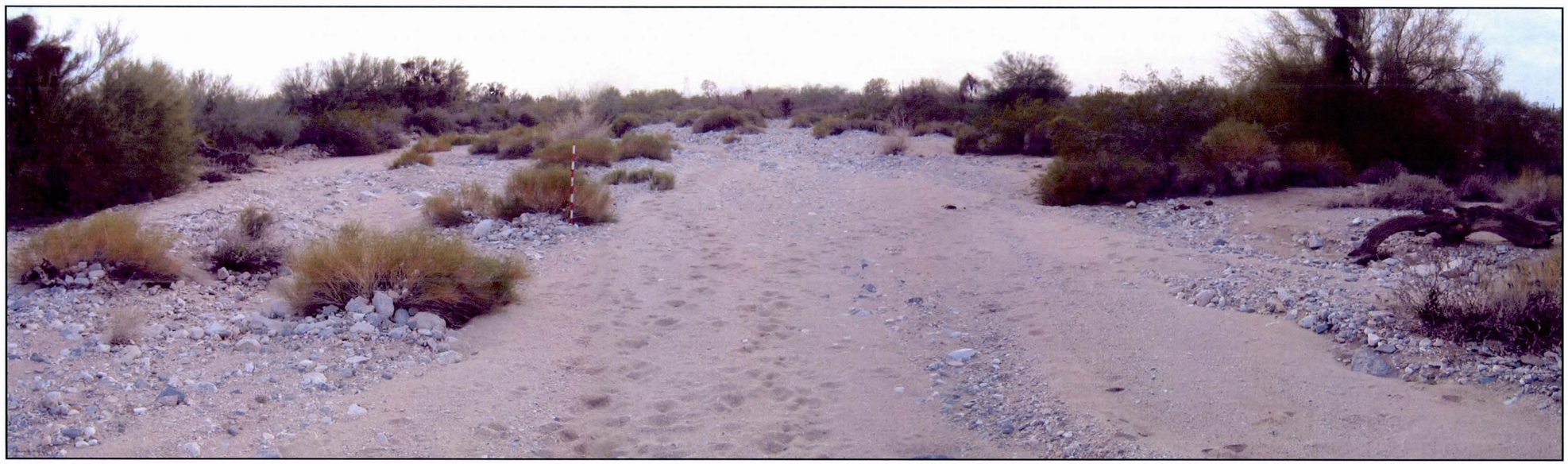
PHOTO #:		NOTES: Tree clearing downstream below power lines
U/S Face	4-43,44	View north, View downstream
View U/S	4-45	View upstream
D/S Face	4-47	View north
View D/S	4-46	View downstream - numerous Palo Verde trees cut down and removed - note apparent incision depth

P4/34 Primary Wash #23 - Cross Section #1 – View looking upstream

P4/35 Primary Wash #23 - Cross Section #1 – View looking downstream

P4/36 Primary Wash #23 - Cross Section #2 – View looking upstream

P4/37 Primary Wash #23 - Cross Section #2 – View looking downstream



P4/39,40,41 Primary Wash #23 - Cross Section #3 – Panorama view looking downstream

P4/38 Primary Wash #23 - Cross Section #3 – View looking upstream

P5/1 Primary Wash #23 - Cross Section #4 – View looking upstream

P5/2 Primary Wash #23 - Cross Section #4 – View looking downstream

P5/3 Primary Wash #23 - Cross Section #5 – View looking upstream

P5/5 Primary Wash #23 - Cross Section #6 – View looking downstream

P5/6 Primary Wash #23 - Cross Section #6 – View looking upstream

P5/7 Primary Wash #23 - Cross Section #7 – View looking downstream

P5/8 Primary Wash #23 - Cross Section #7 – View looking upstream

P5/10 Primary Wash #23 - Cross Section #8 – View looking downstream

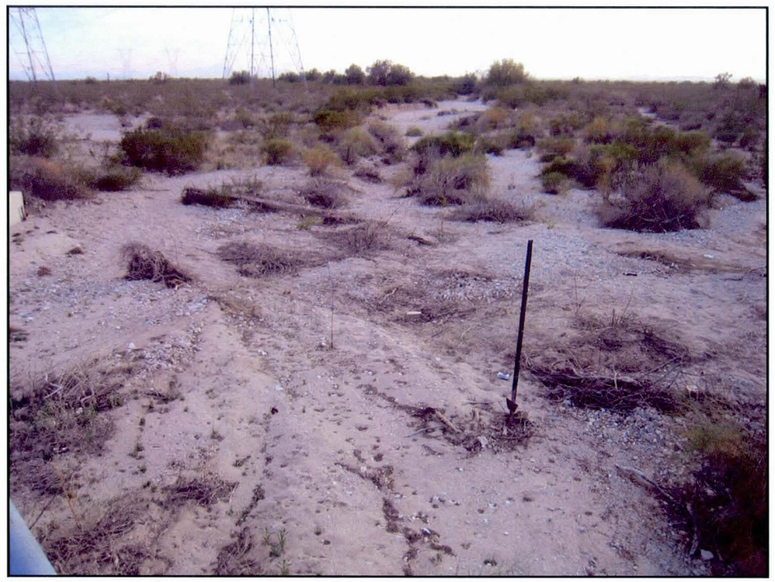
P5/11 Primary Wash #23 - Cross Section #8 – View looking upstream

P4/45 Primary Wash #23 – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P4/43 Primary Wash #23 – Sun Valley Parkway Bridge Culvert
View looking downstream/north at upstream bridge face

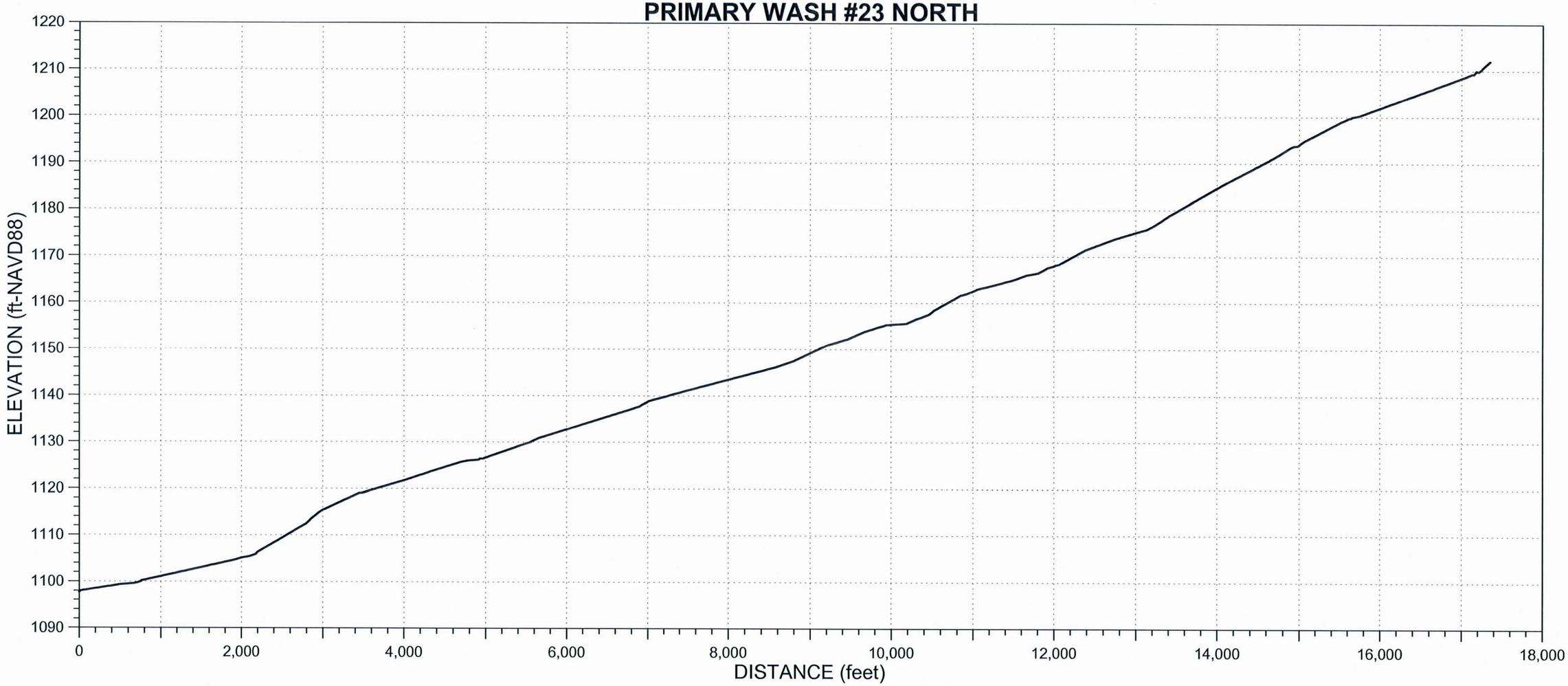
P4/44 Primary Wash #23 – Sun Valley Parkway Bridge Culvert
View looking downstream/south at upstream bridge face at south end

P4/47 Primary Wash #23 – Sun Valley Parkway Bridge Culvert
View looking upstream/north at downstream bridge face

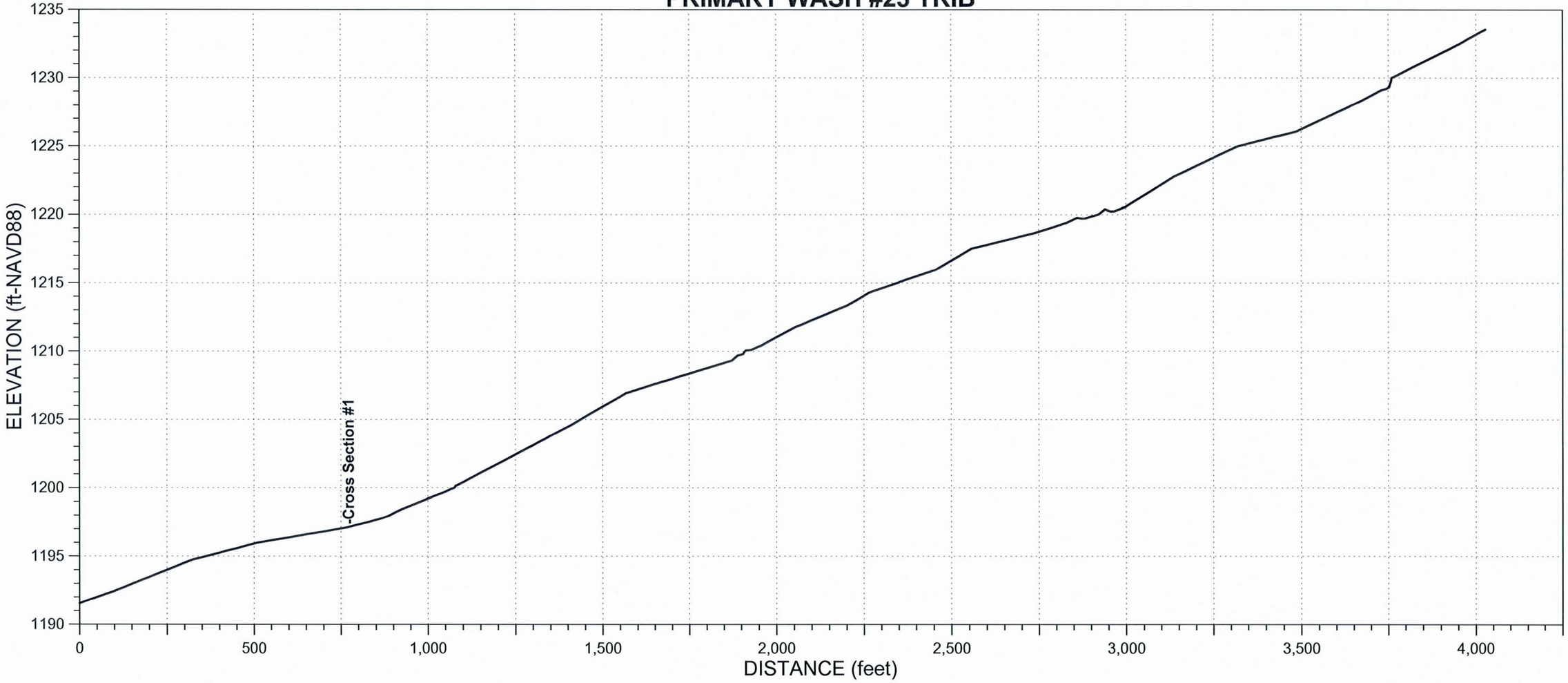


P4/46 Primary Wash #23 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

PRIMARY WASH #23 NORTH



PRIMARY WASH #23 TRIB



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW23Trib	1	155	March 11, 2004
	North: 907439.1 ft East: 459973.2 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

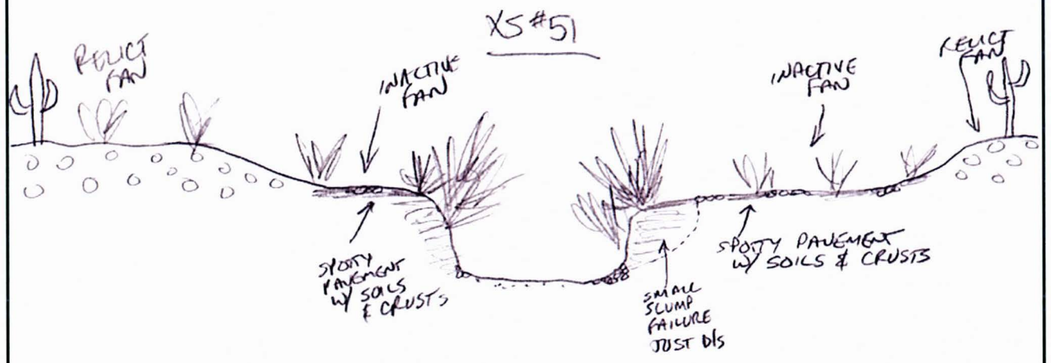
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	<1:1	4.5-5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	4.5-5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			HIGH WATER MARKS/DEBRIS			
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness				
			Left Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Palo Verde	X		Right Bank						
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P5/4 - View upstream						
Mormon Tea									
Tamarisk									
Saguaro C.									

CRYPTO-BIOTIC CRUST (floodway)		PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #51

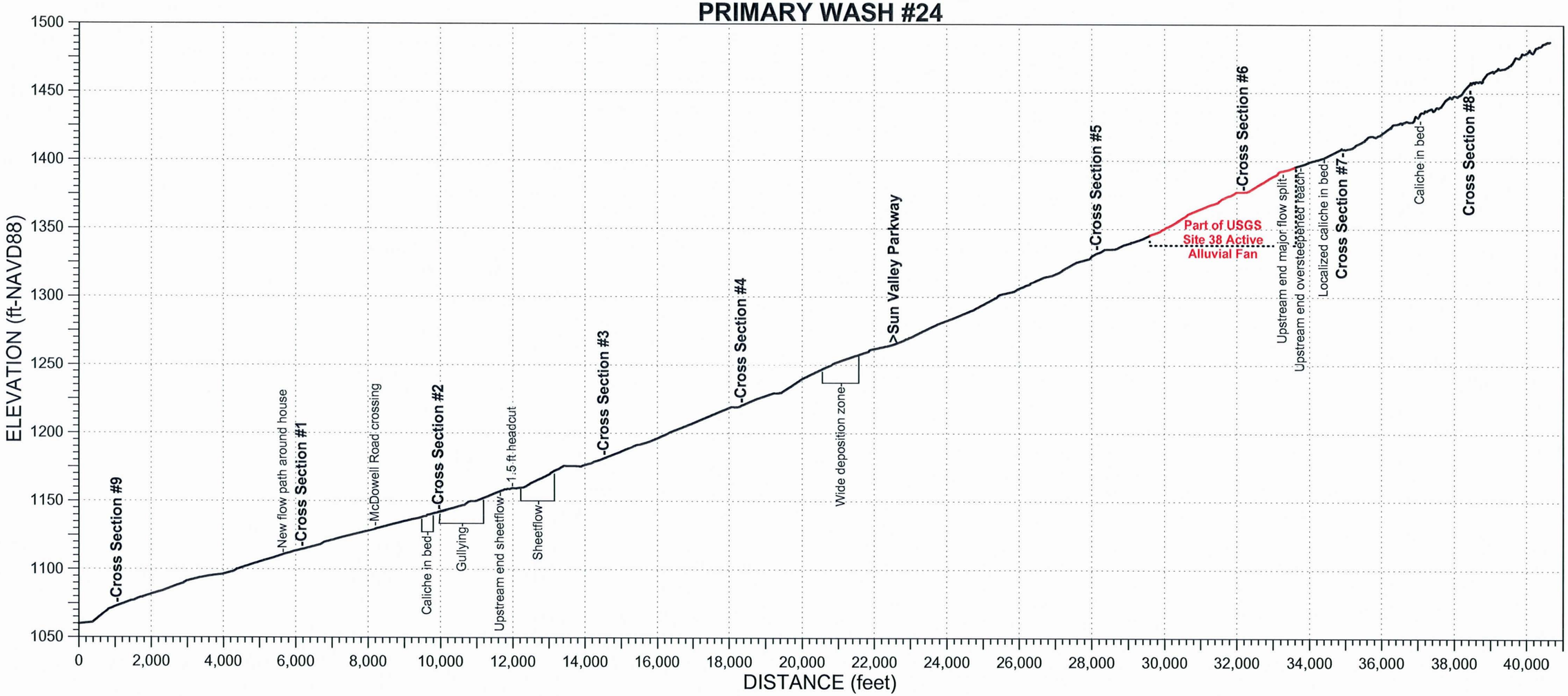


Notes:

AYRES ASSOCIATES

P5/4 Primary Wash #23 Trib - Cross Section #1 – View looking upstream

PRIMARY WASH #24



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24	1	112	March 10, 2004
	North: 897941.3 ft East: 459360.0 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		<1:1	1.5-2 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank		<1:1	1.5-2 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde	on Inactive Fan surfaces	
Creosote		
Brittlebush		
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

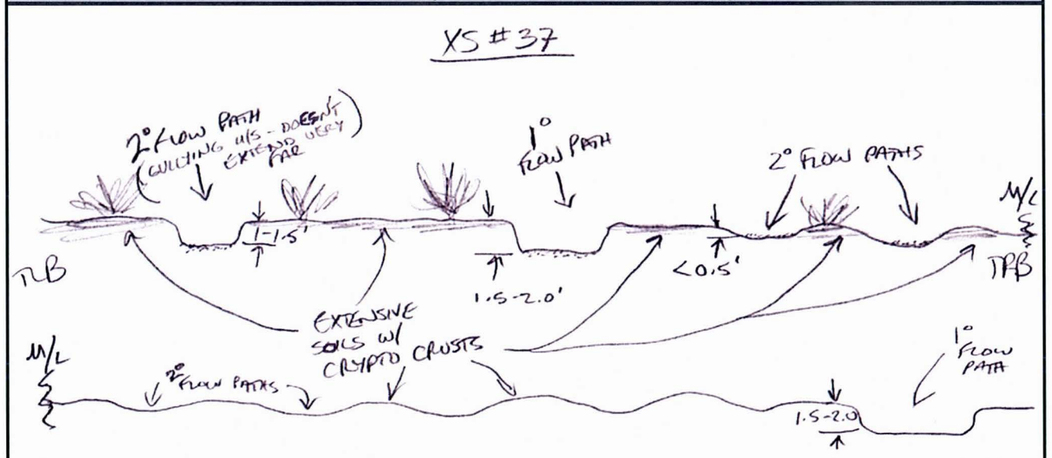
PHOTOS & DESCRIPTION:

P4/3 - View upstream showing headward extent of secondary flow path gullies.

P4/4 - View upstream on primary flow path.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #37



Notes: Cryptobiotic crusts extensive on Inactive Fan surfaces.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24	2	116	March 10, 2004
	North: 901354.2 ft East: 460490.5 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank	X	1:1	3 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X	1:1	3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)		
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

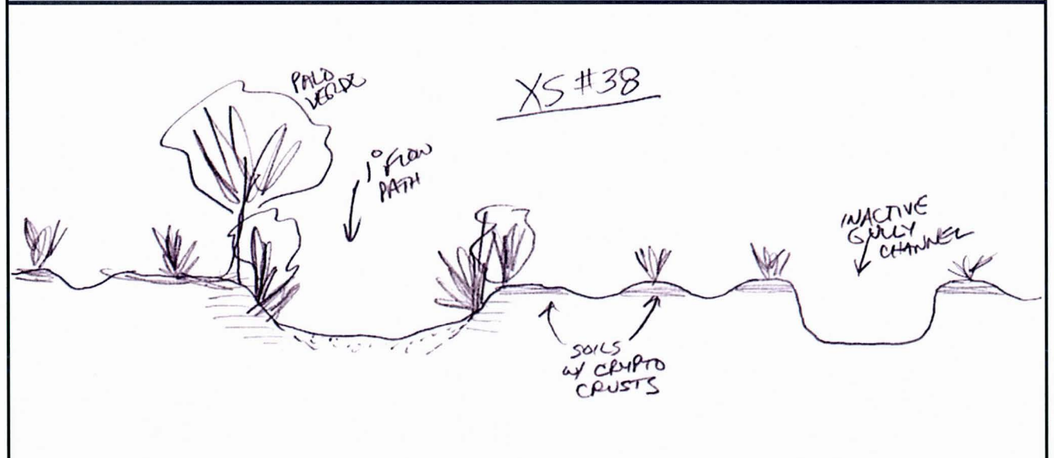
PHOTOS & DESCRIPTION:

P4/6 - View looking upstream showing major (inactive) gullying

P4/7 - View downstream showing primary channel

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE: Downstream			HEADCUT:		
Absent	Caliche Present: Yes			Caliche Present:		
Spotty	Dimensions: 2-3 feet drop over aabout 200-300 feet			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #38



Notes: Cryptobiotic crusts extensive on Inactive Fan surfaces.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW24	3	121	March 10, 2004

North: 904511.0 ft
East: 463455.4 ft

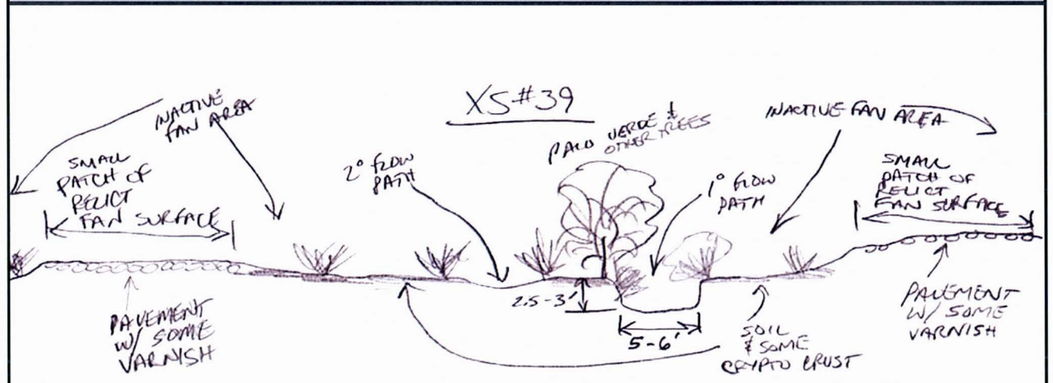
Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		1:1	2.5-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	2.5-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P4/13 - View downstream (flow splits just upstream)						
Mormon Tea									
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #39



Notes: Cryptobiotic crusts extensive on Inactive Fan surfaces.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW24	4	122	March 10, 2004

North: 907497.2 ft
East: 465801.7 ft

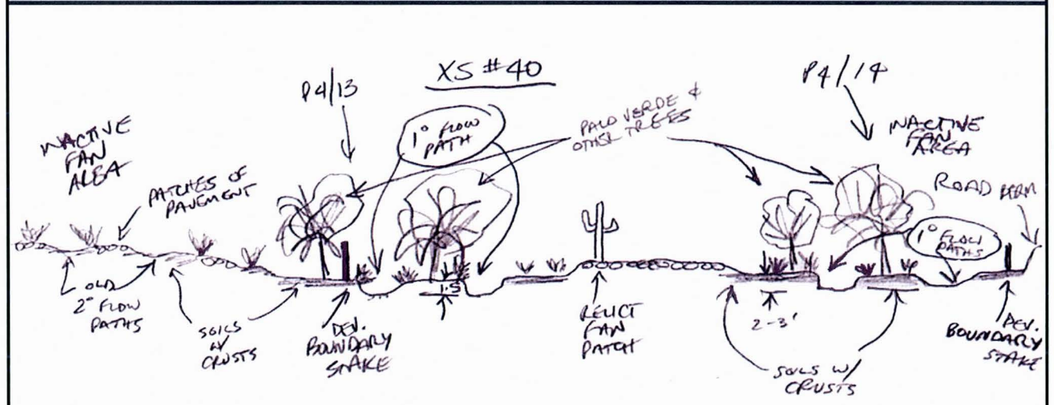
Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank	X			Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X			Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish		X	
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P4/14 - View upstream on left side of multiple flow paths showing relationship of						
Mormon Tea			channel to boundary stake.						
Tamarisk			P4/15 - View looking downstream showing same as P4/13 on right side of						
Saguaro C.			multiple flow paths (note boundary stake).						

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #40



Notes: Cryptobiotic crusts extensive on Inactive Fan surfaces.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24 North: 915417.6 ft East: 470878.7 ft	5	130	March 10, 2004
	Field Crew:	W.J. Spitz, A.B. Alvarado		

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		>4:1	2.5-3 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		>4:1	2.5-3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement		X	
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	~1 ft	~1 ft	

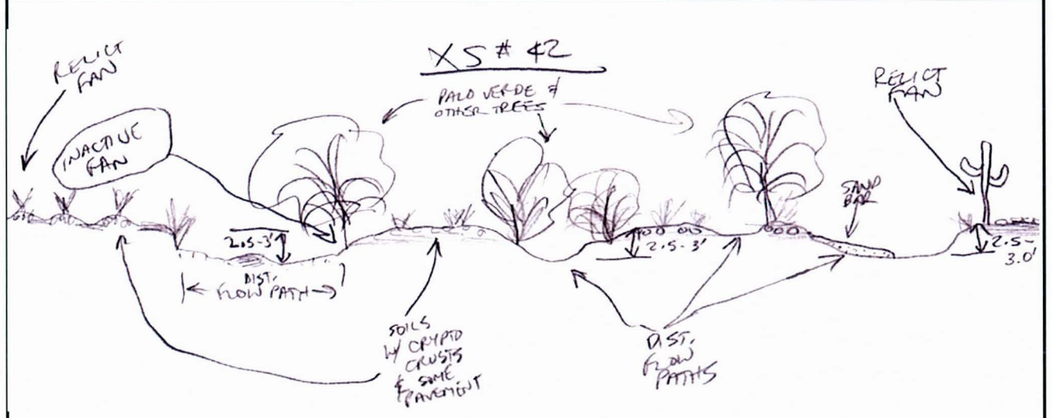
PHOTOS & DESCRIPTION:

P4/25 - View downstream, left primary channel, note flow split around vegetation

P4/26 - View downstream, right primary channel, note flow split around vegetation

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #42



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24 North: 917704.5 ft East: 473515.2 ft	6	131	March 10, 2004
	Field Crew:	W.J. Spitz, A.B. Alvarado		

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		>6:1	2-3 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		>6:1	2-3 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

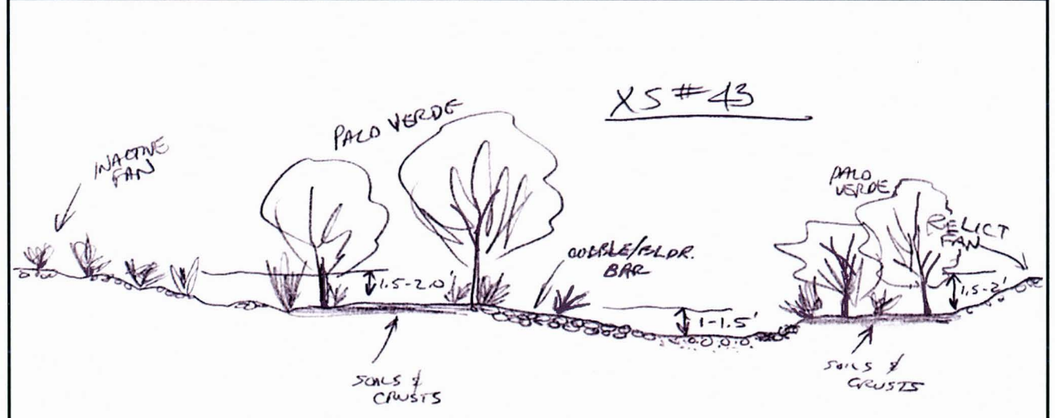
HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1-1.5 ft	1-1.5 ft	1-1.5 ft

PHOTOS & DESCRIPTION:

P4/27,28 - Pan looking downstream, note cobble/boulder bar and ramped cobbles/boulders onto Palo Verde trees on right, also note veg debris.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #43



Notes: This cross section is approximatley on line with USGS Site 37 active fan to north. Downstream of here channel is wide and shallow with extensive cobbles and boulders and split flow = high energy reach or steep slope?

AYRES ASSOCIATES

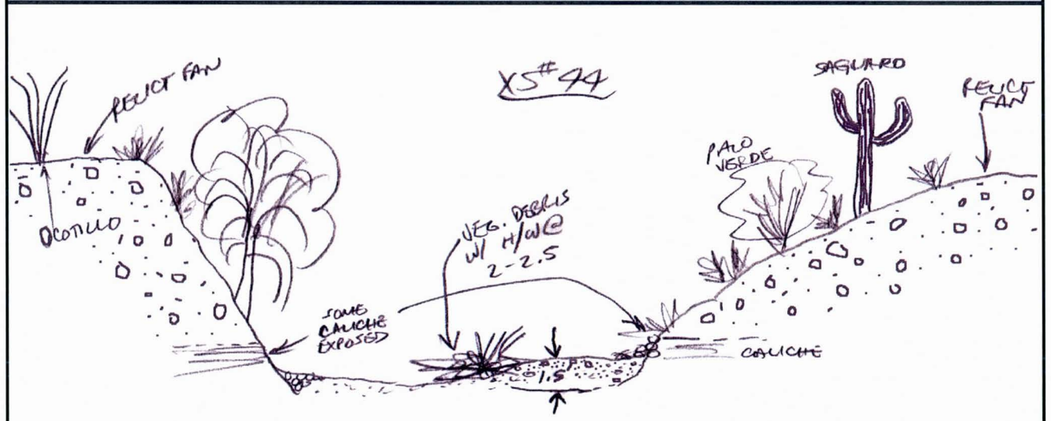
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24 North: 918200.6 ft East: 476031.6 ft	7	135	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	10-12 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	10-12 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	?		HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	1.5-2 ft	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1.5-2 ft	1.5-2 ft	2-2.5 ft
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P4/29 - View downstream, note caliche on left and deris and bar on right.						
Mormon Tea	X		P4/30 - View upstream.						
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #44



Notes:

AYRES ASSOCIATES

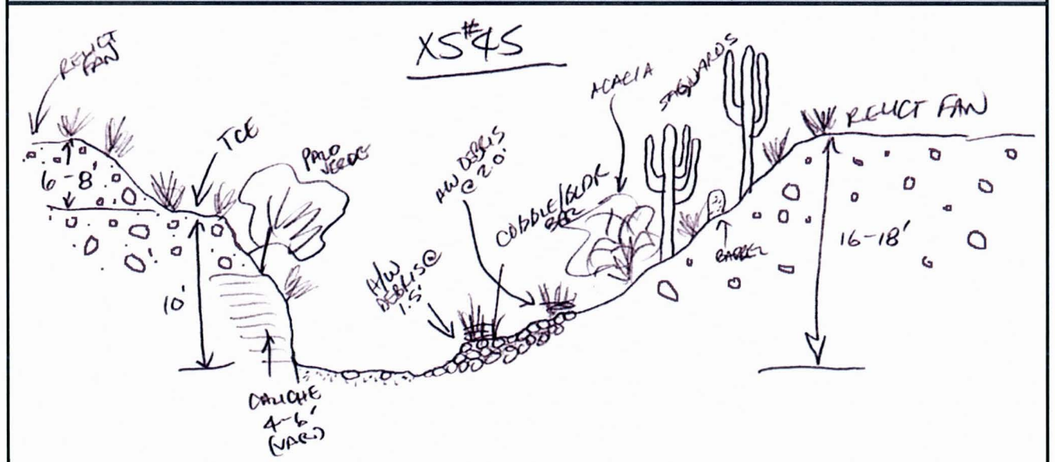
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24 North: 918655.2 ft East: 479262.8 ft	8	137	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	17-18 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	17-18 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank	10 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	4-6 ft	4 ft(?)	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	?	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1.5-2 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P4/32 - View upstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.	on slopes								

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.	on slopes			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #45



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24 North: 893166.5 ft East: 457716.2 ft	9	429	March 19, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	<1:1	3 ft	Sand X	Gravel X
Channel	X	Multiple	X (D/S)	Right Bank	X	<1:1	3 ft	Cobble	Bldrs

VEGETATION		INSET F/P
In-channel		
Marginal	X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.	X	
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.	X	
Ocotillo		

TERRACES (height-ft)		
Left Bank	10 ft	
Right Bank		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P12/4 - View downstream

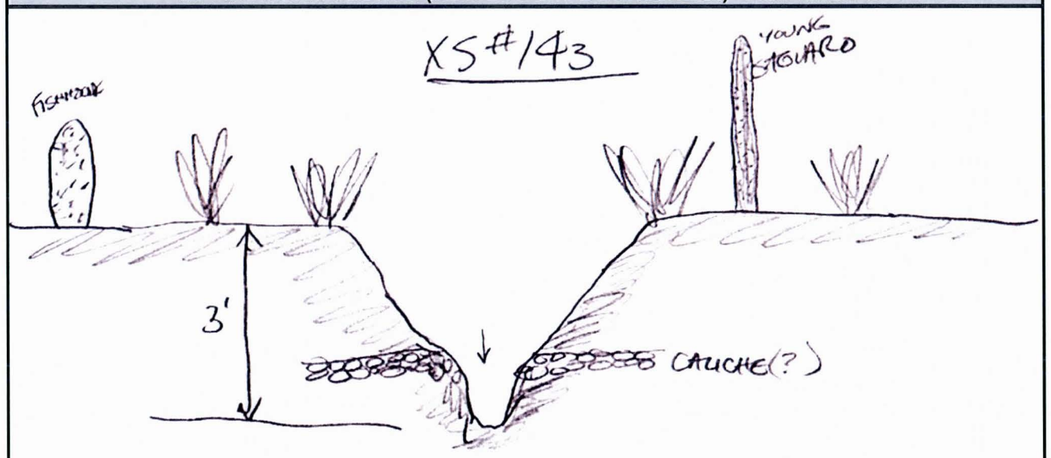
CRYPTO-BIOTIC CRUST (floodway): Absent / **Spotty** / Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain

NICKZONE: Caliche Present: / Dimensions:

HEADCUT: Caliche Present: / Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #143



Notes: Area just downstream is gullied. This channel reach is incising slowly.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	DATE:	WAYPOINT:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW24	March 10, 2004 Field Crew: W.J. Spitz, A.B. Alvarado	D/S Face: 128 U/S Face: 127

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	911001.15	910924.07	2	3 ft	1.0 ft	US: 1.0 ft	DS: 1.0 ft		U/S: 30%
Easting	468096.30	467964.79	**Depth of D/S Incision:** 0 ft			# 2	# 2	No	D/S: 30%

UPSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	**Single**	Yes	**Left bank**	No	1:1	1.5-2 ft	Sand X	Gravel X
Channel	Yes	**Multiple**	No	**Right bank**	No	1:1	1.5-2 ft	Cobble X	Bldrs

DOWNSTREAM CHANNEL

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	**Single**	Yes	**Left bank**	No	>3:1	1-3 ft	Sand X	Gravel X
Channel	No	**Multiple**	No	**Right bank**	No	>3:1	1-3 ft	Cobble X	Bldrs

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	**Ht. above**	Channel	**Ht. above**	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	**Thalweg**	1.0 ft	**Invert**	>1.0 ft

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	**Ht. above**	Channel	**Ht. above**	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	**Thalweg**	1.0 ft	**Invert**	>1.0 ft

PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

PLAN VIEW - UPSTREAM FACE AND CHANNEL

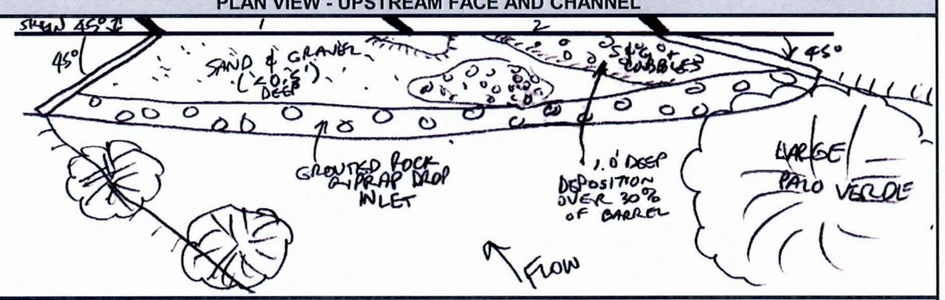


PHOTO #:		NOTES:
U/S Face	4-20	Looking north - note sediment in barrel.
View U/S	4-21	Looking upstream
D/S Face	4-22	View looking north - note sediment in barrel
View D/S	4-23	View looking downstream
Other		

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P4/3 Primary Wash #24 - Cross Section #1 – View looking upstream secondary flow paths

P4/4 Primary Wash #24 - Cross Section #1 – View looking upstream primary flow path

P4/6 Primary Wash #24 - Cross Section #2 – View looking upstream

P4/7 Primary Wash #24 - Cross Section #2 – View looking downstream

P4/13 Primary Wash #24 - Cross Section #3 – View looking downstream

P4/14 Primary Wash #24 - Cross Section #4 – View looking upstream

P4/15 Primary Wash #24 - Cross Section #4 – View looking downstream

P4/25 Primary Wash #24 - Cross Section #5 – View looking downstream

P4/26 Primary Wash #24 - Cross Section #5 – View looking downstream

P4/27 & 28 Primary Wash #24 - Cross Section #6 – Panorama view looking downstream

P4/29 Primary Wash #24 - Cross Section #7 – View looking downstream

P4/30 Primary Wash #24 - Cross Section #7 – View looking upstream

P4/32 Primary Wash #24 - Cross Section #8 – View looking upstream

P12/4 Primary Wash #24 - Cross Section #9 – View looking downstream

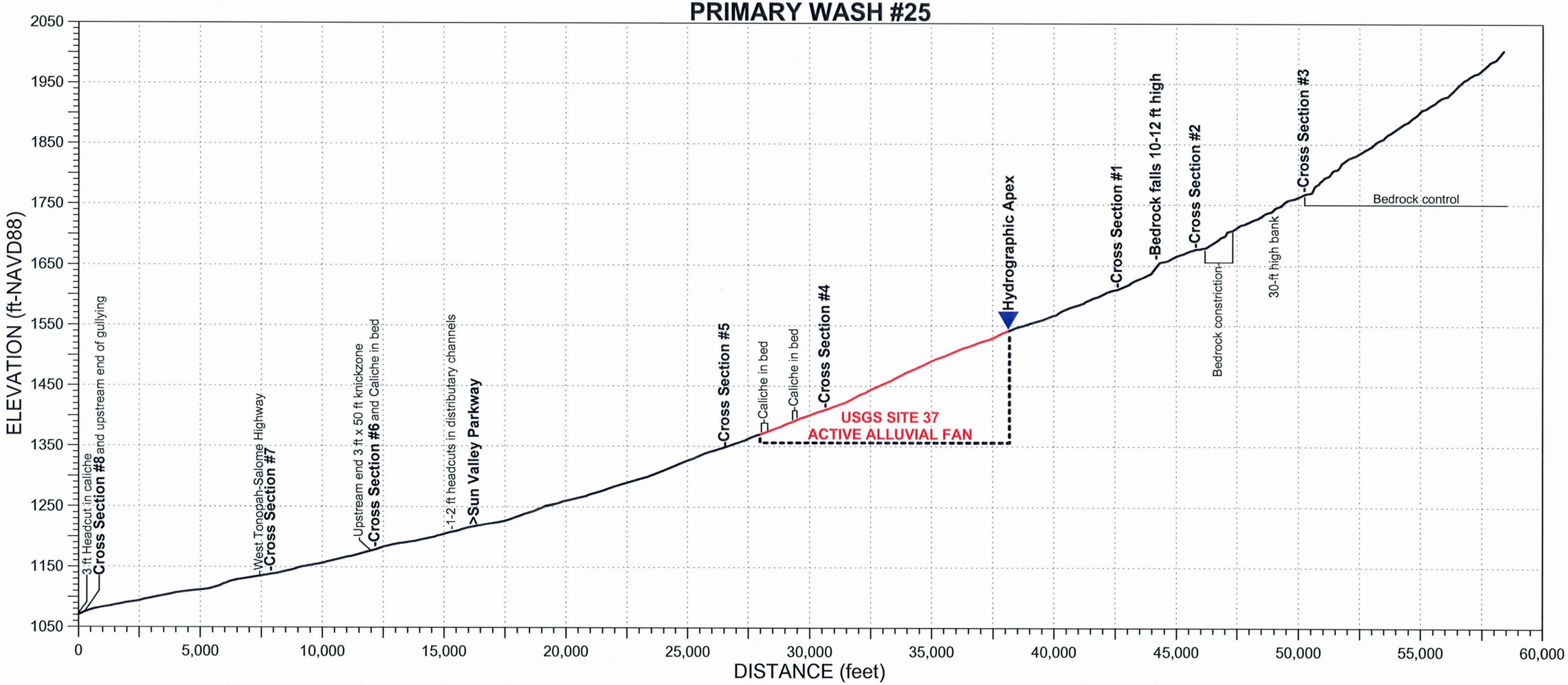
P4/21 Primary Wash #24 – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P4/20 Primary Wash #24 – Sun Valley Parkway Bridge Culvert
View looking downstream/south at upstream bridge face

P4/22 Primary Wash #24 – Sun Valley Parkway Bridge Culvert
View looking upstream/north at downstream bridge face

P4/23 Primary Wash #24 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

PRIMARY WASH #25

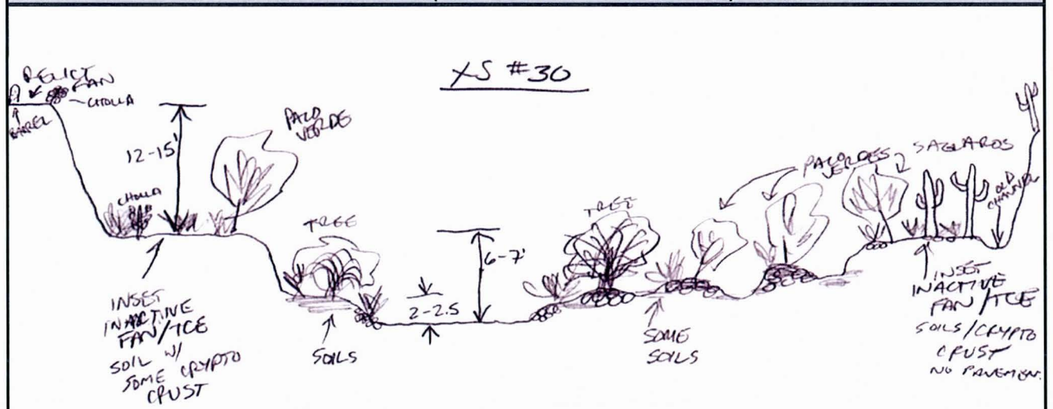


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW25 North: 920964.5 ft East: 486943.3 ft	1	93	March 9, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	2-3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	2-3 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank	6.5 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	6.5-8 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank	X	?	HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank	X	?	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				2-2.5 ft	2-3 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P3/28 - View looking downstream from left bank						
Mormon Tea	X	X	P3/29,30 - Pan looking upstream showing cross section area.						
Tamarisk									
Saguaro C.	X								
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			**Absent**	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #30



Notes:

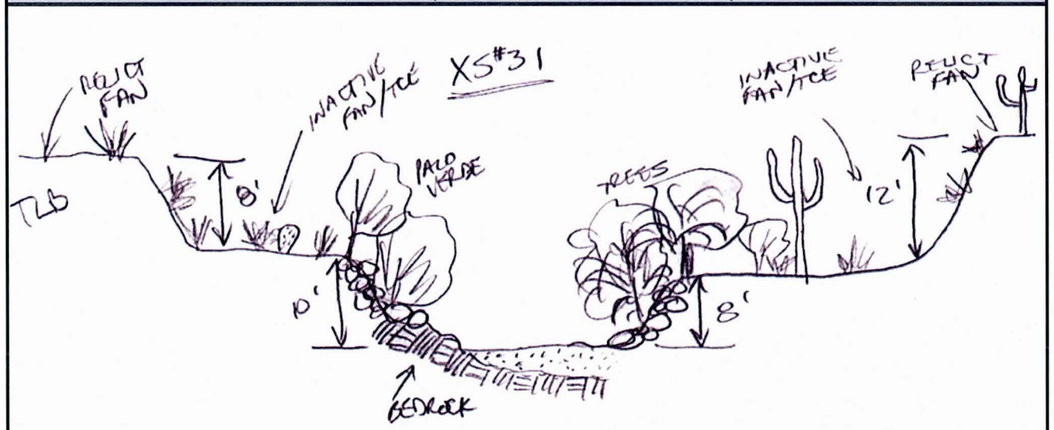
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW25 North: 922600.4 ft East: 489286.9 ft	2	94	March 9, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank				Sand X	Gravel X
Channel	X	Multiple		Right Bank				Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X		Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	On terraces		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1-1.5 ft	1-1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/31 - View upstream showing bedrock constriction and bedrcok in toe of left						
Mormon Tea	X		bank and bed upstream.						
Tamarisk			P3/32 - View downstreamshowing alluvial bed, channel, and Terraces (unpaired?).						
Saguaro C.	On terraces								
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.	On terraces		Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			**Absent**	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #31



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW25	3	98	March 9, 2004

North: 925120.4 m
East: 491921.2 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	25 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		<1:1	30 ft	Cobble X	Bldrs Lots

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	X
Brittlebush	X	X
Bursage	X	X
Mormon Tea	X	X
Tamarisk		
Saguaro C.	On side slope	
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		

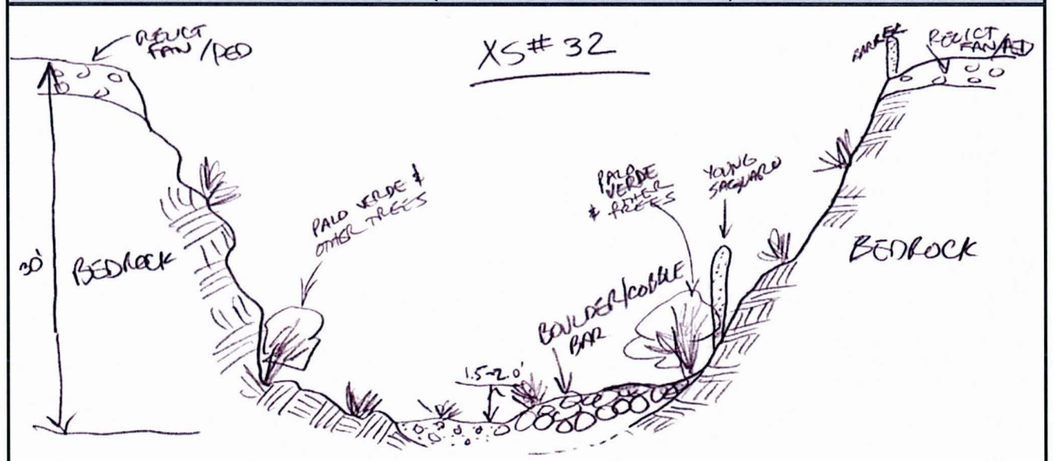
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1-3 ft	1.5 -2 ft	

PHOTOS & DESCRIPTION:
P3/36 - View downstream
P3/37 - View upstream, note bedrock and boulders in channel bed.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #32



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW25	4	99	March 9, 2004

North: 915047.7 m
East: 477576.4 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		2:1	3-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	3-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde		
Creosote	X	
Brittlebush		
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank	2 ft	2 ft+
Right Bank		
Channel		

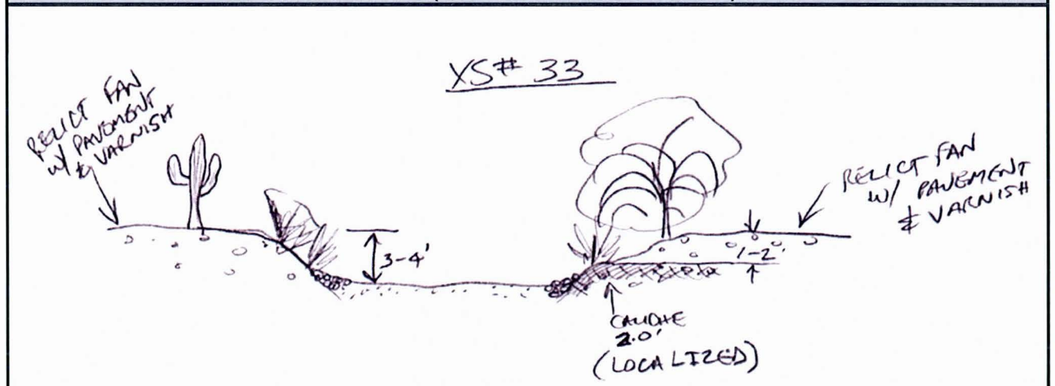
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft		

PHOTOS & DESCRIPTION:
P3/38 - View upstream, note caliche in toe of left bank
P3/39 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #33



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW25	5	104	March 9, 2004

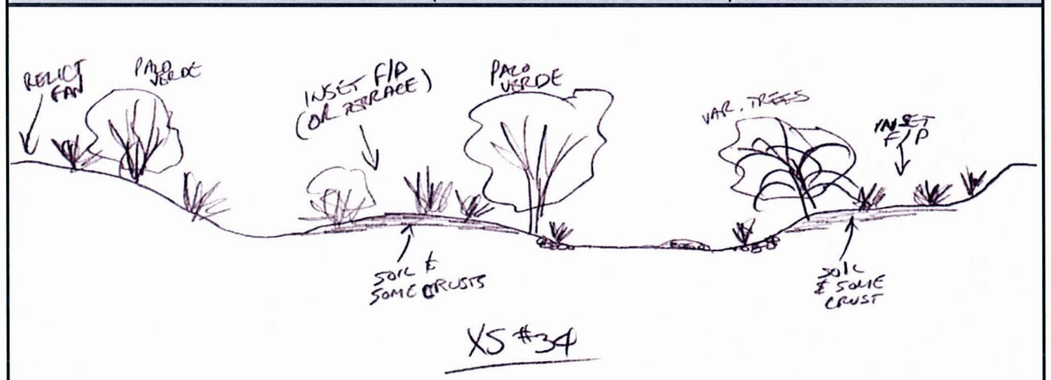
North: 912145.0 m
East: 474839.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank				Sand X	Gravel X
Channel	X	Multiple		Right Bank				Cobble few	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/40 - View upstream						
Mormon Tea	X		P3/41 - View downstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			**Spotty**	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #34



Notes:

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BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW25	6	108	March 9, 2004

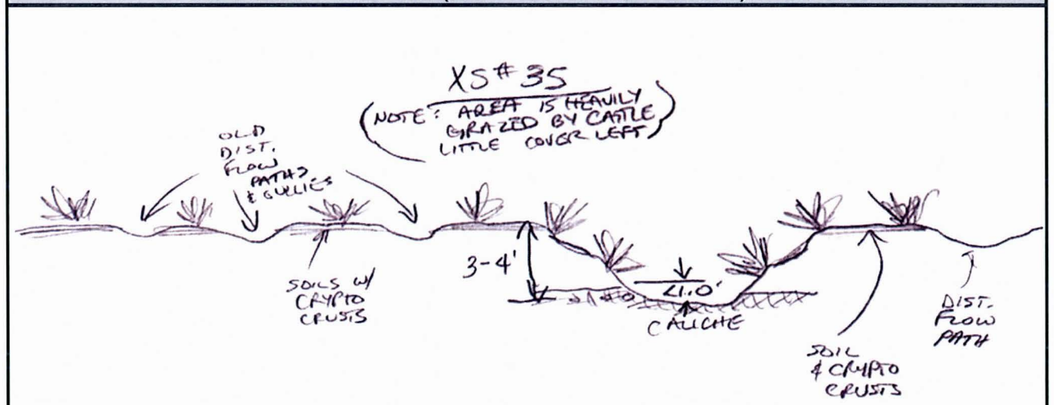
North: 902167.2 m
East: 465851.6 m

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	1:1	3-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	1:1	3-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	<1 ft	<1 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank	<1 ft	<1 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel	X					
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/49 - View upstream, note caliche in chanel bed.						
Mormon Tea			P3/50 - View downstream, note end of calich in channel bed.						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE: At Location			HEADCUT:			
Hedgehog C.			**Absent**	Caliche Present: Yes		Caliche Present:			
Fishhook C.			Spotty	Dimensions: 1-2 feet drop over 30-40 feet		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #



Notes: Area is heavily grazed by cattle, little ground cover is left.

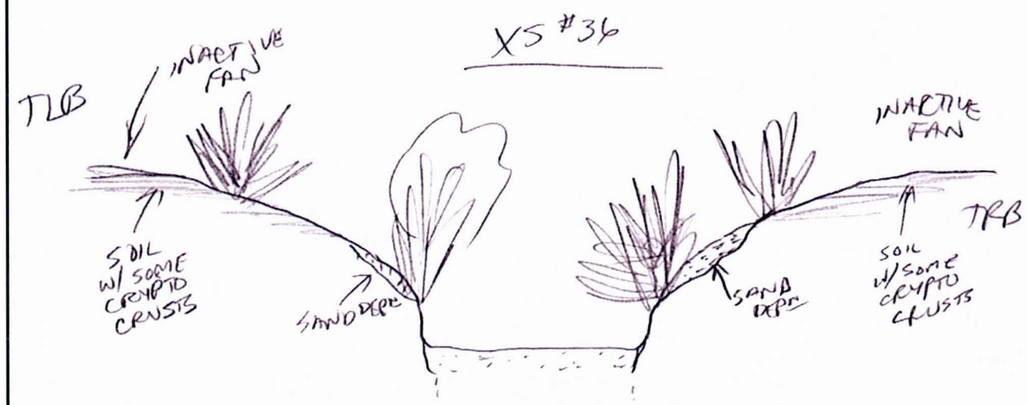
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW25	7	110	March 9, 2004
	North: 898257.3 m East: 464827.5 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank	X	<1:1	3-4 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	3-4 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				sed at 2 ft	sed at 2 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P3/51 - View downstream						
Mormon Tea	X	X	P3/52 - View upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #36



Notes:

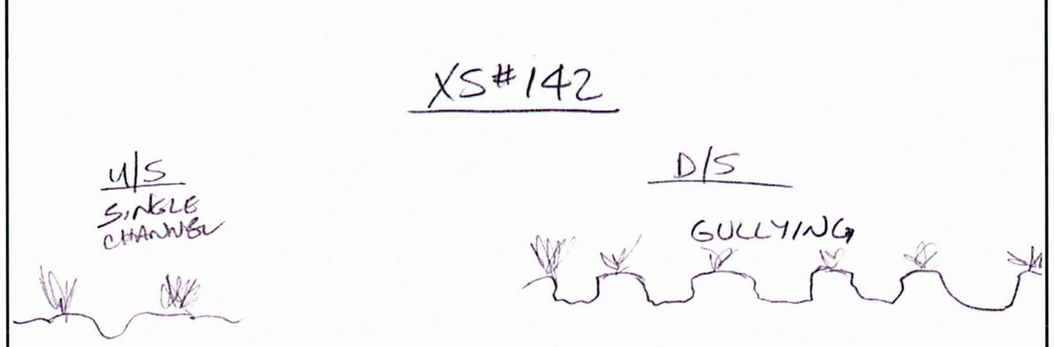
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW25	8	427	March 19, 2004
	North: 991244.3 m East: 462774.2 m	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank	X	1:1	<1 ft	Sand X	Gravel X
Channel	X	Multiple	X	Right Bank	X	1:1	<1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				sed at 2 ft	sed at 2 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P12/1 - View upstream = 4ft high headcut & 4ft deep incised channel at FRS.						
Mormon Tea			P12/2 - View downstream toward FRS#1 showing headward gullying due to						
Tamarisk			perched confluence at FRS detention basin.						
Saguaro C.			P12/3 - View of single swaled channel upstream of gullying.						
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #142



Notes: Headcut at FRS at Wpt. #428.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC. BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	CHANNEL: PW25	DATE: March 9, 2004	WAYPOINT: D/S Face: 106 U/S Face: 105
		Field Crew: W.J. Spitz, A.B. Alvarado	

ROAD CROSSING - CULVERT DATA

CMP___ RCP___ RCBC_X_

LOCATION	US Wpt.	DS Wpt.	# Barrels	Height	Width/Dia.	Max Sed Depth/ Barrel		Debris in Barrels	% Blockage
Northing	905526.54	905421.83	2	3 ft	8 ft	US: 0 ft	DS: 0 ft		U/S: 0
Easting	467992.11	467992.38	Depth of D/S Incision: 0 ft			#	#	No	D/S: 0

UPSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	No	Single	Yes	Left bank	No	6:1	3-4 ft	Sand X	Gravel X
Channel	No	Multiple	No	Right bank	No	6:1	3-4 ft	Cobble___	Bldrs___

DOWNSTREAM CHANNEL									
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	Yes	Single	Yes	Left bank	No			Sand___	Gravel___
Channel	No	Multiple	No	Right bank	No			Cobble___	Bldrs___

UPSTREAM PIEDMONT LANDFORMS						UPSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain		<1.0 ft		

DOWNSTREAM PIEDMONT LANDFORMS						DOWNSTREAM HIGH WATER MARKS			
Left bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain	Ht. above Thalweg	Channel	Ht. above Invert	In Barrel
Right bank	Pediment	Relict Fan	Active Fan	Inact. Fan	Alluvial plain				

PLAN VIEW - DOWNSTREAM FACE AND CHANNEL

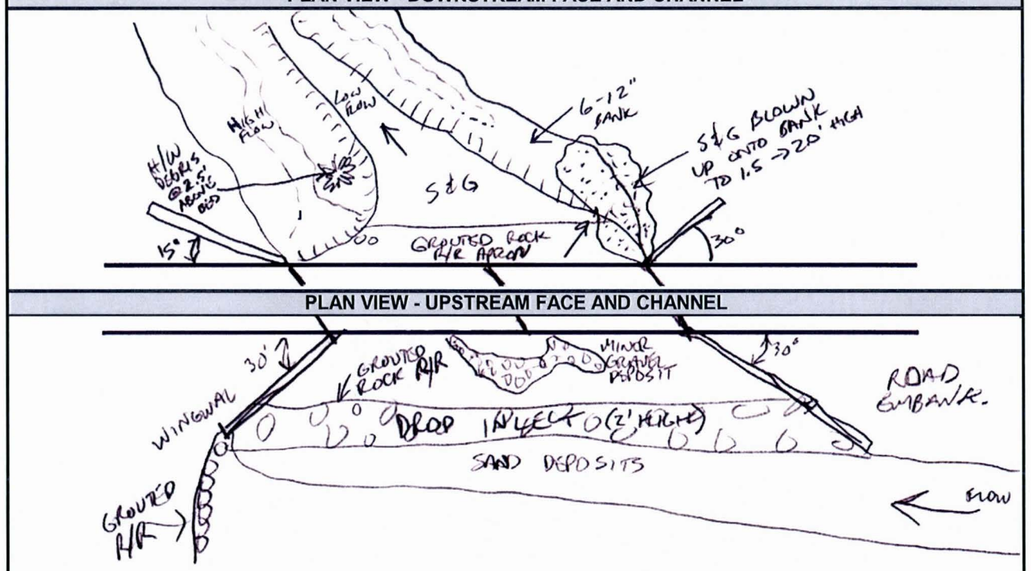


PHOTO #:		NOTES:
U/S Face	3-42	View north/upstream showing grouted rock riprap drop inlet
View U/S	3-43	Upstream channel - note highwater debris at 1.5-2.0 ft
D/S Face	3-44	View north
View D/S	3-45	Note highwater debris
Other		

AYRES ASSOCIATES

P3/29 & 30 Primary Wash #25 - Cross Section #1 – Panorama view looking upstream

P3/28 Primary Wash #25 - Cross Section #1 – View looking downstream

P3/31 Primary Wash #25 - Cross Section #2 – View looking upstream

P3/32 Primary Wash #25 - Cross Section #2 – View looking downstream

P3/36 Primary Wash #25 - Cross Section #3 – View looking downstream

P3/37 Primary Wash #25 - Cross Section #3 – View looking upstream

P3/38 Primary Wash #25 - Cross Section #4 – View looking upstream

P3/39 Primary Wash #25 - Cross Section #4 – View looking downstream

P3/40 Primary Wash #25 - Cross Section #5 – View looking upstream

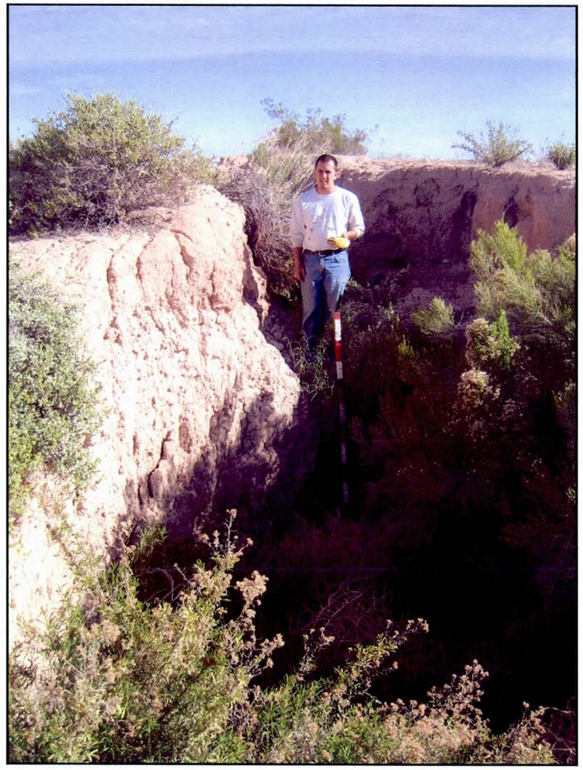
P3/41 Primary Wash #25 - Cross Section #5 – View looking downstream

P3/49 Primary Wash #25 - Cross Section #6 – View looking upstream

P3/50 Primary Wash #25 - Cross Section #6 – View looking downstream

P3/51 Primary Wash #25 - Cross Section #7 – View looking downstream

P3/52 Primary Wash #25 - Cross Section #7 – View looking upstream



P12/1 Primary Wash #25 – downstream of Cross Section #8
View looking upstream from Buckeye FRS #1

P12/2 Primary Wash #25 - Cross Section #8 – View looking downstream

P12/3 Primary Wash #25 - Cross Section #8 – View looking upstream

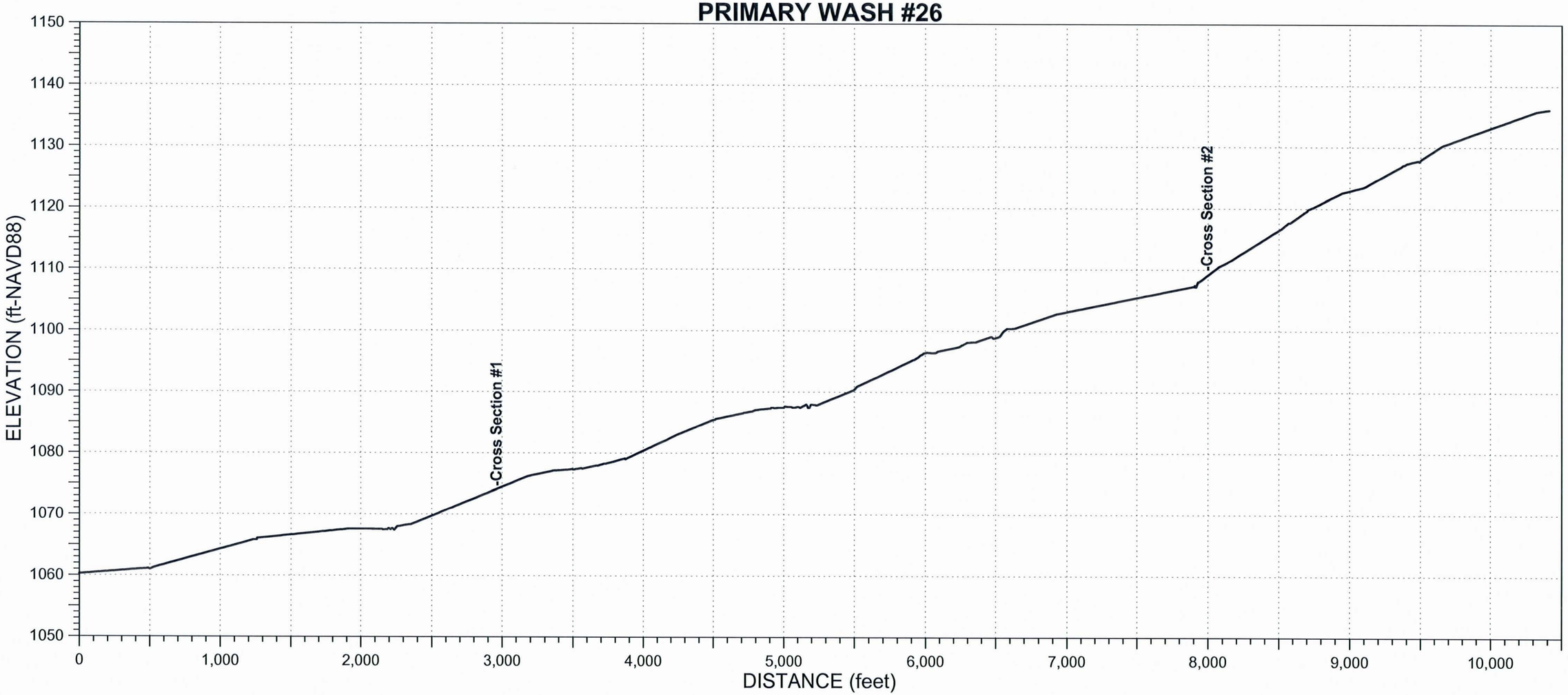
P3/43 Primary Wash #25 – Sun Valley Parkway Bridge Culvert
View looking upstream at channel upstream of bridge

P3/42 Primary Wash #25 – Sun Valley Parkway Bridge Culvert
View looking downstream/south at upstream bridge face

P3/44 Primary Wash #25 – Sun Valley Parkway Bridge Culvert
View looking upstream/north at downstream bridge face

P3/45 Primary Wash #25 – Sun Valley Parkway Bridge Culvert
View looking downstream at downstream channel

PRIMARY WASH #26



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW26 North: 897363.7 ft East: 447268.6 ft	1	431	March 19, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank	3 ft	
Marginal	X		Right Bank	6 ft	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

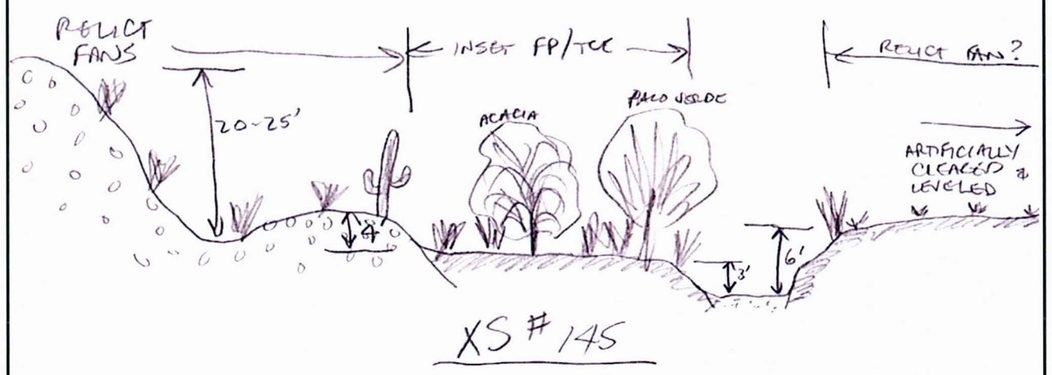
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	2-2.5 ft	2.5 ft	

PHOTOS & DESCRIPTION:
P12/6 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #145



Notes: Channel and floodway upstream to next cross section is choked with dense grassy vegetation.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW26 North: 902022.4 ft East: 448612.5 ft	2	432	March 19, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top) Above Bed		Thickness
Left Bank		
Right Bank		
Channel		

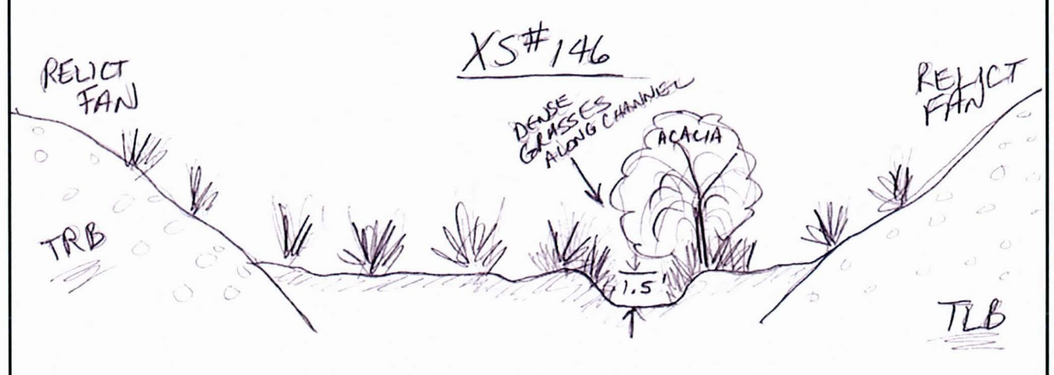
WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils	X		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:
P12/7 - View downstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING UPSTREAM) - FIELD XS #146



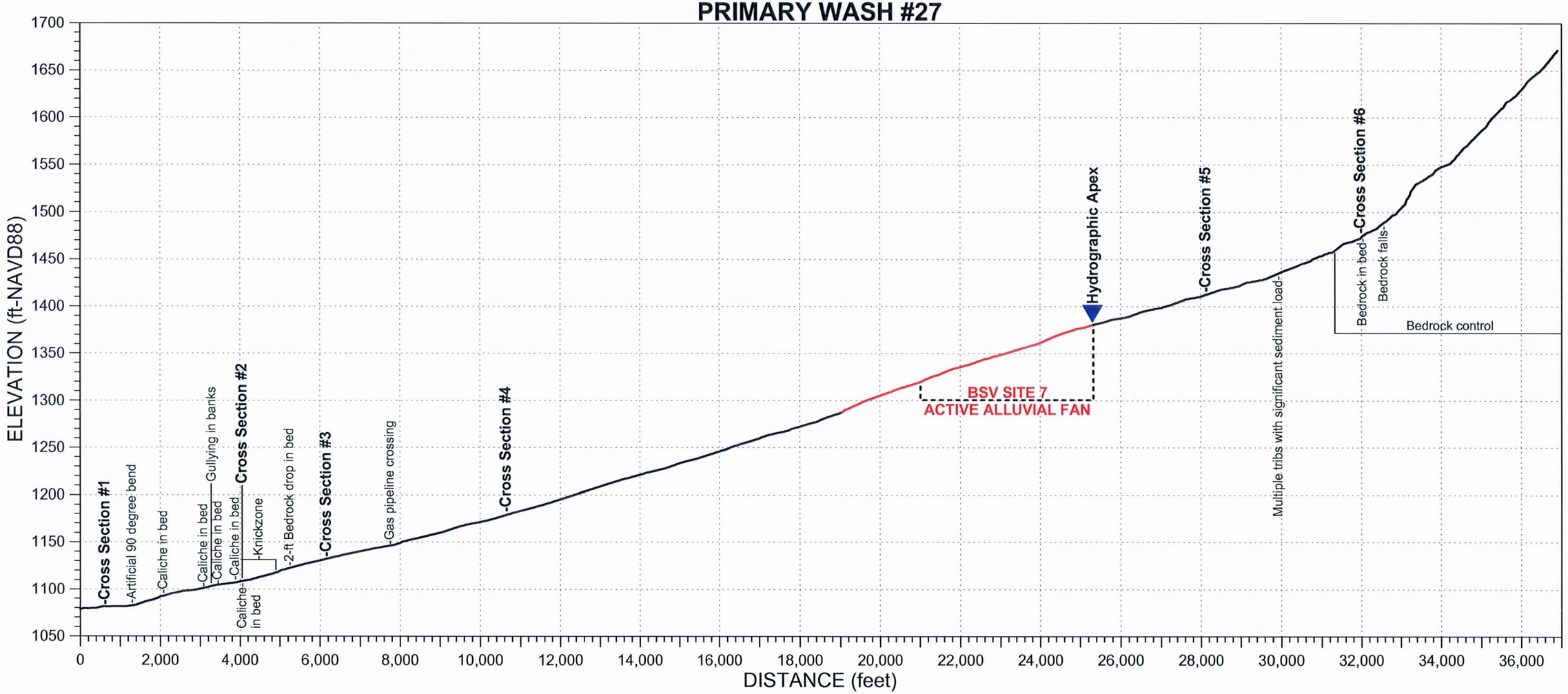
Notes: Channel and floodway is choked with dense grassy vegetation.

AYRES ASSOCIATES

P12/6 Primary Wash #25 - Cross Section #1 – View looking downstream

P12/7 Primary Wash #25 - Cross Section #2 – View looking downstream

PRIMARY WASH #27

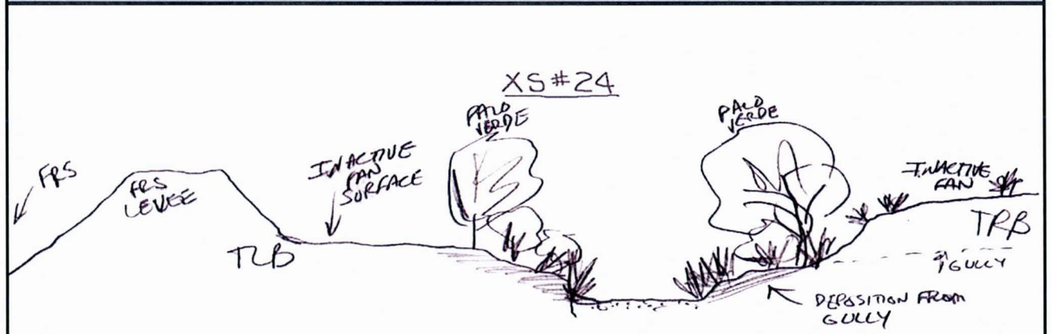


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27 North: 886739.1 ft East: 477764.2 ft	1	72	March 9, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		3:1	1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/1 - View looking downstream						
Mormon Tea	X								
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #24



Notes: Located on upstream side levee separating channel from FRS.

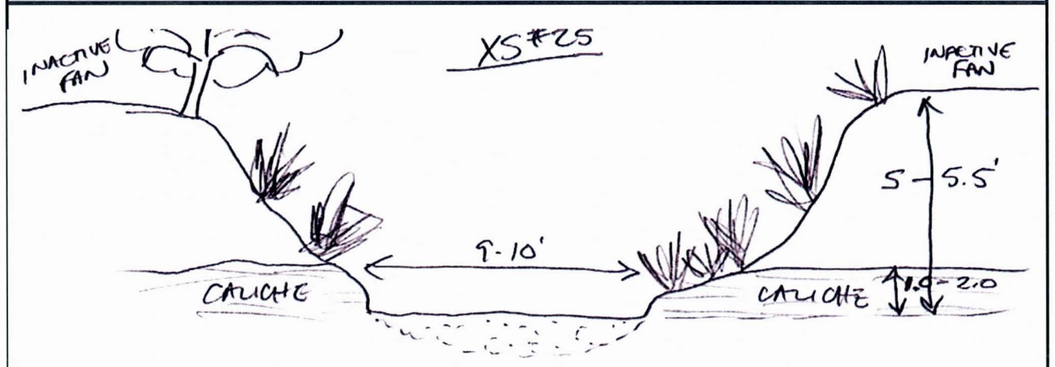
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27 North: 889179.1 ft East: 478608.7 ft	2	79	March 9, 2004
	Field Crew: W.J. Spitz, A.B. Alvarado			

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	<1:1	5.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	<1:1	5.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	1-2 ft	1-2 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	1-2 ft	1-2 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel	US			<1 ft	<1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/5 - View downstream showing entrenched channel						
Mormon Tea	X		P3/6 - View upstream showing knickzone in caliche						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE: Downstream			HEADCUT:			
Hedgehog C.			Absent	Caliche Present: Yes		Caliche Present:			
Fishhook C.			Spotty	Dimensions: 3-4 feet drop over about 300 feet		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #25



Notes: Knickzone is just upstream. Extenxive gullying on both banks along upstream knickzone.

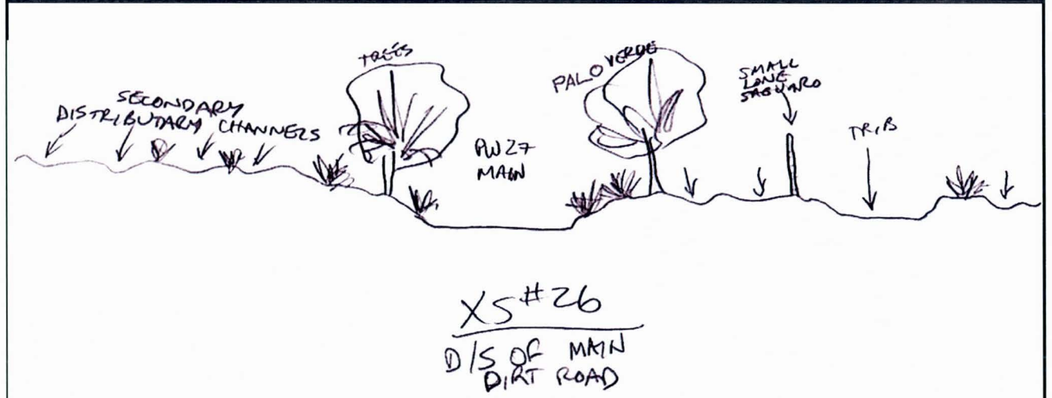
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27	3	82	March 9, 2004
	North: 890863.3 ft East: 479855.1 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	Main	Left Bank				Sand__X__	Gravel__X__
Channel	X	Multiple	Secondary	Right Bank				Cobble____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				<0.5 ft	<0.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/8 - View downstream						
Mormon Tea	X		P3/9 - View upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:				HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #26



Notes:	Downstream of main dirt road.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27	4	84	March 9, 2004
	North: 895047.2 ft East: 480836.5 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank			<1 ft	Sand__X__	Gravel__X__
Channel		Multiple	X	Right Bank			<1 ft	Cobble____	Bldrs_____

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)			Height (top) Above Bed		Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush			PHOTOS & DESCRIPTION:						
Bursage	X		P3/11 - View to west showing multiple small distributary flow paths.						
Mormon Tea									
Tamarisk									
Saguaro C.	Spotty								
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE:				HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #27

XS #27

Multiple distributary flow paths.

Notes:	

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27	5	85	March 9, 2004
	North: 909844.2 ft East: 483478.1 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

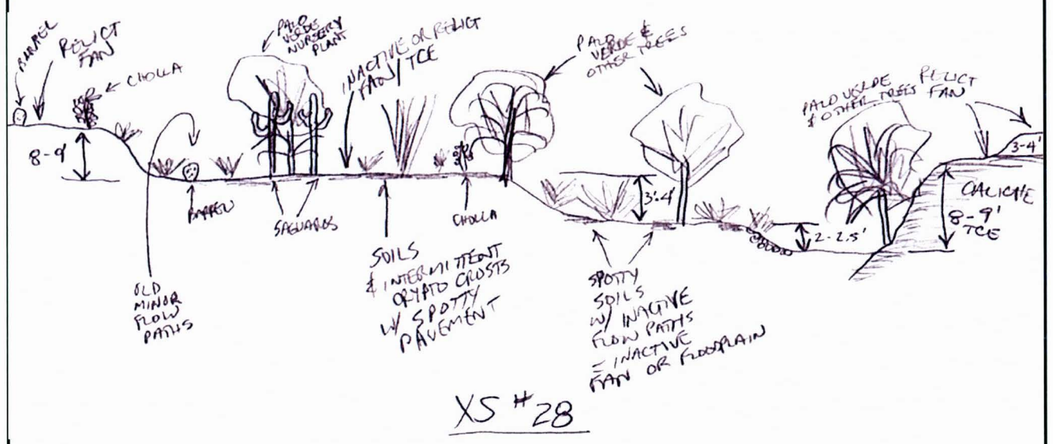
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	2-2.5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	1:1	8-9 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank	2-2.5 ft	3-4 ft		Extensive	Spotty	Absent
Marginal	X		Right Bank	8-9 ft		Varnish			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank	8-9 ft	8-9 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P3/12 - View downstream						
Mormon Tea	X		P3/13 - View upstream						
Tamarisk			P3/14 - View right bank to left bank showing terraces/inset inactive fan/floodplain.						
Saguaro C.	On terrace								
Cholla C.									
Barrel C.									
Prickly Pear									
X-mas C.									
Hedgehog C.									
Fishhook C.									
Ocotillo									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #28



Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW27	6	91	March 9, 2004
	North: 911251.9 ft East: 486526.6 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

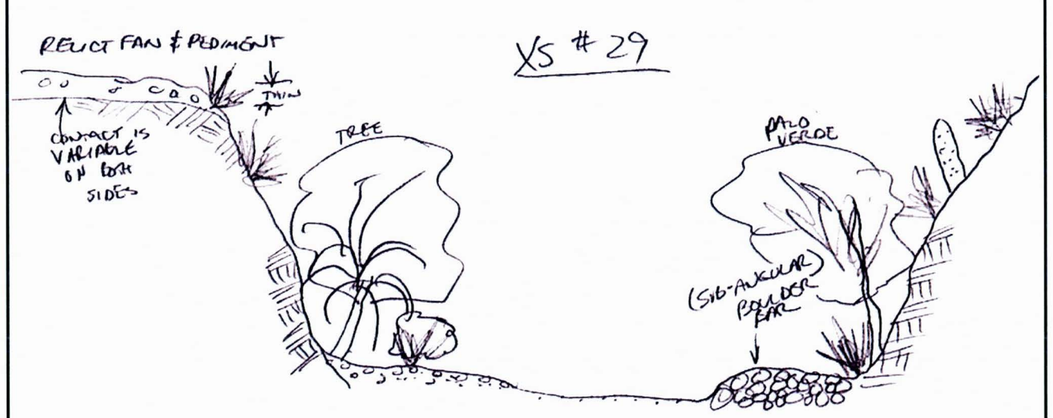
ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	>20 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		<1:1	>20 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft	1-1.5 ft	
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage			P3/18 - View upstream, note 90 degree bend at bedrock						
Mormon Tea			P3/17 - View downstream showing bedrock bound channel, not subangular						
Tamarisk			boulders in right bank bar.						
Saguaro C.									
Cholla C.									
Barrel C.	on rock bank								
Prickly Pear									
X-mas C.									
Hedgehog C.									
Fishhook C.									
Ocotillo									

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #29



Notes:

AYRES ASSOCIATES

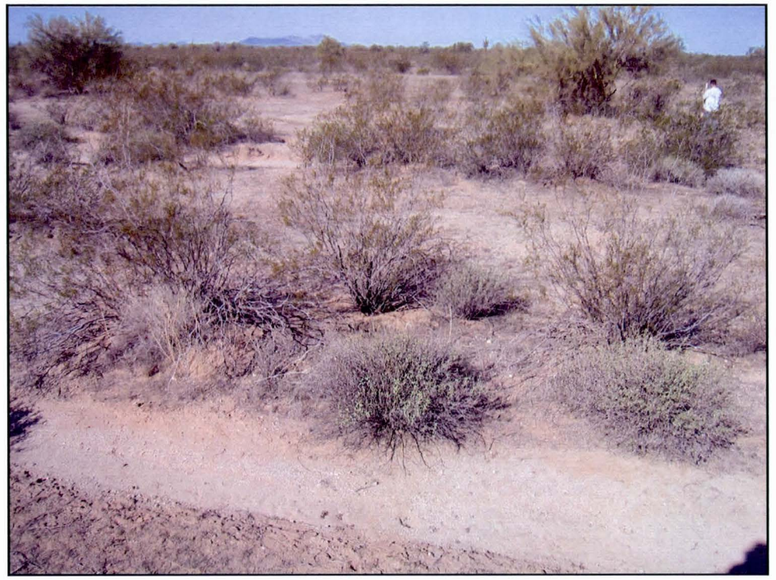
P3/1 Primary Wash #26 - Cross Section #1 – View looking downstream

P3/5 Primary Wash #26 - Cross Section #2 – View looking downstream

P3/6 Primary Wash #26 - Cross Section #2 – View looking upstream

P3/8 Primary Wash #26 - Cross Section #3 – View looking downstream

P3/9 Primary Wash #26 - Cross Section #3 – View looking upstream



P3/11 Primary Wash #26 - Cross Section #4 – View looking to west and downstream

P3/12 Primary Wash #26 - Cross Section #5 – View looking downstream

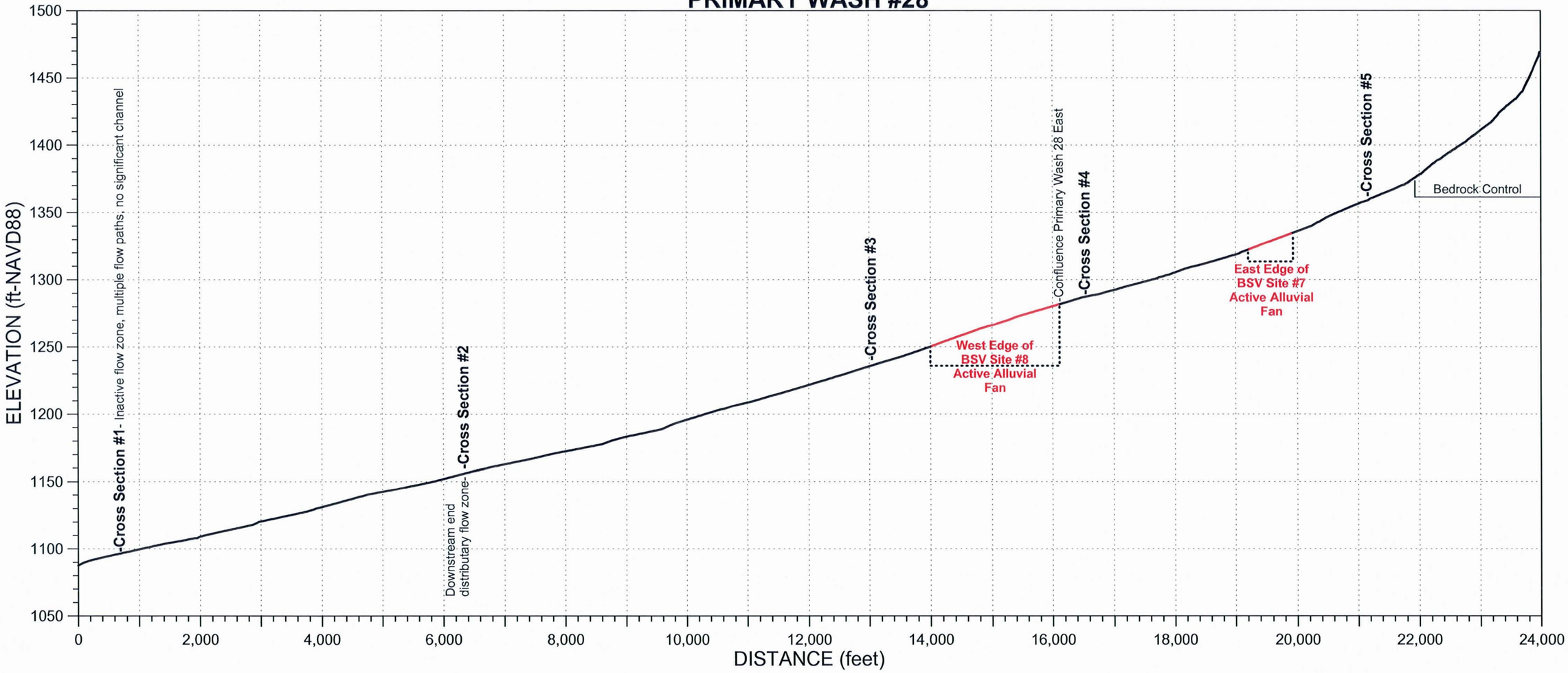
P3/13 Primary Wash #26 - Cross Section #5 – View looking upstream

P3/14 Primary Wash #26 - Cross Section #5 – View looking right bank to left bank (southeast)

P3/18 Primary Wash #26 - Cross Section #6 – View looking upstream

P3/17 Primary Wash #26 - Cross Section #6 – View looking downstream

PRIMARY WASH #28



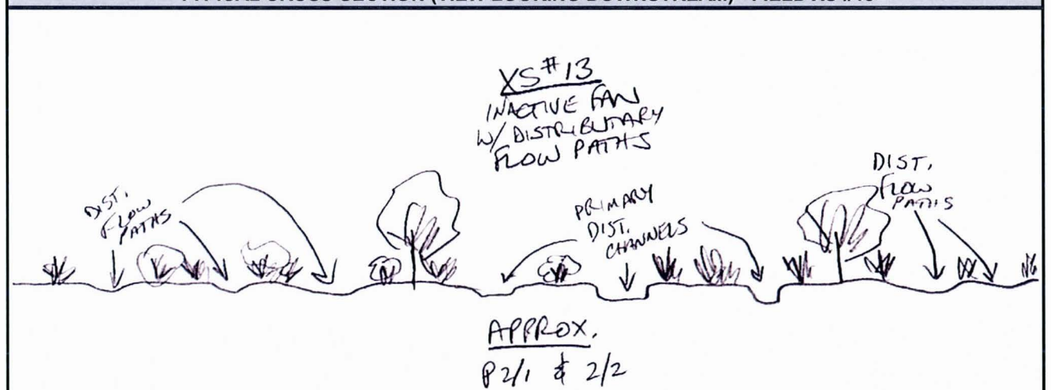
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28	1	49	March 8, 2004
	North: 887110.0 ft East: 480009.9 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	<1 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		1:1	<1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P2/1 - View upstream showing distributary channel (one of primary ones) that is						
Mormon Tea			only about 2.5-3 feet wide and about 1 foot deep. Note convergence upstream.						
Tamarisk			P2/2 - View downstream showing split flow zone.						
Saguaro C.	Occasional								

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #13



Notes:	Multiple distributary flow paths, several poorly defined, most <0.5 feet deep, few are 0.5-1.0 feet deep.

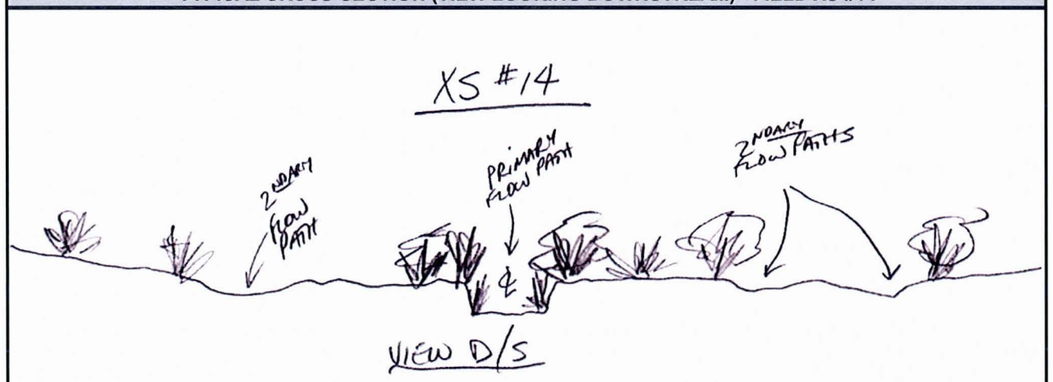
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28	2	50	March 8, 2004
	North: 892122.1 ft East: 482157.4 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	<1-1.5 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		1:1	<1-1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P2/3 - View downstream showing flow divergence; PW28 goes left and main flow						
Mormon Tea			goes right to PW27.						
Tamarisk			P2/4 - View upstream showing primary channel PW28.						
Saguaro C.	Occasional								

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	NICKZONE:			HEADCUT:		
Absent	Caliche Present:			Caliche Present:		
Spotty	Dimensions:			Dimensions:		
Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #14



Notes:	Flow diverges just downstream of cross section with main flow going to PW27.

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28	3	51	March 8, 2004
	North: 897941.3 ft East: 485359.1 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single		Left Bank		1:1	<1 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank		1:1	<1 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal			Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	Few		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	Few		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						

Brittlebush	X		
Bursage	X		
Mormon Tea			
Tamarisk			
Saguaro C.			
Cholla C.	Occasional		
Barrel C.			
Prickly Pear			
X-mas C.			
Hedgehog C.	Occasional		
Fishhook C.			
Ocotillo			

PHOTOS & DESCRIPTION:

P2/5 - View upstream showing multiple flow paths.

P2/6 - View downstream showing multiple flow paths.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Absent	**NICKZONE:**			**HEADCUT:**		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #15

XS #15

No Cross Section

Multiple distributary flow paths

(shallow - <0.5 to 1.0 feet deep)

Notes:

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28	4	52	March 8, 2004
	North: 901241.4 ft East: 485564.2 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		3:1	1.5 ft	Sand X	Gravel X
Channel	X	Multiple	minor	Right Bank		3:1	1.5 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X		
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel						

Brittlebush	X		
Bursage	X		
Mormon Tea	X		
Tamarisk			
Saguaro C.	X		
Cholla C.			
Barrel C.			
Prickly Pear			
X-mas C.			
Hedgehog C.			
Fishhook C.			
Ocotillo			

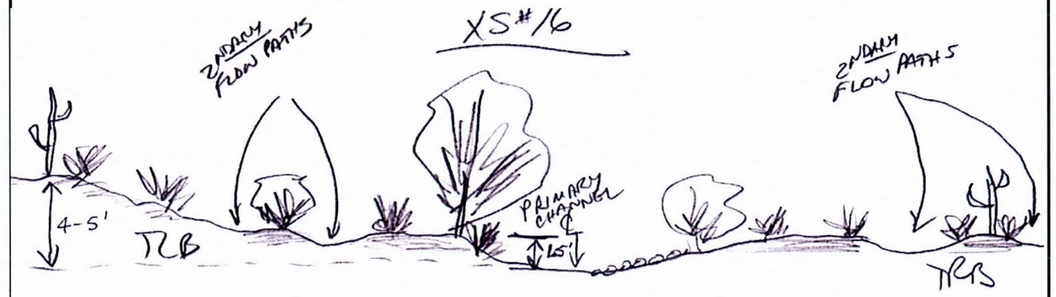
PHOTOS & DESCRIPTION:

P2/7 - View downstream on primary channel, note high water debris 1.5 feet up on tree base.

P2/8 - View upstream showing primary channel.

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	**Inactive Fan**	Alluvial Plain
Absent	**NICKZONE:**			**HEADCUT:**		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #16



Notes: Channel appears to steepen up here.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28	5	53	March 8, 2004
	North: 905490.1 ft East: 486990.5 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	5 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	5 ft	Cobble spots	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel		X	Left Bank		
Marginal	X		Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

P2/9 - View downstream

P2/10 - View upstream, note flow split.

CRYPTO-BIOTIC CRUST (floodway)

- **Absent**
- Spotty
- Extensive

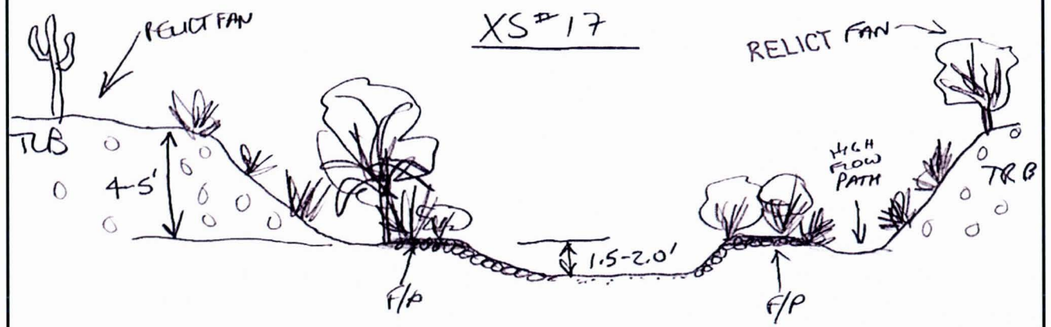
PIEDMONT LANDFORMS (marginal to channel/floodway)

Left Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #17



Notes: Channel starts to become entrenched a few hundred feet downstream of this cross section.

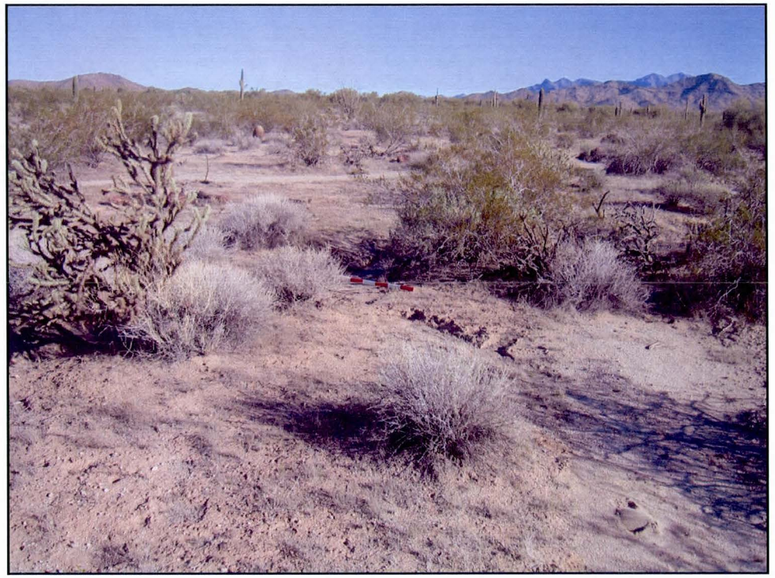
AYRES ASSOCIATES

P2/1 Primary Wash #28 - Cross Section #1 – View looking upstream

P2/2 Primary Wash #28 - Cross Section #1 – View looking downstream

P2/3 Primary Wash #28 - Cross Section #2 – View looking downstream

P2/4 Primary Wash #28 - Cross Section #2 – View looking upstream



P2/5 Primary Wash #28 - Cross Section #3 – View looking upstream

P2/6 Primary Wash #28 - Cross Section #3 – View looking downstream

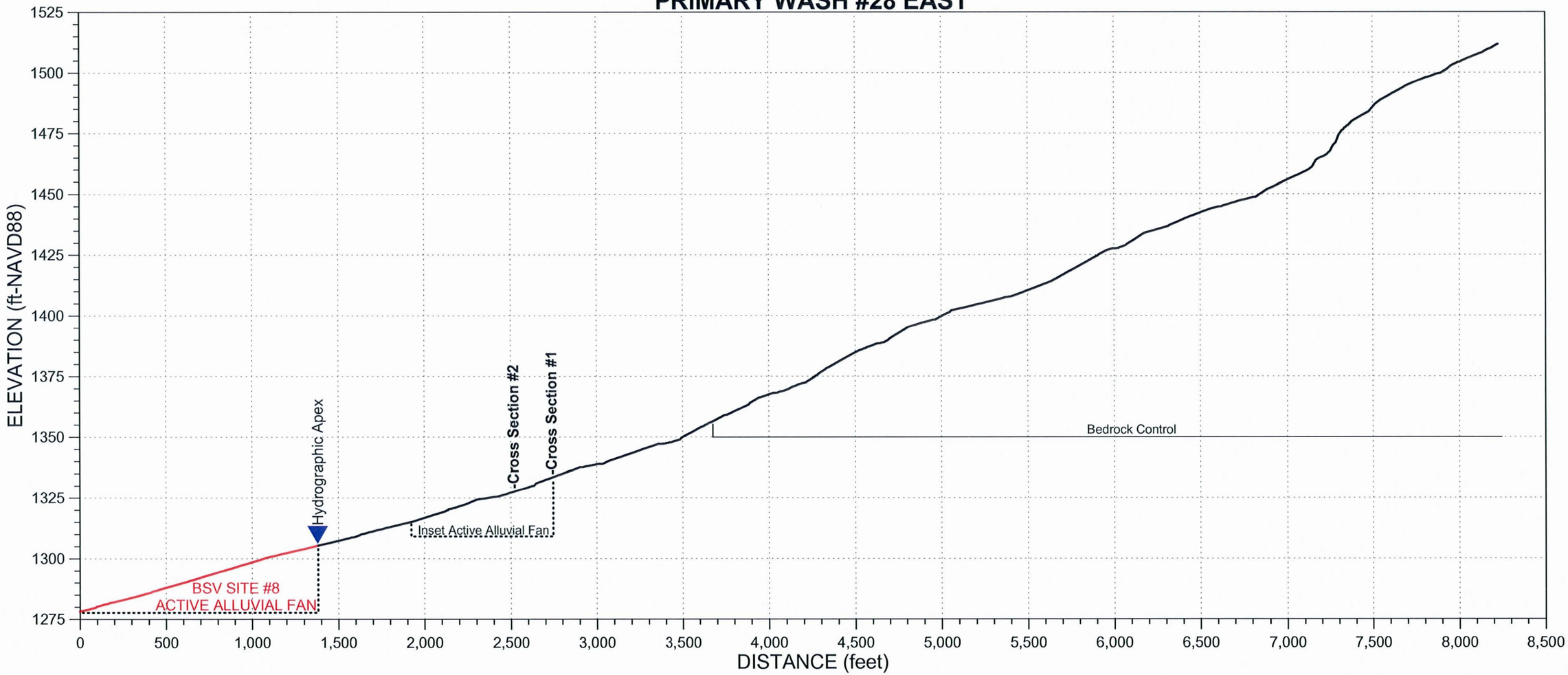
P2/7 Primary Wash #28 - Cross Section #4 – View looking downstream

P2/8 Primary Wash #28 - Cross Section #4 – View looking upstream

P2/9 Primary Wash #28 - Cross Section #5 – View looking downstream

P2/10 Primary Wash #28 - Cross Section #5 – View looking upstream

PRIMARY WASH #28 EAST



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28 East	1	57	March 8, 2004
	North: 902091.2 ft East: 487809.9 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	1:1	10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	10 ft	Cobble X	Bldrs minor

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X		Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	
Palo Verde	X	
Creosote	X	
Brittlebush	X	
Bursage	X	
Mormon Tea	X	
Tamarisk		
Saguaro C.		
Cholla C.	On banks	
Barrel C.	On banks	
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA	Above Bed	Thickness
Height (top)		
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS	Left Bank	Right Bank	Channel
Ht. Above Thalweg	1-1.5 ft	1-1.5 ft	<1 ft

PHOTOS & DESCRIPTION:

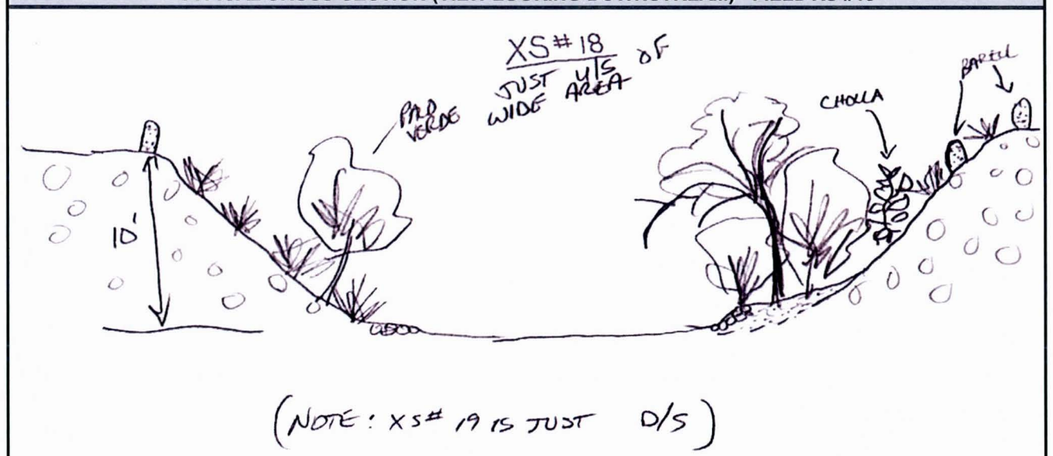
P2/12 - View upstream

P2/13 - View downstream showing inset depositional area

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent						
Spotty						
Extensive						

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #18



Notes: Cross section is located upstream of wide inset depositional zone (downstream end of zone at **Wpt. #56**).

Cross section 19 is located just downstream.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW28 East	2	58	March 8, 2004
	North: 901939.4 ft East: 487597.5 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single		Left Bank		1:1	6 ft	Sand X	Gravel X
Channel		Multiple	X	Right Bank	X	vert.	8 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel	X	X	Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X
Palo Verde	X	X
Creosote	X	X
Brittlebush	X	X
Bursage	X	X
Mormon Tea	X	X
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA	Above Bed	Thickness
Height (top)		
Left Bank		
Right Bank	6-7 ft	6-7 ft
Channel		

HIGH WATER MARKS/DEBRIS	Left Bank	Right Bank	Channel
Ht. Above Thalweg			

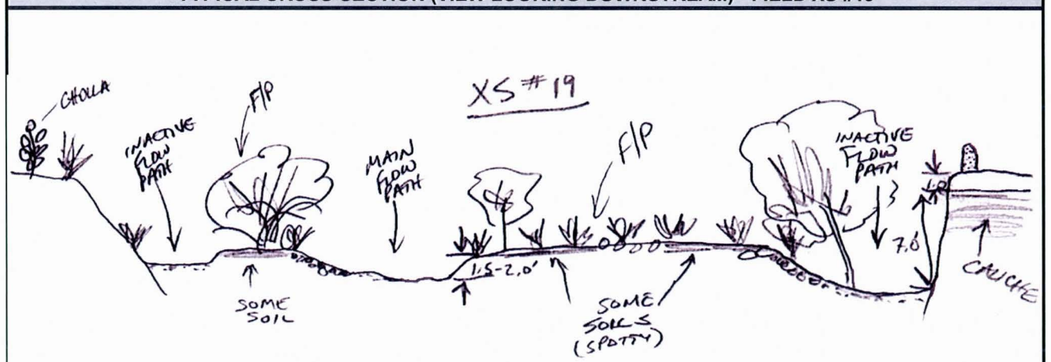
PHOTOS & DESCRIPTION:

see P2/13 at cross section 1

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent						
Spotty						
Extensive						

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #19



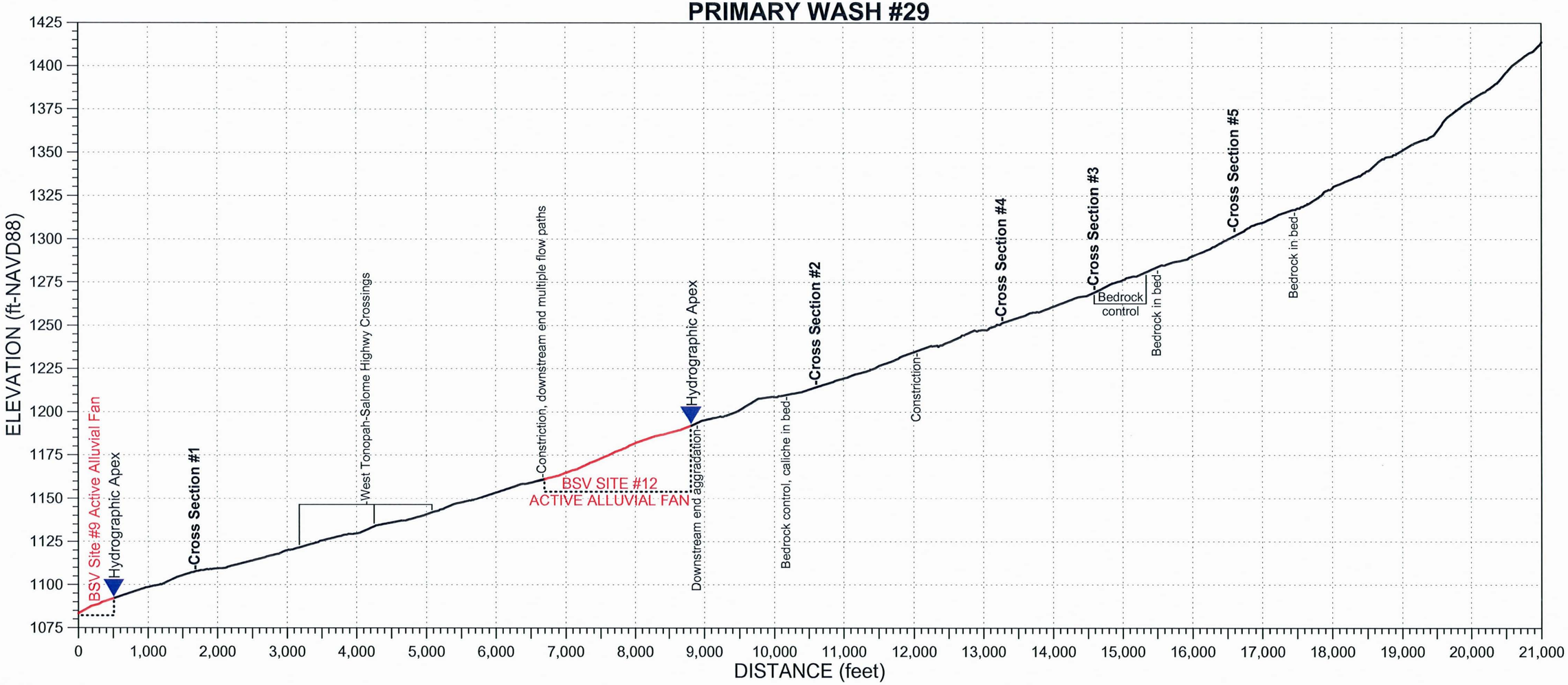
Notes: Located downstream of Wpt. #57

AYRES ASSOCIATES

P2/12 Primary Wash #28 East - Cross Section #1 – View looking upstream

P2/13 Primary Wash #28 East - Cross Section #2 – View looking downstream

PRIMARY WASH #29

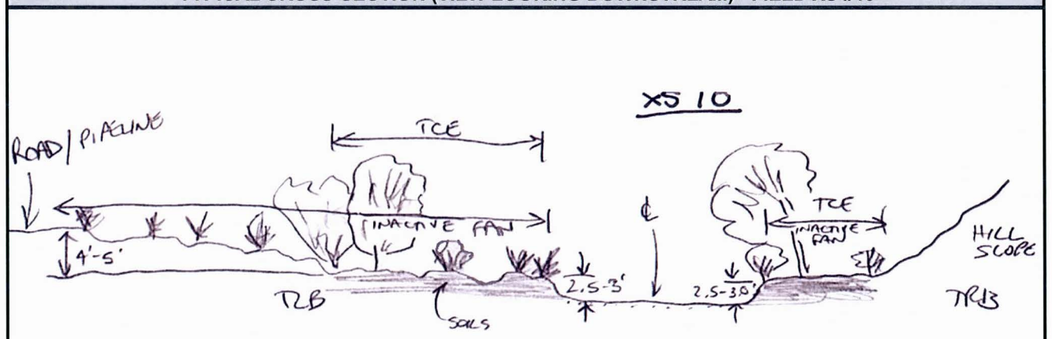


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29 North: 887519.0 ft East: 488141.1 ft	1	34	March 7, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	3 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	3 ft	Cobble minor	Bldrs minor

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank	3-4 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	3-4 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement		X	
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils	X	(on TCE)	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1.5 ft		
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P1/34 - View looking downstream						
Mormon Tea			P1/35 - View looking upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive*						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #10



Notes: Reach is upstream of Active Inset Alluvial Fan and FRS.

* Cryptobiotic crusts extensive on terraces.

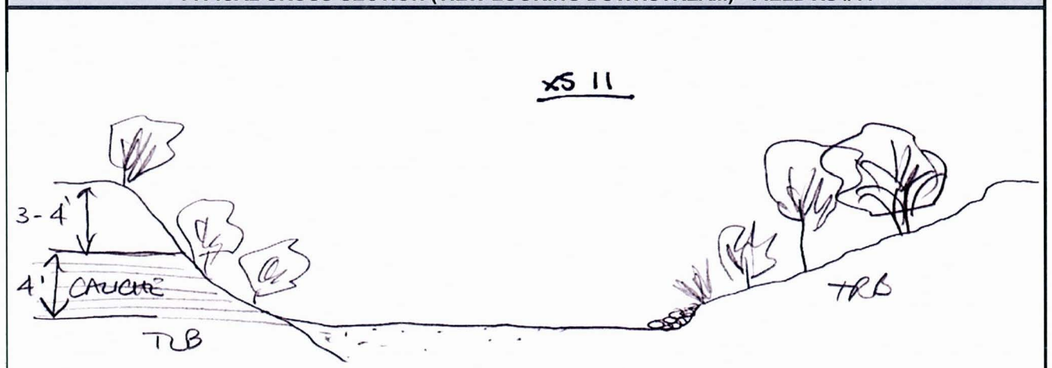
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29 North: 895496.6 ft East: 487262.7 ft	2	41	March 7, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	1:1	8 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		6:1	8 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top)	Above Bed	Thickness	Soils			X
			Left Bank	4 ft	4 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde	X		Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X		Channel				1 ft		
Brittlebush	X		PHOTOS & DESCRIPTION:						
Bursage	X		P1/36 - View looking downstream						
Mormon Tea			P1/37 - View looking upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #11



Notes:

AYRES ASSOCIATES

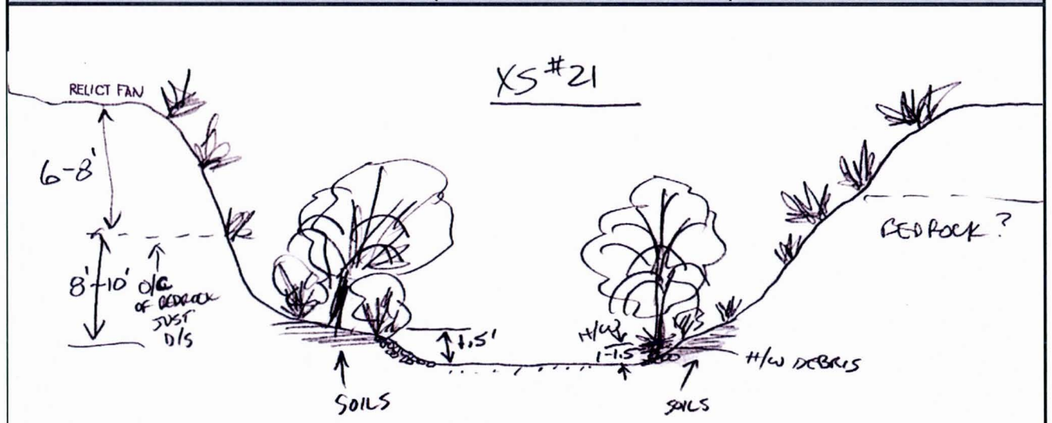
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29 North: 898317.01 ft East: 489171.45 ft	3	66	March 8, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	16-17 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	16-17 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				1 ft	1 ft	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P2/17 - View looking upstream, note bedrock						
Mormon Tea			P2/18 - View looking downstream						
Tamarisk									
Saguaro C.									

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #21



Notes: Bedrock control in banks ends just downstream. For short distance here and upstream have intermittent bedrock in banks.

AYRES ASSOCIATES

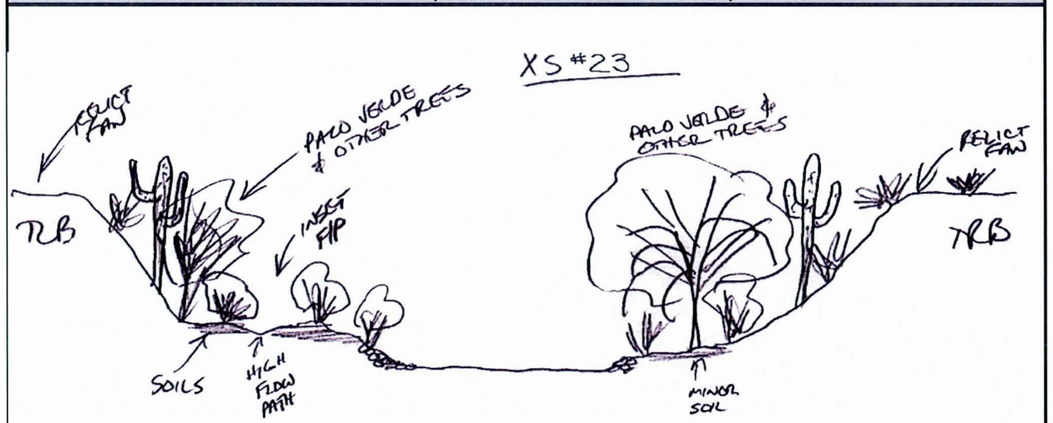
AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29 North: 897235.7 ft East: 488475.1 ft	4	70	March 8, 2004 Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		1:1	11-12 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	11-12 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				<1 ft	<1 ft	<1 ft
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P2/21 - View downstream						
Mormon Tea			P2/22 - View upstream						
Tamarisk									
Saguaro C.	X								

Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #23



Notes: Bedrock control in banks ends just downstream. For short distance here and upstream have intermittent bedrock in banks.

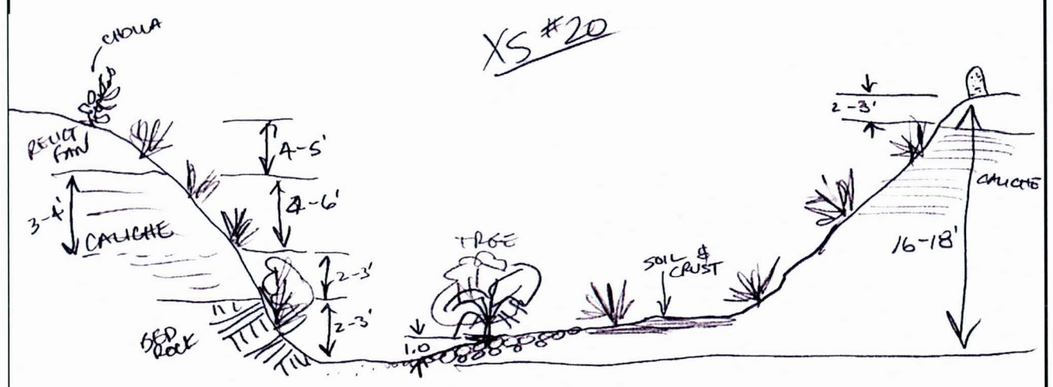
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29	5	61	March 8, 2004
	North: 899693.9 ft East: 492985.5 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	16-18 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		<1:1	16-18 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
			CALICHE STRATA			Soils		X	
VEG TYPE	FLOODWAY	CHANNEL	Height (top)	Above Bed	Thickness				
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Left Bank	8-10 ft	4-6 ft	HIGH WATER MARKS/DEBRIS			
Palo Verde			Right Bank	8-10 ft	4-6 ft	Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				<1 ft	<1 ft	<1 ft
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P2/14 - View upstream						
Mormon Tea			P2/15 - View downstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.				NICKZONE:			HEADCUT:		
Hedgehog C.			Absent	Caliche Present:			Caliche Present:		
Fishhook C.			Spotty	Dimensions:			Dimensions:		
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #20



Notes:

AYRES ASSOCIATES

P1/34 Primary Wash #29 - Cross Section #1 – View looking downstream

P1/35 Primary Wash #29 - Cross Section #1 – View looking upstream

P1/36 Primary Wash #29 - Cross Section #2 – View looking downstream

P1/37 Primary Wash #29 - Cross Section #2 – View looking upstream

P2/17 Primary Wash #29 - Cross Section #3 – View looking upstream

P2/18 Primary Wash #29 - Cross Section #3 – View looking downstream

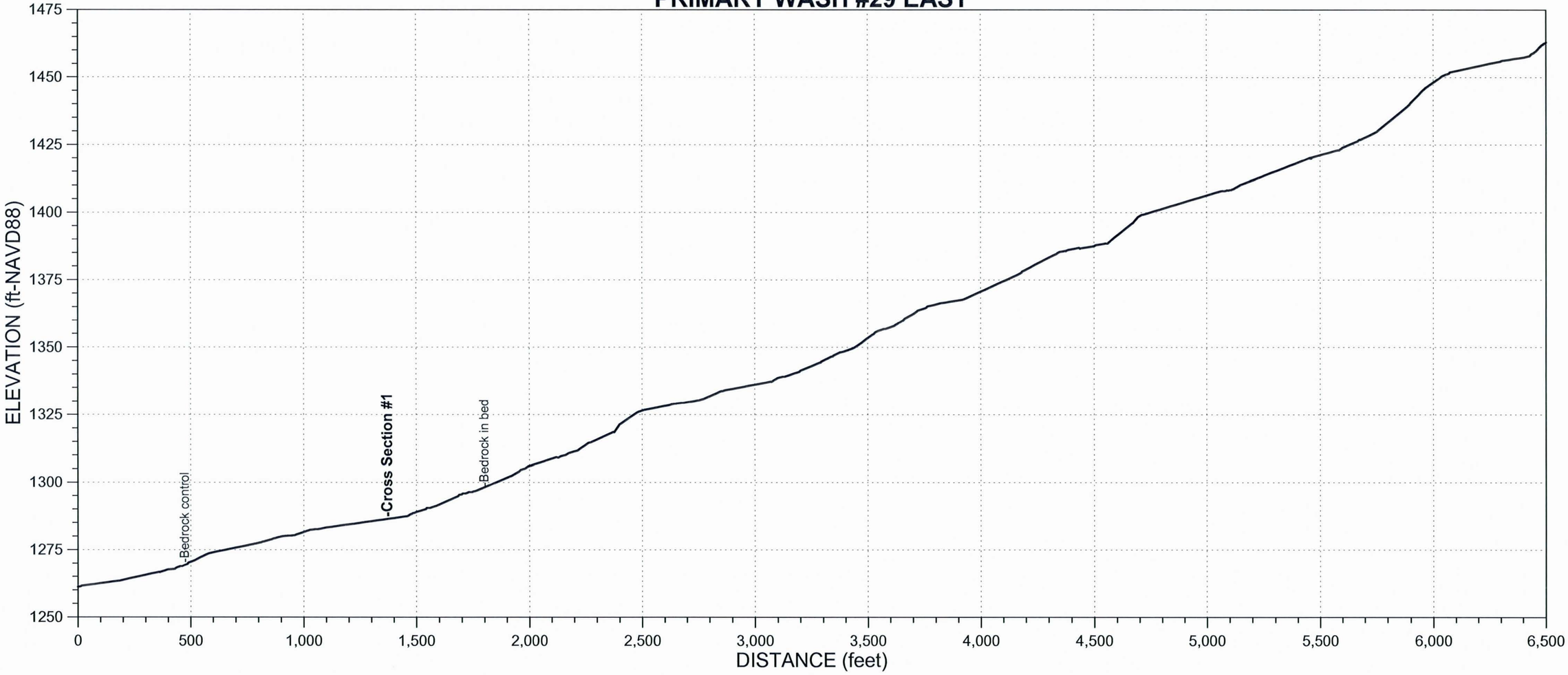
P2/21 Primary Wash #29 - Cross Section #4 – View looking downstream

P2/22 Primary Wash #29 - Cross Section #4 – View looking upstream

P2/14 Primary Wash #29 - Cross Section #5 – View looking upstream

P2/15 Primary Wash #29 - Cross Section #5 – View looking downstream

PRIMARY WASH #29 EAST



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW29 East	1	68	March 8, 2004
	North: 898455.3 ft East: 490098.3 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		<1:1	18 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		<1:1	18 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal			Right Bank		

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X
Palo Verde	X	X
Creosote	X	X
Brittlebush	X	X
Bursage	X	X
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.		
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.		
Fishhook C.		
Ocotillo		

CALICHE STRATA		
	Height (top) Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils		X	

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	

PHOTOS & DESCRIPTION:

P2/19 - View downstream.

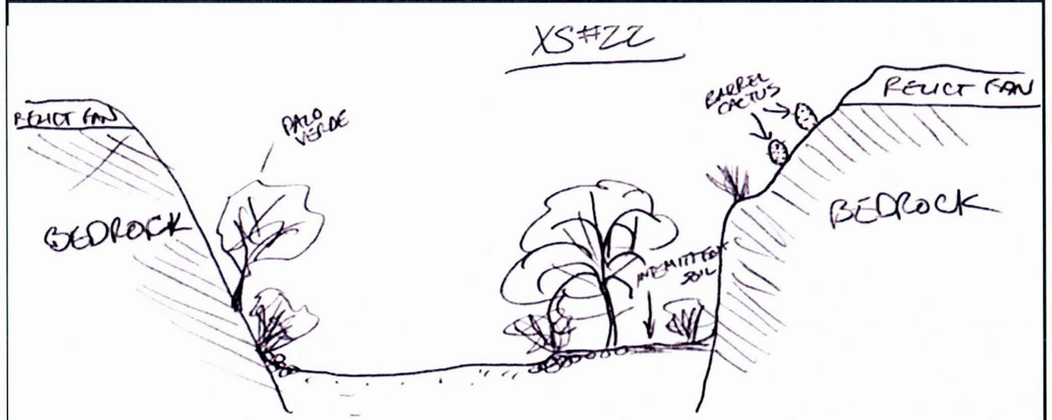
P2/20 - View upstream, note cobble/boulder low floodplain along toe of left bank.

CRYPTO-BIOTIC CRUST (floodway)	
	Absent
	Spotty
	Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #22

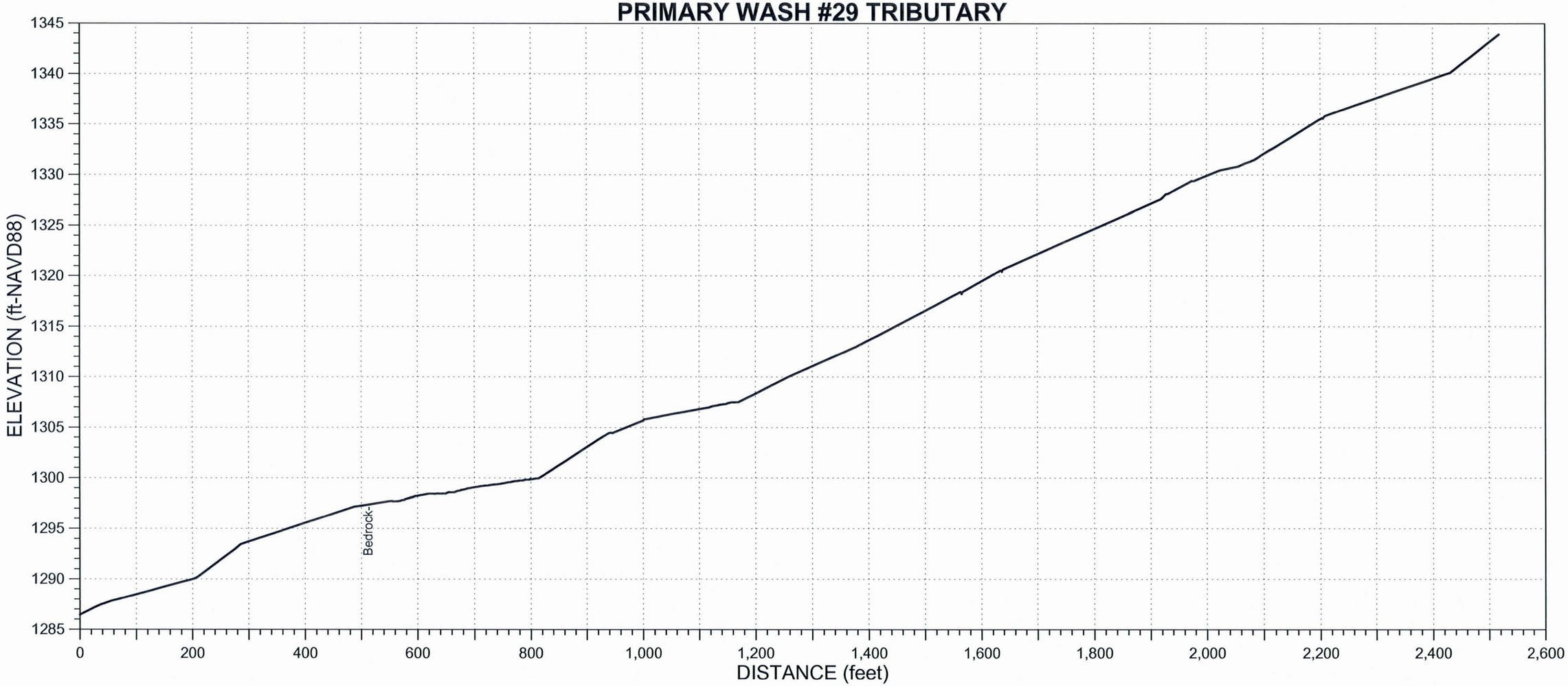


Notes: Bedrock is intermittent in banks downstream of here.

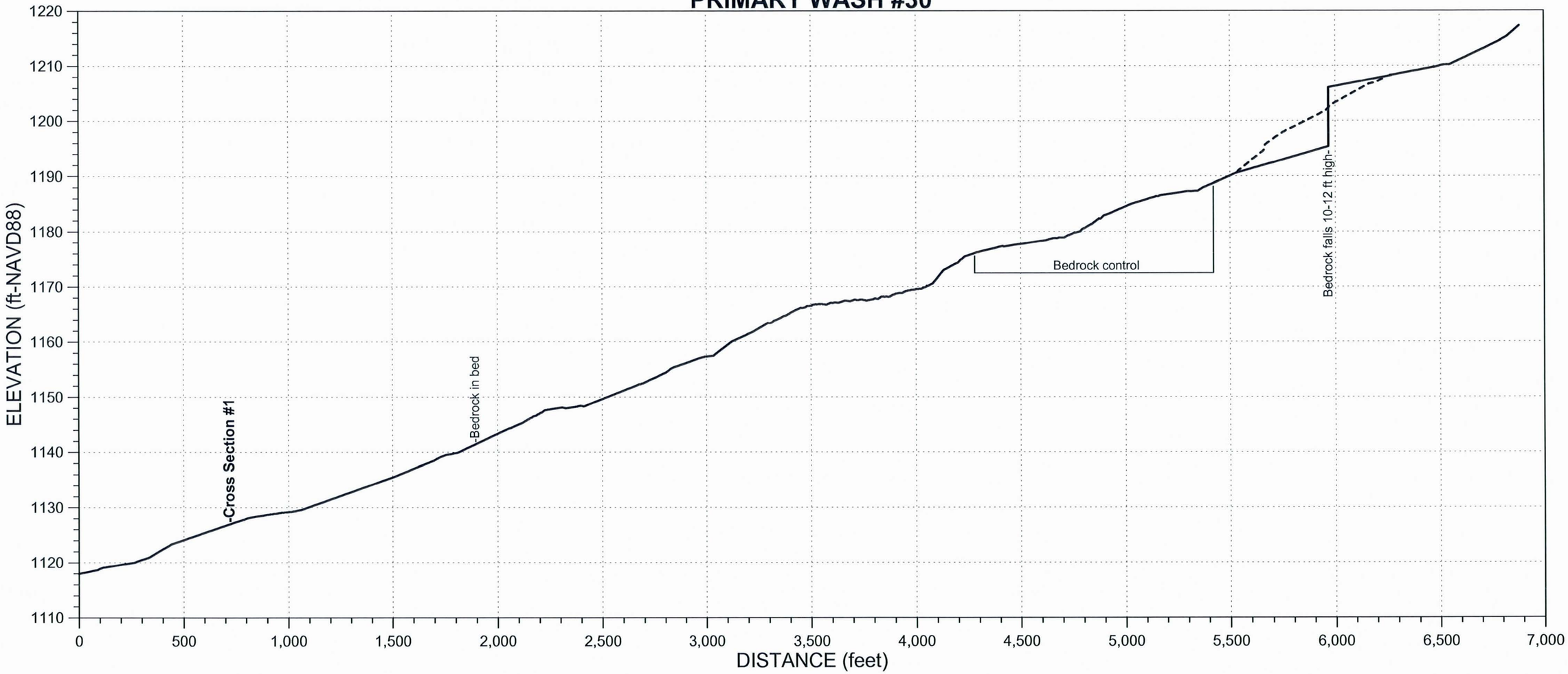
P2/19 Primary Wash #29 East - Cross Section #1 – View looking downstream

P2/20 Primary Wash #29 East - Cross Section #1 – View looking upstream

PRIMARY WASH #29 TRIBUTARY



PRIMARY WASH #30



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW30	1	44	March 7, 2004

North: 889196.8 ft
East: 491041.2 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		3:1	8 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		1:1	8 ft	Cobble minor	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils	X		

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	Along margins		Height (top)	Above Bed	Thickness
Palo Verde			Left Bank		
Creosote			Right Bank		
Brittlebush			Channel		
Bursage					
Mormon Tea					
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1.5-2 ft		

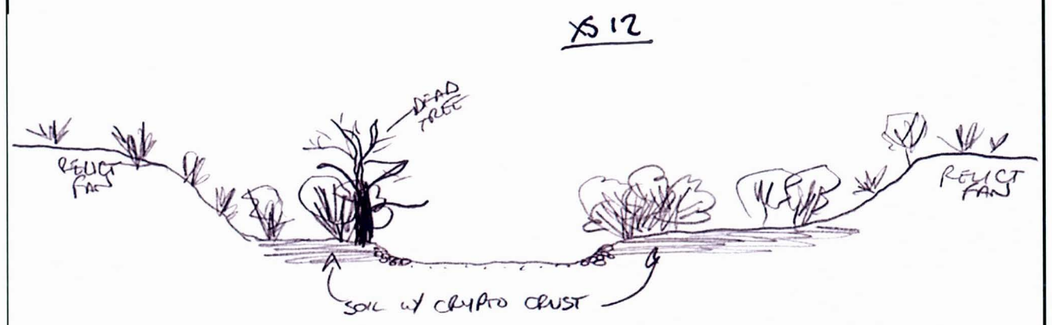
PHOTOS & DESCRIPTION:
P1/39 - View downstream
P1/40 - View upstream

CRYPTO-BIOTIC CRUST (floodway)
Absent
Spotty
Extensive

PIEDMONT LANDFORMS (marginal to channel/floodway)					
Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:	HEADCUT:
Caliche Present:	Caliche Present:
Dimensions:	Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #12



Notes:

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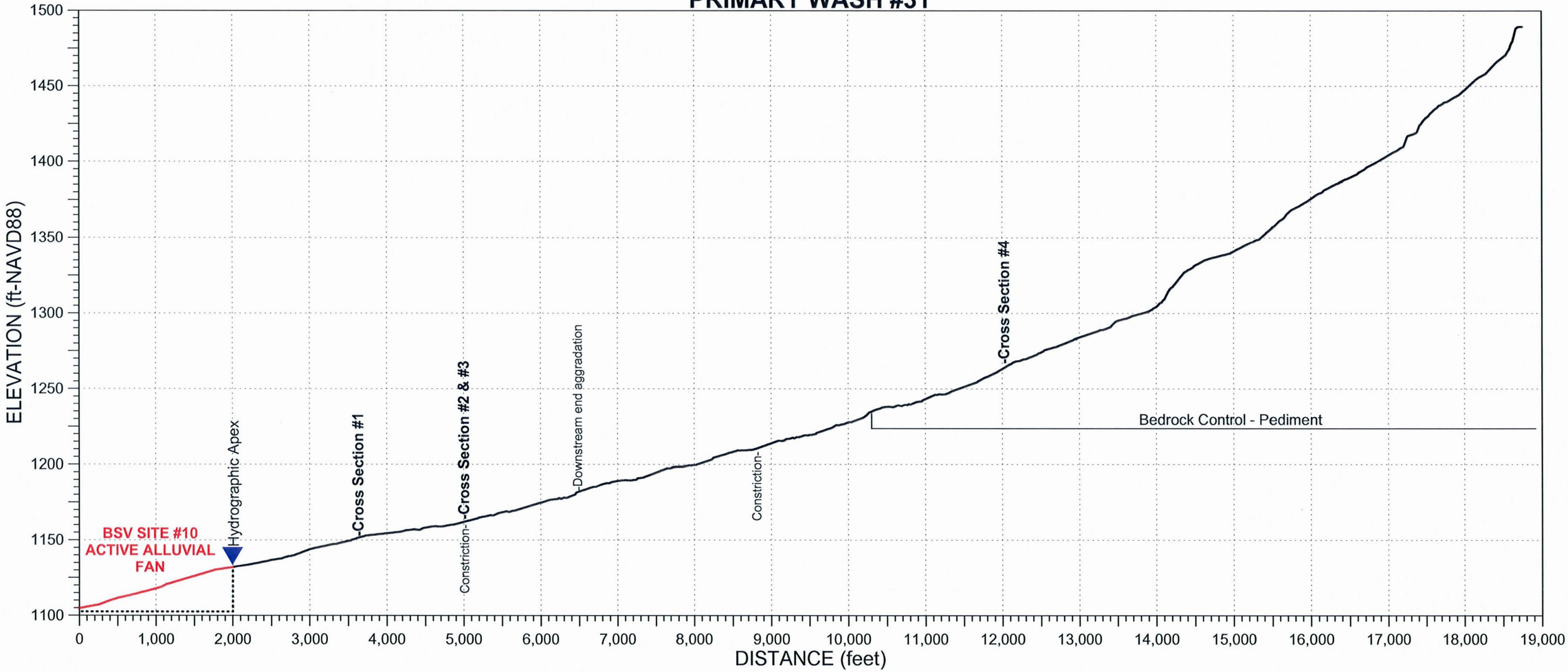
P1/39 Primary Wash #30 - Cross Section #1 – View looking downstream

P1/40 Primary Wash #30 - Cross Section #1 – View looking upstream

PRIMARY WASH #31

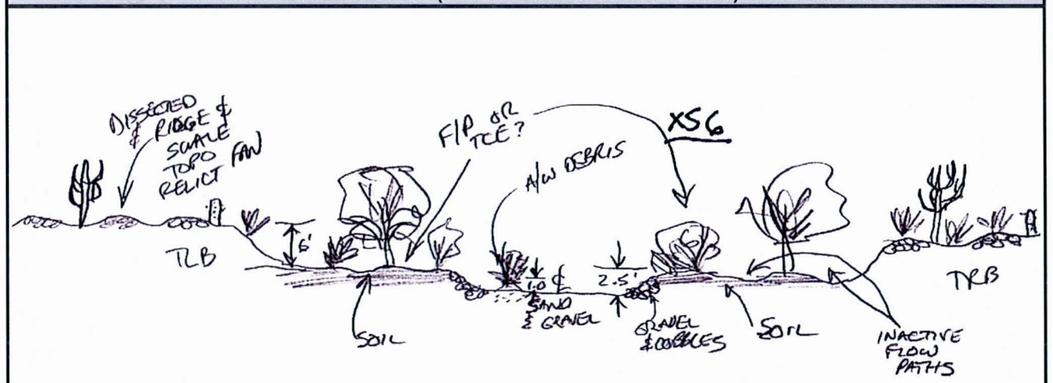


AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW31	1	28	March 7, 2004
	North: 890716.0 ft East: 495308.3 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		>4:1	6 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		2:1	6 ft	Cobble minor	Bldrs minor

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel		X	Left Bank	2.5 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank	2.5 ft		Varnish			X
						Pavement			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Soils	X		
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	HIGH WATER MARKS/DEBRIS			
			Left Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Palo Verde	X	X	Right Bank				1.5 ft	1.5 ft	1.5 ft
Creosote	X	X	Channel						
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P1/28 - View looking downstream						
Mormon Tea			P1/29 - View looking upstream						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			Absent	Caliche Present:		Caliche Present:			
Fishhook C.			**Spotty**	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #6



Notes:	***Area is just upstrem of ACTIVE ALLUVIAL FAN***

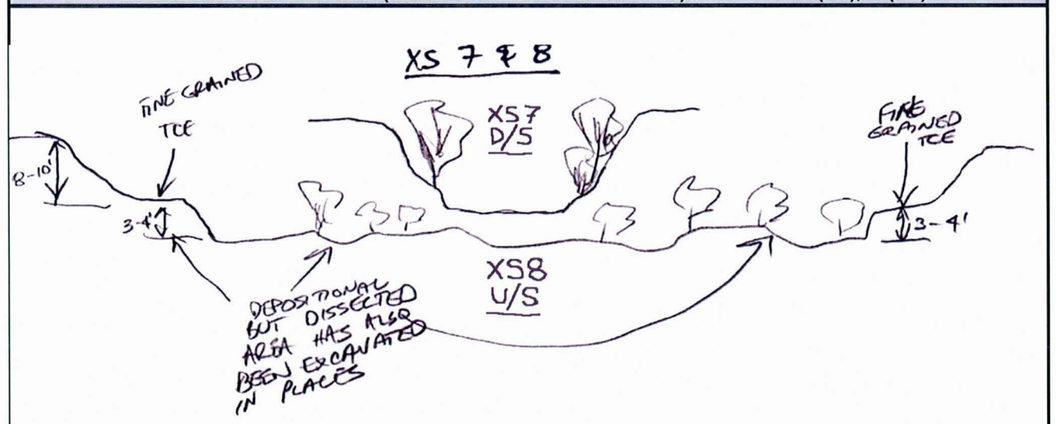
AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW31	2, 3	29	March 7, 2004
	North: 892082.7 ft East: 495170.3 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	DS	Left Bank		1:1	12 ft	Sand X	Gravel X
Channel	X	Multiple	US	Right Bank		1:1	12 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Soils			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	HIGH WATER MARKS/DEBRIS			
			Left Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Palo Verde	X	X	Right Bank						
Creosote	X	X	Channel						
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P1/30 - View looking downstream showing narrow inset channel downstream of						
Mormon Tea			constriction.						
Tamarisk			P1/31,32 Pan upstream to downstream - View looking upstream showing wide						
Saguaro C.			depositional area upstream of constriction.						
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.			Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
Prickly Pear			Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain	
X-mas C.			NICKZONE:			HEADCUT:			
Hedgehog C.			**Absent**	Caliche Present:		Caliche Present:			
Fishhook C.			Spotty	Dimensions:		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #7(DS), #8(US)



Notes:	This area is a natural (?) constriction with upstream deposition. May have been dammed naturally or artificially at times.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW31	4	33	March 7, 2004

North: 896564.3 ft
East: 491217.2 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway		Single	X	Left Bank		<1:1	15-18 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank		<1:1	15-18 ft	Cobble	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)		
In-channel			Left Bank		
Marginal	X		Right Bank		

WITHIN FLOODWAY			
	Extensive	Spotty	Absent
Varnish			X
Pavement			X
Soils			X

VEG TYPE	FLOODWAY	CHANNEL
Trees (Acacia, Ironwood, Mesquite, etc.)	Along mid and lower bank position	
Palo Verde		
Creosote		
Brittlebush		
Bursage		
Mormon Tea		
Tamarisk		
Saguaro C.		
Cholla C.	Along steep banks	
Barrel C.		
Prickly Pear		
X-mas C.		
Hedgehog C.	Along steep banks	
Fishhook C.		
Ocotillo		

CALICHE STRATA		
Height (top)	Above Bed	Thickness
Left Bank		
Right Bank		
Channel		

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel

PHOTOS & DESCRIPTION:

P1/33 - View looking downstream showing dedrock confined channel.

P1/34 - View looking upstream showing bedrock confined channel.

CRYPTO-BIOTIC CRUST (floodway): **Absent** / Spotty / Extensive

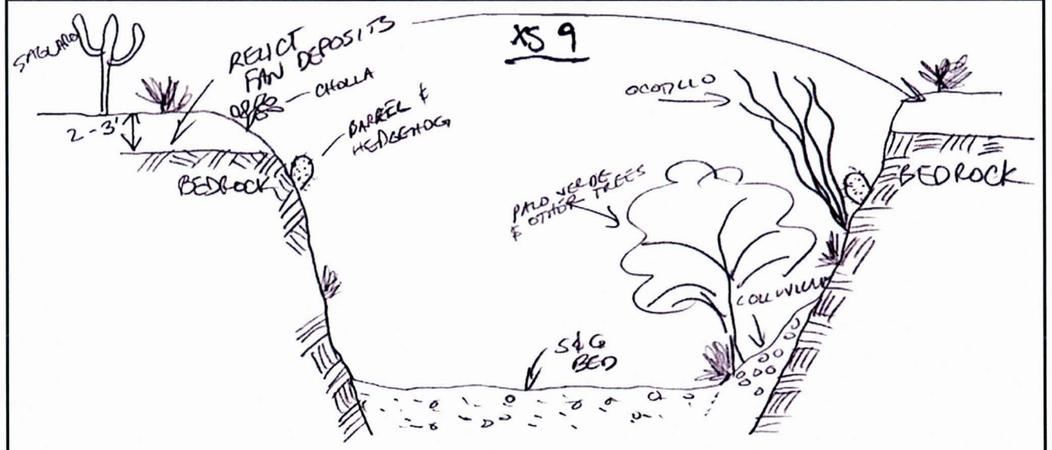
PIEDMONT LANDFORMS (marginal to channel/floodway)

Left Bank	**Pediment**	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain
Right Bank	**Pediment**	**Relict Fan**	Active Fan	Inactive Fan	Alluvial Plain

NICKZONE:
Caliche Present:
Dimensions:

HEADCUT:
Caliche Present:
Dimensions:

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #9



Notes: Channel is deply entrenched into PEDIMENT surface with thin veneer of RELICT FAN deposits on top.

AYRES ASSOCIATES

P1/28 Primary Wash #31 - Cross Section #1 – View looking downstream

P1/29 Primary Wash #31 - Cross Section #1 – View looking upstream

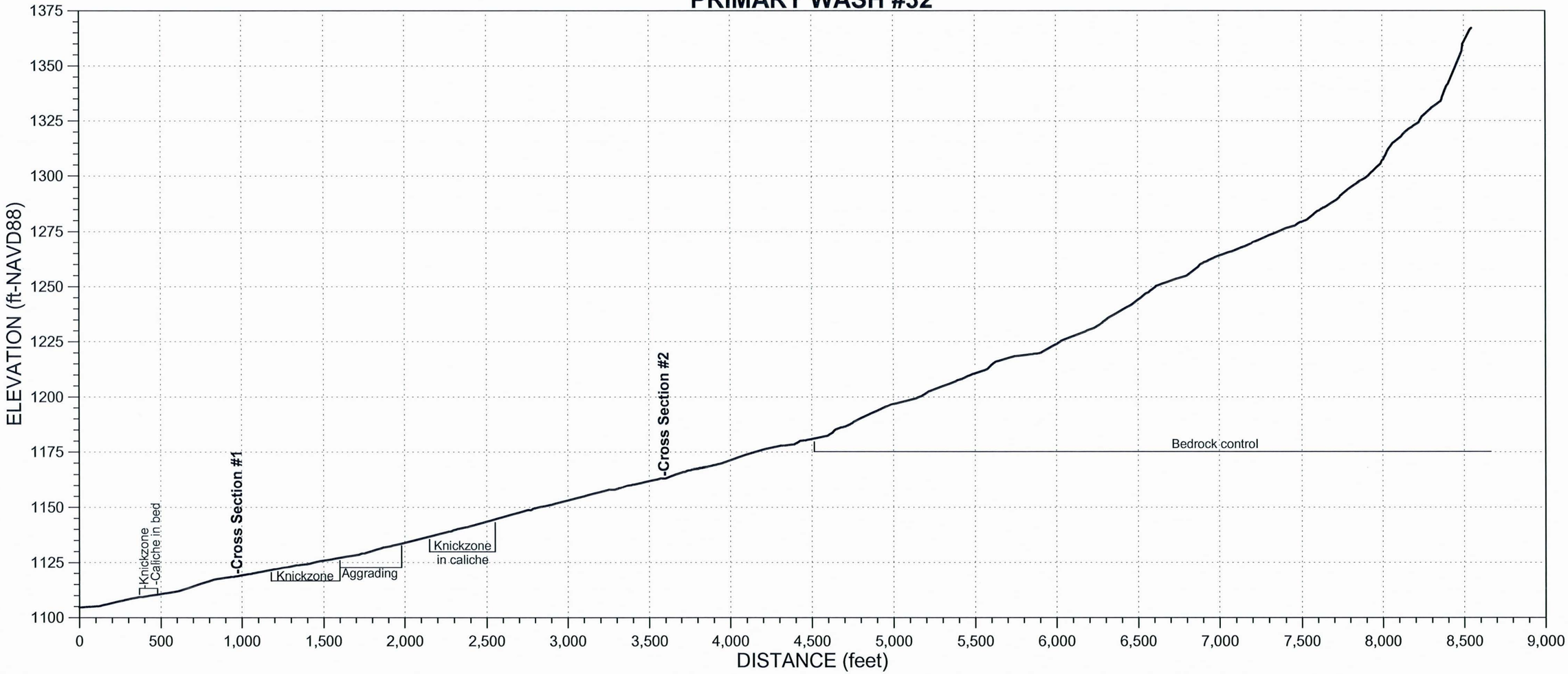
P1/231 & 32 Primary Wash #31 - Cross Sections #2 & 3 – Panorama view looking upstream

P1/30 Primary Wash #31 - Cross Sections #2 & 3 – View looking downstream

P1/33 Primary Wash #31 - Cross Section #4 – View looking downstream

P1/34 Primary Wash #31 - Cross Section #4 – View looking upstream

PRIMARY WASH #32



AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW32	1	19	March 7, 2004
	North: 890018.6 ft East: 500031.6 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank		6:1	1-1.5 ft	Sand X	Gravel X
Channel		Multiple		Right Bank		6:1	1-1.5 ft	Cobble X	Bldrs

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils	X		

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top) Above Bed		Thickness
Palo Verde	X	X	Left Bank		
Creosote	X	X	Right Bank		
Brittlebush	X	X	Channel		
Bursage	X	X			
Mormon Tea					
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	<1 ft	<1 ft	~1.5 ft

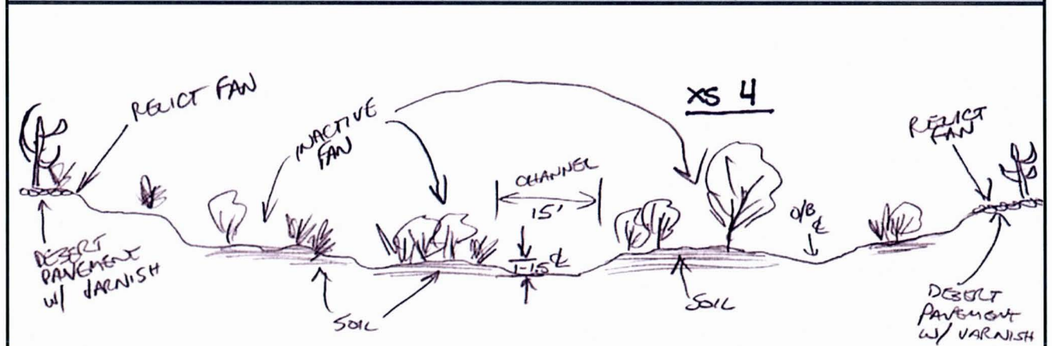
PHOTOS & DESCRIPTION:

P1/22 - View downstream

P1/23 - View upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #4



Notes:

Area on both sides of floodway mapped as INACTIVE FAN but looks more like RELICT FAN.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.	CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
BUCKEYE/SUN VALLEY ADMS Task 2.6.4 - Existing Conditions Assessment of Primary Washes	PW32	2	26	March 7, 2004
	North: 892244.9 ft East: 498816.1 ft	Field Crew:	W.J. Spitz, A.B. Alvarado	

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	1:1	~12 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	1:1	~12 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
						Pavement			X
						Soils			X

VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA		
Trees (Acacia, Ironwood, Mesquite, etc.)	X		Height (top) Above Bed		Thickness
Palo Verde			Left Bank	6 ft	3-4 ft
Creosote	X	X	Right Bank	6 ft	3-4 ft
Brittlebush	X	X	Channel		
Bursage	X	X			
Mormon Tea					
Tamarisk					
Saguaro C.					
Cholla C.					
Barrel C.					
Prickly Pear					
X-mas C.					
Hedgehog C.					
Fishhook C.					
Ocotillo					

HIGH WATER MARKS/DEBRIS			
Ht. Above Thalweg	Left Bank	Right Bank	Channel
	1 ft	1 ft	

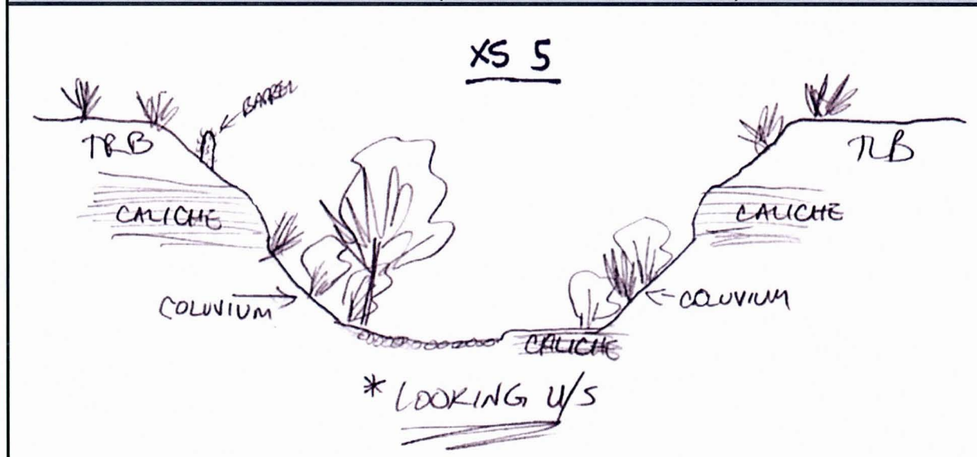
PHOTOS & DESCRIPTION:

P1/26 - View looking downstream

P1/27 - View looking upstream

CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
	Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
	Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Absent	NICKZONE:			HEADCUT:		
Spotty	Caliche Present:			Caliche Present:		
Extensive	Dimensions:			Dimensions:		

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #5



Notes:

AYRES ASSOCIATES

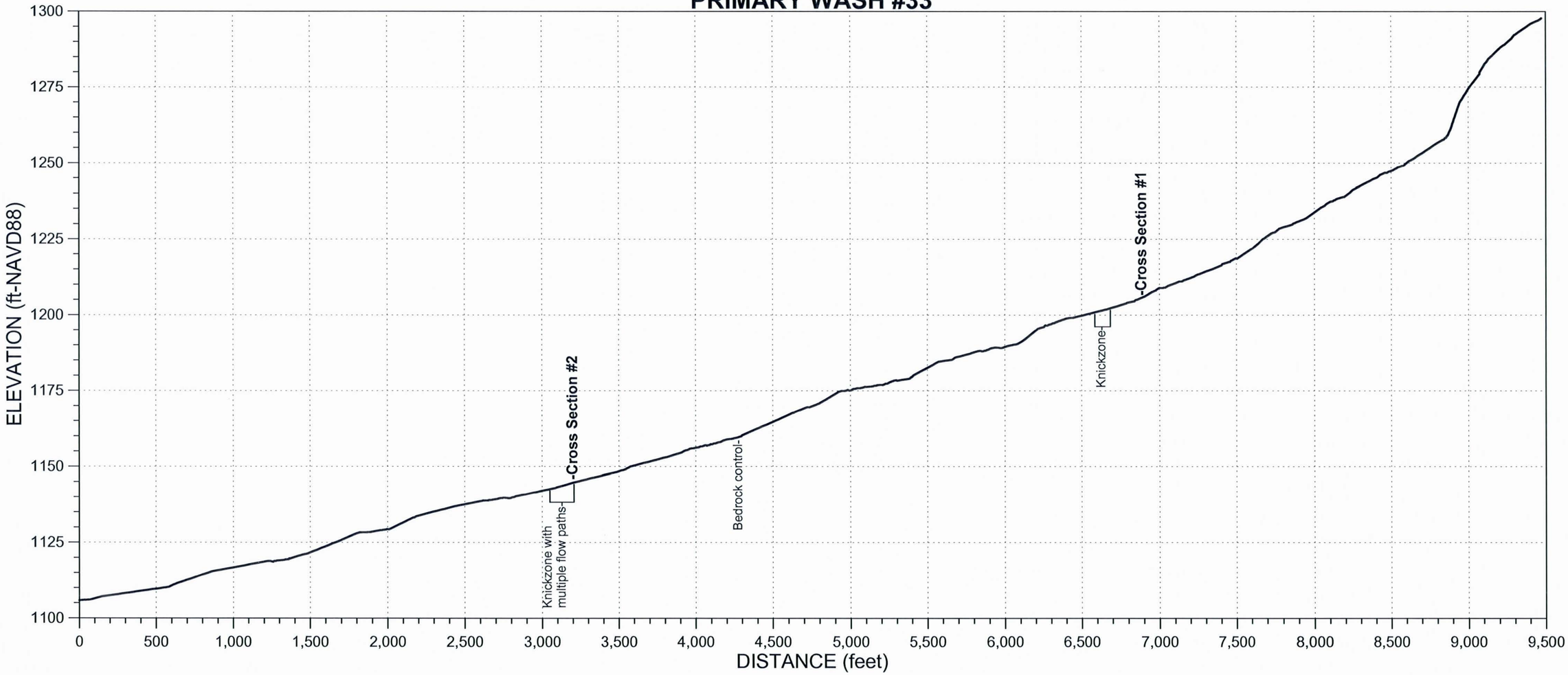
P1/22 Primary Wash #32 - Cross Section #1 – View looking downstream

P1/23 Primary Wash #32 - Cross Section #1 – View looking upstream

P1/26 Primary Wash #32 - Cross Section #2 – View looking downstream

P1/27 Primary Wash #32 - Cross Section #2 – View looking upstream

PRIMARY WASH #33



AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW33	1	11	March 7, 2004

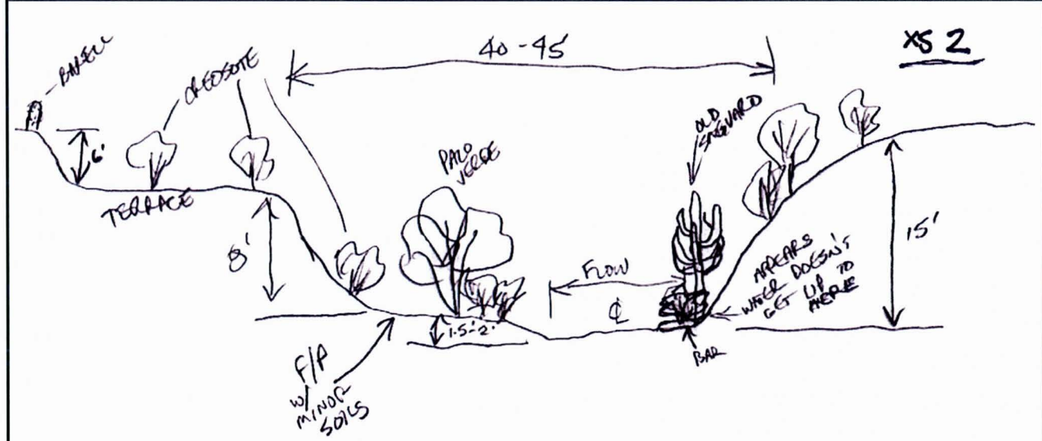
North: 894590.8 ft
East: 502690.4 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	X	Left Bank	X	1:1	9-10 ft	Sand X	Gravel X
Channel	X	Multiple		Right Bank	X	1:1	15 ft	Cobble X	Bldrs small

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel	X	X	Left Bank	9-10 ft			Extensive	Spotty	Absent
Marginal	X		Right Bank			Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel				<1.0	<1.0	
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage			P1/14 - View downstream; note saguaro cactus along right edge of channel						
Mormon Tea			P1/15 - View upstream; note small flow wplit around trees						
Tamarisk									
Saguaro C.	X	X							
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE: At Location			HEADCUT:			
Hedgehog C.			Absent	Caliche Present: Yes		Caliche Present:			
Fishhook C.			Spotty	Dimensions: 4 feet drop over about 100 feet, WPT #12 at DS end		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #2



Notes: Upstream of here, get inset meandering floodway (old meanders) with inset straight channel.
Short knickzone (100 ft) located just downstream - downstream end at WPT #12.

AYRES ASSOCIATES

AYRES ASSOCIATES, INC.

BUCKEYE/SUN VALLEY ADMS
Task 2.6.4 - Existing Conditions
Assessment of Primary Washes

CHANNEL:	CROSS-SECTION:	WAYPOINT:	DATE:
PW33	2	14	March 7, 2004

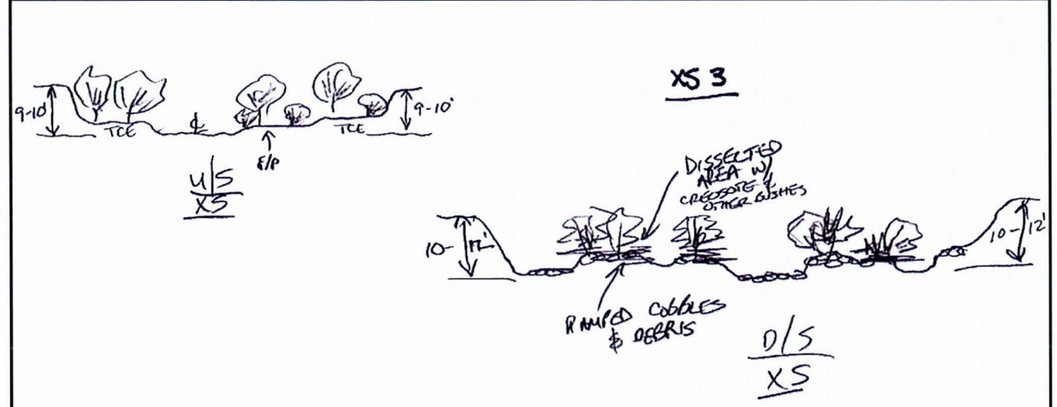
North: 891814.9 ft
East: 501395.5 ft

Field Crew: W.J. Spitz, A.B. Alvarado

ENTRENCHMENT		FLOW PATHS		BANKS	Erosion	H:V	Height	BED MATERIAL	
Floodway	X	Single	US	Left Bank		2:1	9-10 ft	Sand X	Gravel X
Channel	X	Multiple	DS	Right Bank		2:1	9-10 ft	Cobble X	Bldrs X

VEGETATION		INSET F/P	TERRACES (height-ft)			WITHIN FLOODWAY			
In-channel			Left Bank				Extensive	Spotty	Absent
Marginal			Right Bank	1.5 ft		Varnish			X
VEG TYPE	FLOODWAY	CHANNEL	CALICHE STRATA			Pavement			X
Trees (Acacia, Ironwood, Mesquite, etc.)	X	X	Height (top)	Above Bed	Thickness	Soils		X	
			Left Bank			HIGH WATER MARKS/DEBRIS			
Palo Verde	X	X	Right Bank			Ht. Above Thalweg	Left Bank	Right Bank	Channel
Creosote	X	X	Channel						
Brittlebush	X	X	PHOTOS & DESCRIPTION:						
Bursage	X	X	P1/17 - View downstream showing multiple flow paths over steep DS reach						
Mormon Tea			P1/18 - View of single channel upstream with low inset floodplain						
Tamarisk									
Saguaro C.									
Cholla C.			CRYPTO-BIOTIC CRUST (floodway)	PIEDMONT LANDFORMS (marginal to channel/floodway)					
Barrel C.				Left Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
Prickly Pear				Right Bank	Pediment	Relict Fan	Active Fan	Inactive Fan	Alluvial Plain
X-mas C.			NICKZONE: Downstream			HEADCUT:			
Hedgehog C.			Absent	Caliche Present: No		Caliche Present:			
Fishhook C.			Spotty	Dimensions: 4-5 feet drop over ~100 feet, mainly oversteepened reach		Dimensions:			
Ocotillo			Extensive						

TYPICAL CROSS-SECTION (VIEW LOOKING DOWNSTREAM) - FIELD XS #3



Notes:

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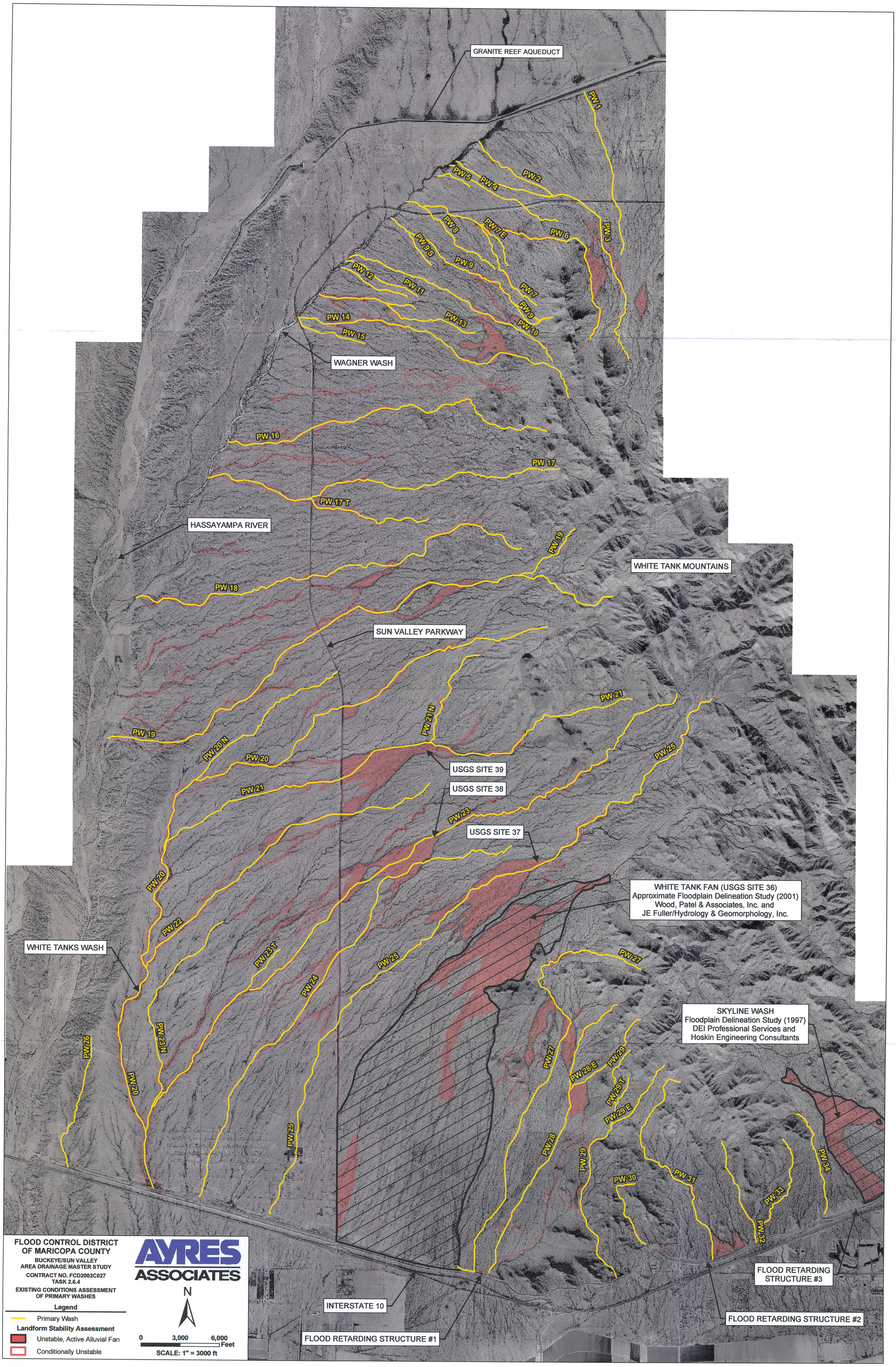
P1/14 Primary Wash #33 - Cross Section #1 – View looking downstream

P1/15 Primary Wash #33 - Cross Section #1 – View looking upstream

P1/17 Primary Wash #33 - Cross Section #2 – View looking downstream

P1/18 Primary Wash #33 - Cross Section #2 – View looking upstream


GRANITE REEF AQUEDUCT
WAGNER WASH
HASSAYAMPA RIVER
SUN VALLEY PARKWAY
WHITE TANK MOUNTAINS
WHITE TANKS WASH
INTERSTATE 10
FLOOD RETARDING STRUCTURE #1
FLOOD RETARDING STRUCTURE #2
FLOOD RETARDING STRUCTURE #3
USGS SITE 39
USGS SITE 38
USGS SITE 37
PW 1
PW 2
PW 3
PW 4
PW 5
PW 6
PW 7
PW 7E
PW 8
PW 9
PW 9S
PW 10
PW 11
PW 12
PW 13
PW 14
PW 15
PW 16
PW 17
PW 17T
PW 18
PW 19
PW 20
PW 20N
PW 21
PW 21N
PW 22
PW 23
PW 23T
PW 23N
PW 24
PW 25
PW 26
PW 27
PW 28
PW 28E
PW 29
PW 29T
PW 29E
PW 30
PW 31
PW 32
PW 33
PW 34
WHITE TANK FAN (USGS SITE 36)
Approximate Floodplain Delineation Study (2001)
Wood, Patel & Associates, Inc. and
JE Fuller/Hydrology & Geomorphology, Inc.
SKYLINE WASH
Floodplain Delineation Study (1997)
DEI Professional Services and
Hoskin Engineering Consultants
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
BUCKEYE/SUN VALLEY
AREA DRAINAGE MASTER STUDY
CONTRACT NO. FCD2002C027
TASK 2.6.4
EXISTING CONDITIONS ASSESSMENT
OF PRIMARY WASHES
Legend
Primary Wash
Landform Stability Assessment
Unstable, Active Alluvial Fan
Conditionally Unstable
AYRES ASSOCIATES
N
0
3,000
6,000
Feet
SCALE: 1" = 3000 ft