

QUEEN CREEK/SANOKAI WASH HYDRAULIC MASTER PLAN

FCD 98-26

November 2000

ADMINISTRATIVE REPORT MEETING MINUTES

Prepared for
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

by
HUITT-ZOLLARS

In Association with

Aquatic Consulting & Testing/Archaeological Consultant Services
Hoque & Associates/Kenney Aerial Mapping/WEST Consultants

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (13.10)
Subject: Draft Submittal Review
Date: August 1, 2000
Time: 10 a.m. to 11:30 a.m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 602 506-4718
David Degerness 602 506-4730
Huitt-Zollars
Fred Duren 602 952-9123
Charlie Joy 602 952-9123

This meeting was held to present a draft version of the Concept Plans, to receive and review District comments concerning the working draft submittal of the Project Study Report (submitted previously), and to clarify some of the details regarding the final submittals.

Draft copies of the updated version of the Project Study Report were also provided at the meeting. Attached is a list of questions prepared by Huitt-Zollars that served as the agenda. The essential decisions reached in the meeting are summarized below.

SUMMARY OF MEETING

Sediment Analysis

Tim requested that the write-up in the Project Study Report include a section discussing how the recommendations from the sediment analysis performed by WEST can be incorporated into the preferred alternative and the multi-use concepts.

Huitt-Zollars is to meet with WEST to discuss the recommendations proposed and see how the recommendations can be modified, changed and/or implemented to be consistent with the multi-use aspects of the project.

Dave noted that based upon the sedimentation report, there would appear to be a need to recommend a ~3 ft. drop structure on the East Branch of Sanokai Wash, however, a drop structure is not called out in the sedimentation analysis report. This is to be discussed with WEST and clarified whether there is a need for a drop structure.

Tim indicated that the reach designations need to be consistent between the Project Study Report and the Concept Plans. It was agreed that Tables on page 25 of the draft Project Study Report should be removed and instead of reach numbers the reaches be identified by the road crossings. The reaches for the sediment analysis should be designated by the road crossings that form the upstream and downstream ends of the reaches.

Fred indicated that West did not determine the final locations of drop structures since only a sediment budget analysis was performed. Drop structure locations were identified in the sediment budget analysis for a particular reach. A HEC-6 analysis will be required to locate precise drop structure locations. Tim asked that the reaches recommended for drop structures be identified on the Concept Plans. He also asked that the implementation plan in the Project Study Report be modified to indicate that an HEC-6 analysis will be required as part of final design of channel improvements in order to define the final locations of drop structures.

Charlie asked the District to review the revised sediment analysis write-up in the draft Project Study Report that was distributed at this meeting and to respond with comments to him as soon as feasible. Also the District was asked to provide some figures to include in the report and identify any photos/figures which could be removed from the report.

HEC-1 Models

Dave requested that Huitt-Zollars provide the final HEC-1 runs for Queen Creek and Sanokai Wash since Collins-Pina needs them to finish its study of the EMF.

Concept Drawings

Tim and Dave quickly reviewed the draft Concept Drawings. It was agreed that the Concept Drawings to be included at the back of the Project Study Report in 11 x 17-inch format should show the cross sections but not the topography. The drawings for the Project Technical Report will show the topography along with the all the other information shown on the drawings in the Project Study Report.

The line weights for the channel boundaries on the 11 x 17-inch drawings need to be increased so as to be more discernable.

Huitt-Zollars is to include Concept Plan drawings for the reaches of Queen Creek that are not recommended for improvements. A note should be placed on these drawings that no improvements are called for in these reaches. The criteria tables for these plans should provide averages for the variable items (e.g., top width, depth).

Concept Plans will not be provided for the existing confluences of Queen Creek and Sanokai Wash.

Hydrology Sheets and Land-Use Map

Hydrology sheets showing sub-basin boundaries and routing parameters should be included in the back of the Project Study Report in 11 x 17-inch format. Tim requested that enough sheets be provided so that the information on these sheets can be read.

Dave requested that a full-size set of hydrology sheets be provided with the final submittals.

A land-use map will also be provided at the back of the Project Study Report.

Evaluation Matrix Table

Table 5 in the draft Project Study Report, Example of Evaluation Matrix Table, should be condensed to just show the average weights for the various evaluation criteria. The sample rating values should be eliminated.

Cost Estimates

Tim requested that the cost tables for the preferred alternatives be broken down into several components, including excavation, land, design, CMS, and contingencies. He also requested that this breakdown of costs be provided on the Concept Plans for each reach.

Charlie indicated that land was not included in the costs for normal channel improvements since this land is assumed to be donated by developers. However, Charlie indicated that land costs were included where the channel had to be re-aligned to avoid existing structures and where detention basins were located. This was agreeable. Tim requested that the itemized reach costs provided on the Concept Plans indicate this distinction in handling land costs.

It was agreed that the cost for trails needs to be included in the cost estimate.

Tim indicated that his experience in reviewing prior cost estimates submitted to the District included a design cost of seven percent of construction cost, a CMS of eight percent, and contingencies of 20 percent. He suggested that Huitt-Zollars use whatever percentages it felt appropriate for the project.

Change Order No. 4

Fred provided Tim with the copy of Huitt-Zollars request for Change Order No. 4 previously sent by e-mail. Tim was concerned that the request wasn't made along with the schedule extension of Change Order No. 3. However, Fred indicated that he recalled that Tim wanted to proceed with the schedule extension as soon as possible and didn't want to wait for the fee estimate to be prepared to cover any additional costs that Huitt-Zollars considered associated with modifying the format of the final report.

Final Submittals

It was agreed that the following would constitute all of the final submittals for the project:

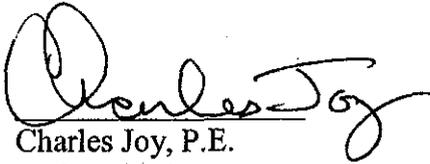
- Concept Plans
 - In back of Project Study Report in 11 x 17-inch format without topography
 - In Project Technical Report in 11 x 17-inch format with topography
 - Full-size mylars
 - Digital versions on diskette or CD
- Project Study Report
 - Study Report text
 - Concept Plans (see above)
 - Land-Use Map
 - HEC-1 and HEC-RAS models for preferred alternatives on diskette or CD
 - Diskette or CD of Word file(s)
- Executive Summary (separate from Project Study Report)
 - 11 x 17-inch format
 - Include project introductions, existing conditions, and preferred alternatives
 - Add maps of preferred alternatives
 - About 5 pages in length
 - Diskette or CD of Word file(s)
- Project Technical Report
 - Hard copies of model runs of preferred alternatives
 - Technical data
- Administrative Report
 - Essential correspondence

The number of final copies to be submitted are:

- Concept Plans - one set of full-size mylars
- Project Study Report – nine copies
- Executive Summary – nine copies
- Project Technical Report – four copies
- Administrative Report – one copy

Tim requested that 99-percent final submittals of the above documents be made to the District for final review. At that time the District may submit versions to outside agencies for comment.

The preceding minutes were prepared by Fred Duren and Charles Joy, Huitt-Zollars, Inc., and are based upon discussions and conversations heard during the course of the meeting. Meeting attendees are asked to advise the authors in writing or verbally of any discrepancies and/or omissions.



Charles Joy, P.E.
Project Engineer

8/3/00
Date Prepared

Attachments

c: Attendees

- Gary Burroughs
- Glenn Shearer
- Rick Amalfi, ACT
- Enamul Hoque, H&A
- Barbara Macnider, ACS
- John Cahoon, Kenney
- Dennis Richards, West

Questions for District Meeting 8-1-00

Concept Plans

- What needs to be submitted for Queen Creek upstream of channel improvements?
 - Should these sheets be included in the Concept Plans (seems like it would work better but since no channel improvements, may be confusing) or submitted separately?
 - Plan view?
 - Plan/Profile view (Ron has already cut the profile)?
 - Is there any need to submit additional sheets for the existing alignment? In particular, the area west of Higley Road.
- Hydrology sheets are not in the concept plans. Should they be included as part of the concept plans or be provided separately as an appendix or figure in the Study Report and/or Technical Report?
- Plan/Profile sheets look better without topo. Would the District prefer the Concept Plans without topo? Without cross sections?

Study Report

- What additional figures does the District desire in the Study Report?
 - There are some figure the District had in the draft report which we cannot adequately modify (study area limits) or reproduce (aerial photos of entire watershed). Can the District help provide those figures?
- Are there figures/photos the District may want to discard/combine?

Technical Report

- How to provide cross section location information?
 - As part of the Concept Plans? (if to include QC upstream of in concept plan)
- Technical Report that includes correspondence, meeting minutes etc.... will be very large and probably need to be divided into separate volumes.
- Anticipate providing ring binders since technical report is so large.

Change Order Request

- Review of Change Order Request No. 4.
- Response to questions.

Final Submittal Review

- Define ALL final products to be submitted.
- Discuss schedule for completion
 - Draft submittals
 - District review
 - Final submittals

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Progress Meeting No. 16
Date: May 2, 2000
Time: 2:00 p. m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Dave Degerness 506-4730
Huitt-Zollars
Fred Duren 952-9123
Charles Joy 952-9123

Purpose of Meeting

The meeting was held to discuss the District's comments on the Level II Alternatives Analysis Report, to discuss the Level III analysis of the preferred alternatives and the completion of the project. Attached is an agenda for the meeting.

Project Status Overview

The project is currently in the initial stages of Level III with Huitt-Zollars working on the more detailed Level III hydrologic and hydraulic analyses of the selected preferred alternatives. The selected preferred alternatives are Alternative 1 for Queen Creek (channel improvements only), Alternative 3 for Sanokai Wash (detention basins at Sossaman Road, Riggs Road, and Signal Butte Road and channel improvements), and Alternative 3 for the EMF confluence (new confluence locations for both Queen Creek and Sanokai Wash).

Level II Analysis

In the review comments of the Level II report, the District expressed concerns over the routing in the hydrology models. For Level II, the hydrology models for each alternative were modified to include proposed detention basins but no attempt was made to change the hydrologic routing for proposed channels improvements, with the exception of the East Branch of Sanokai Wash which was routed through a channel (previously routed by overland flow). The change in the East Branch routing was done to address a recommendation by the District and the Town of Queen Creek in a previous meeting at the beginning of the Level II analysis. During the same meeting, HZI expressed concerns

over the amount of work involved in making other changes in the hydrologic routing for each alternative (during Level II a significant number of alternatives were considered prior to finally selecting three for evaluation). Huitt-Zollars understanding from that meeting was that the routing for the East Branch would be changed because there was no defined channel for the East Branch; however, elsewhere along both Sanokai Wash and Queen Creek, the channel routing would not be modified for each alternative in Level II because there currently existed channels and the washes were routed as such.

Fred acknowledged that changing the routing for the channel improvements in the Level II hydrology models for each alternative would have provided more precise results; however, such a level of detail exceeded the scope of Level II which was to be completed using limited quantitative analyses. Fred stated that Huitt-Zollars felt it had met the Scope of Work with the level of analyses that was completed and that each alternative was evaluated with the same "comparative level of detail". While routing changes would have produced different channels/basin sizes (affecting alternative costs), it probably would not have changed the final selection of the preferred alternatives because of other evaluation criteria that would not be significantly impacted.

Dave wanted to make sure that these changes would be made in the Level III analyses. He was informed that for Level III, Huitt-Zollars has always intended to provide a hydrologic model that would account for routing changes arising from proposed channel improvements, detention basins and changes in confluence location.

Level II Report Comments

All the comments on the Level II Alternatives Analysis Report received from the District and the Town of Queen Creek were discussed. The comments and responses are provided at the end of these minutes.

Level III

Dave expressed a desire that all the channel routing in the hydrology model be done using the Normal-Depth Method (the Muskingum Method is used in sections of the hydrology). Charlie stated that Huitt-Zollars will use the Normal-Depth Method whenever it is necessary to change the routing parameters; however, Huitt-Zollars had not intended to change the channel routing for reaches where no channel improvements are proposed (this primarily concerns Queen Creek east of ~Hawes Road). Dave still expressed a desire to have all the channel routing changed to Normal-Depth even if channel improvements are not made.

Dave was informed that for the Queen Creek/Sanokai Wash study, subbasins outside of the study area had been removed from the study hydrology model so that the model only presented information pertinent to the study. Dave asked if those areas could be put back without too much effort. Charlie said the areas would be put back into the model but that all the revisions necessary to incorporate the model into a Future Conditions model of the EMF would not be made. Dave indicated that was acceptable.

Reports

Fred and Charlie related to Dave, that while called for in the Scope of Work, spending time and effort to revise and resubmit a "Final Level II Alternative Analysis Report" to address the report comments may not be productive unless there was a desire for the District to revisit the Level II alternatives. It was felt that such a report would be not be particularly useful and superfluous since the development and evaluation of the Level II analyses would be addressed in the Final Project Report. Fred is to discuss this issue with Tim along with the format of the final project report(s) and plans.

Schedule

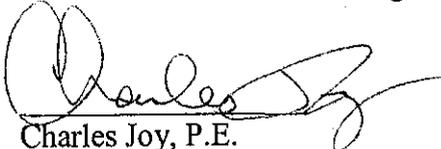
Fred indicated that the current schedule would not likely be met due to recent delays in the project.

Action Items

- Fred is to meet and discuss with Tim: the project reports, report formats, project schedule and the District's concern over the Level II routing.
- Charlie is to replace hydrology for the areas outside the QC/SW watershed that were removed from the model.

The meeting ended at approximately 4:30 p.m.

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Charles Joy, P.E.
Project Engineer

5-2-00

Date Prepared

Attachment

- c: Attendees
Tim Phillips
Afshin Ahouraiyan
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
Rick Amalfi, ACT
John Cahoon, Kenney
Gary Burroughs
Mark Seits

**Responses to FCDMC's Comments on the
Queen Creek/Sanokai Wash Alternatives Analysis Report**

(Review Comments italicized)

1. *The Table of Contents is missing a section for the Appendices. I presume this should be on Page iv. Also a breakdown is needed for the Appendices section in the Table of Contents so the reader knows what is contained within the Appendices.*

Can be done

2. *Paragraph 3 of page 1-3 of the Introduction Section states that "Approximately from Via del Jardin to the Queen Creek confluence, Sanokai Wash is contained between unengineered levees." This comment is not entirely true. From Power Road downstream to the confluence with Queen Creek, Sanokai Wash is primarily classified as sheet flow that could not be contained within a tailwater ditch. Please amend the sentence to reflect this fact.*

Paragraph 3 can be rewritten to address comment

3. *Table 1 of the Introduction Section states that a proposed bridge crossing of Queen Creek Wash at Sossaman Road will be included in the hydraulic analysis. Did you get the proposed bridge plans from MCDOT for the bridge improvement? The bridge/culvert provided by the District in the original hydraulic model is what is in place at this time. Please change this table to reflect this fact. If indeed the bridge at Sossaman is the future proposed bridge please indicate as such in your model.*

There was some discrepancy between the District and Huitt-Zollars as to what currently exists at the Queen Creek/Sossaman crossing. Dave indicated that there was a bridge structure at the crossing while Charlie indicated that there was no bridge structure and only a silted up multi-barrel CMP culvert under the road. The hydraulic model obtained from the District includes a bridge at the crossing of Queen Creek at Sossaman Road. It was Huitt-Zollars understanding that the District desired a bridge modeled at the crossing to account for a possible bridge to be built in the future.

Dave indicated that, regardless, the bridge in the hydraulic model should remain and the wording in the report be changed to say there is a culvert structure at the crossing.

4. *Section 3, Page 3-2, paragraph 4 says "The subbasin boundaries are shown in Appendix A." A figure should be added to the appendix showing this or this statement should be removed.*

The statement will be removed from the report. Subbasins will be shown in the HEC-1 schematic for Level III.

5. Section 3, Page 3-3, top of the page. Please change DDM-V1 to DDMS, Version 1.

Can be done.

6. Section 3, Page 3-3, bottom of the page. You have made changes to Queen Creek which necessitates the changing of the Muskingum parameters. Ideally in the original update to the Queen Creek model you should have changed the Muskingum Routing to Normal Depth Routing. This is now coming back to haunt you!!! You can not model future channel configurations with an existing channel routing. Please change all Queen Creek Wash Main Channel routings to normal depth!!

See Meeting Minutes.

7. Section 3, Page 3-7, middle of the page. Same as comment #6.

See above.

8. Section 3, Page 3-9, second paragraph. The report states that "Routing changes for alternatives was not done in the Level II analysis for any of the study watercourses. Routing changes will be made to the hydrology for the selected alternatives in Level III." Analysis of the HEC-1 models has revealed that you did channelize the East Branch of Sanokai. In fact, you should have channelized all routings that you are proposing to be channelized. This includes both Sanokai and Queen Creek Washes. Please change this paragraph to reflect this fact and please channelize your routings in the HEC-1 models for Sanokai Wash and Queen Creek Wash.

See Meeting Minutes

9. Section 4, Page 4-3, fourth paragraph. Sentence states, "A Sossaman Road bridge on Queen Creek does not exist but was included in the hydraulic models" Please correct this statement and paragraph. A bridge/culvert does exist over Queen Creek at Sossaman Road. The bridge in the model is the existing bridge. Please see comment #3.

See response to comment #3.

10. Section 4, Page 4-4, paragraphs 4 and 6. Please correct the spellings of Ranch Jardines and Pinal County.

Can be done.

11. Section 6, Page 6-1, fourth paragraph. Sentence states that vegetative islands are not modeled in the hydraulic analyses. Why are they not modeled? This effects water surface.

This primarily concerns the cottonwoods along Queen Creek. Dave was concerned that these areas be shown or somehow accounted for in the hydraulic model. Dave suggested changing the cross section to show the islands and/or the channel n-values. Charlie

indicated that where channel improvements are proposed these vegetative islands would be fairly isolated/rare, not very significant hydraulically and maybe a level of detail exceeding the conceptual level of the study. Changing the n-values would be easy to do however charlie indicated it would be preferred to retain a consistant n-value over a reach rather than change from cross section to cross section because of a small vegetative island. However, Charlie will review the areal and get back with Dave to discuss a resolution.

12. *Section 6, Page 6-1, fifth paragraph. Did you lower cross sections at bridges to account for channel incisement, if there is any incisement proposed? Does your cost estimate take into account bridge retrofit?*

When proposed, channel incisement was carried through the bridges. The cost estimate did not account for retrofitting bridges to account for a lower channel invert. This cost would be same for all the proposed alternatives and therefore would not be a determining factor in the selection of a preferred alternative. (The No Action Alternative recently proposed was not under consideration at the time because it did not accomplish the purpose of the study.) A rough cost of retrofitting the bridges can be estimated in Level III.

13. *Section 6, Page 6-2, third paragraph. The sentence states "Analyses indicate that Queen Creek, with channel improvements necessary to incise the channel, is able to contain the 100-yr, 24-hr future development conditions peak discharges. . . .". Where do the channel incisements occur, all along the wash or only in certain locations, with the exception of Trilogy.*

The statement can be reworded to discribe where channel improvements are proposed.

14. *Figure 3 in Section 6, Alternative 1. It seems suspicious that the alternative flows listed are the same as the future conditions flows and yet you are proposing to channelize Queen Creek at various locations. This goes back to changing your routing parameters to reflect channel improvements.*

This is related to the previously discussed Level II routing issues. Because routing was not changed in Level II for channel improvements, essentially the No Detention alternative has the same flow rate as the Base Future Conditions hydrology.

15. *This comment pertains to all figures which depict alternatives and the various flow rates for Section 6. I am confused as to what (Future Conditions) means. Does this mean future conditions landuse with existing conditions routings still in place? Or is it based upon the base condition being the channelization of each wash. I, as a reader of this document would want to know what good comes from having spent all this money and the flow rates remain the same. If the channel is improved, will flow rates go up, down, etc.*

This is related to the previously discussed routing issue. Future Conditions refers to the future land use conditions with routing modifications for the East Branch but does not included changes in the routing for each alternative.

16. *Section 6, Page 6-6, Alternatives 1,2, and 3. Each alternative proposes to improve the channel of Queen Creek from Power Road to Hawes Road and yet your figures (Figures 3,4 and 5) indicate that no improvements will be needed between Recker Road and Hawes Road. Please correct the figures to have the n/a bracket the area between Recker and Power Roads. You would then have to provide widths for that portion of Queen Creek from Power to Hawes Roads. In the same vein, if an incisement is to take place maybe the incisement depth should be indicated upon each of the figures.*

The Figures 3, 4, and 5 in our copies of the report correctly represent the areas proposed for channels improvements for each alternative and a N/A bracket is provided for the area between Recker and Hawes Roads. The linework/brackets identifying the areas were misread in the figure.

The channel depths were discussed and it would be possible to include separate channel profiles for the existing and the modified conditions from HEC-RAS, however, it is not believed that the information could easily be provided in one profile. In addition this would not provide actual depths. To provide depths along the course of the channel would involve additional work and it was worth the effort. In the Plan/Profile sheets for Level III, the incisement depth could be readily obtained from the profile.

17. *Section 6, page 6-6, first paragraph. The paragraph states that incisement of the channel will take place from Power to Hawes Road. How much lowering of the invert will be involved? Will significant backwater occur upstream of Power Road.*

Charlie stated that the channel modifications were made to try and match the channel invert at Power Ranch and that the transition upstream and downstream is relatively smooth in the model.

18. *Section 6, page 6-7, second paragraph. It states that extensive channel improvements will take place along the entire reach of Sanokai Wash. Yet you did not modify the HEC-1 channel routings for the Main stem Sanokai Wash. You did it for the East Branch.*

Related to the previous routing discussions.

19. *Section 6, Page 6-7, third paragraph. The paragraph states that "There are significant locations where proposed channel improvements may require realignment of the watercourses." Has this been accounted for in the HEC-RAS model. Also, please state how much realignment must take place(in feet) to avoid future development or existing properties.*

Charlie discussed the areas where the channel may need to be realigned. These realignments will be shown in the Level III plans and the hydraulic models modified as necessary.

20. *Section 6, Page 6-11, Table 5. Do the cost estimates take into account any bridge retrofits or additional hydraulic structures that may be needed at roads due to channel incisement.*

As stated in the response to comment #12, the cost estimates do not account for any bridge retrofits. In addition, the costs do not account for any hydraulic structures or road

realignments that might be necessary to incise the channel through road crossings. As with bridge retrofits, these costs would be same for all the proposed alternatives and therefore would not be a determining factor in the selection of a preferred alternative. For Level III, to include costs for road modifications (primarily for Sanokai Wash) would be extremely difficult and require at least a rough design of new road/dip configuration (because of changing vertical alignment) just to identify the length of needed improvements. Whether this is needed for the concept level of detail is in question. Bridge retrofitting costs would be easier to estimate because it does not require a vertical realignment of the road.

21. *Section 6, Page 6-12, Paragraph 1. How were the confluence alternatives evaluated (HEC-1, HEC-RAS) and if they are available can the District obtain these.*

Dave's primary concern was that the confluence changes be modeled in the Level III analyses. Dave was assured that they would be.

22. *Figure 10 in Section 6. This alternative is supposed to evaluate moving the Queen Creek Wash outlet up to the alignment of Queen Creek Road. Please change the figure 11 to reflect this fact. It has Queen Creek emptying into the EMF at Ocotillo Road.*

Figure 10 will be changed to show the correct confluence location for Queen Creek. Figure 11 is correct.

23. *Please check the numbers in Table 6 of page 6-12. Make sure that the estimated cost of Alternative 2 is calculated for moving the outlet of Queen Creek up to Queen Creek Road and not at Ocotillo Road as shown in Figure 10.*

The estimate for Alternative 2 is for the relocating Queen Creek/EMF confluence to Queen Creek Road. Figure 10 does not show the correct location.

24. *Section 6, Page 6-12, Table 7. Do these costs take into account any maintenance required to remove sediment from the basins.*

Costs do not include maintenance and sediment removal for the basins.

25. *Will there be any additional basins proposed by West Consultants that will serve as sediment traps.*

WEST has not currently proposed any sedimentation basins.

26. *How is the sedimentation analysis going? I haven't heard a thing about this.*

Dave was informed of the extent of WEST's current analyses.

27. *Section 7, Page 7-8, last paragraph. The wording of this paragraph is confusing to me. Is it not the northeast corner of the intersection of Riggs and Hawes Roads. Or perhaps the southwest quarter of Section 28, T2S, R7E.*

The sentence can be revised to read ".....located northeast of the intersection of Ellsworth Road and Riggs Road....."

28. *Please provide a decent sized figure showing the cross sections from the hydraulic modeling in plan view with the project area. Showing every cross section would be too many so show them at critical points, such as major street locations, bridges, confluences, etc.*

The Level III plans will have the cross sections show on the plan/profile sheets.

Town of Queen Creek's Comments
(Dick Schaner's Comments italicized)

1. *How did you consider the flows getting into the proposed channel improvement? How will the concentration points noted at different locations along the wash translate to specific features to discharge the storm water into the channel? The report needs to show how and where these flows will enter the channel.*

This was discussed and it was agreed that this exceeded the conceptual level of detail for this study.

2. *How fine-tuned is the HEC 1 routing method in this analysis? How much impact does the "n" value used have on the design? Run the HEC 1 with 0.03 and see if there are areas with capacity deficiencies. The improved channel shows more attenuation of the flows? Is this right and if so why?*

This was discussed and it was agreed that the n-values were established in a previous meeting and that a sensitivity analysis of the n-values would not be appropriate for the conceptual level of detail for this study.

AGENDA

PROGRESS MEETING NO. 16 MAY 2, 2000

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Project Status Overview

2. Level II Analysis

a. Methodology

- Comparative Level of Detail
- Normal Depth Analyses
- Matrix Criteria

b. Preferred Alternatives

- Queen Creek = Alternative 1
- Sanokai Wash = Alternative 3
- EMF/Queen Creek Confluence = Alternative 3
 - Sanokai Wash Outlet vs. Chandler Heights Detention Basin

c. Review Comments

- District
 - District Concern re: HEC-1 Modeling
- Dick Schaner
 - Flow Into Basins
 - Flows Into Channels
 - Different "n" Value HEC-1 Runs

d. Responses

e. Resolution/Level III Alternatives

3. Alternatives Analysis Draft Report

a. Review Comments

- District

b. Responses

c. Additions

c. Resolution/Submittal Process

4. Level III Analysis Tasks

- a. Refining the Models
 - HEC-1
 - HEC-RAS
 - Final Modeling Products
- b. Concept Drawings
 - Software (MicroStation)
 - Scale
 - Conceptual Design Data
 - Sample Drawing Submittal
 - Example Format from District
- c. Preferred Analysis Report vs. Final Report
 - Format
 - Scope Impact

5. Final Project Submittals

- a. Reports
- b. Drawings
- c. Diskettes

6. Schedule

- a. Current Completion Date = June 28, 2000
- b. Potential Extension

7. Review of Decisions and Action Items

8. Open

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: ~~05-0949-01~~ (200,08)
Subject: Progress Meeting No. 14 – Initial Level II Alternatives Analysis
Date: January 4, 2000
Time: 9:00 a. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**

Tim Phillips	602 506-4718
David Degerness	602 506-4730
Dennis Holcomb	602 506-4070
Theresa Hoff	602 506-8127

Town of Queen Creek

Dick Schaner	480 987-3890
--------------	--------------

Huitt-Zollars

Fred Duren	602 952-9123
Glenn Shearer	602 952-9123
Charlie Joy	602 952-9123

WEST Consultants

Dennis Richards	480 345-2155
-----------------	--------------

Collins-Pina

Pedro Calza	602 264-7505
Boyd Winfrey	602 264-7505

The meeting agenda was transmitted to the District on January 3. Additional copies of the agenda, as attached, were distributed at the meeting. Action items are shown in italics in the body of the minutes.

This is the first of three meetings regarding selection of the Level II alternatives for Queen Creek and Sanokai Wash.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached in the meeting is presented below.

Meeting Objective

The meeting objective is to present the findings of the Level II analysis completed to date and to discuss the initial recommendations that have been developed.

Project Overview

The analysis of the East Maricopa Floodway (EMF) has been completed by Huitt-Zollars and the draft final report submitted to the District. The study is now focused on a three-phased analysis of Queen Creek and Sanokai Wash. Huitt-Zollars has completed the Level I evaluation of Queen Creek and Sanokai Wash (i.e., the first phase), which consisted of a non-quantitative assessment of numerous alternatives to improve the channels to adequately convey the 100-year, future-conditions hydrology, flood event. From the Level I analysis, several alternatives were selected for a quantitative analysis to be conducted in the Level II analysis.

The current meeting will develop direction for further Level II analysis of Queen Creek and Sanokai Wash, which will be followed by a second meeting with the District and Town of Queen Creek, a neighborhood open house, a Town Council meeting, and a third meeting with the District and Town to finalize the recommended alternatives for Queen Creek and Sanokai Wash. From the Level II analysis, the recommended improvement alternatives for Queen Creek and Sanokai Wash will be selected using a matrix approach and based on public input. The Level III analysis will then be conducted of the recommended alternatives to refine these alternatives to a point suitable for development of concept plans.

Meeting Format

The remainder of the meeting is devoted to discussing the initial Level II findings and recommendations related to outlet conditions, Queen Creek, and Sanokai Wash.

Outlet Conditions

Huitt-Zollars evaluated the three outlet conditions for Queen Creek, which are: (1) maintain the existing Queen Creek outlet and drop structure locations, (2) move the drop structure upstream of the existing Queen Creek outlet, and (3) move the drop structure and Queen Creek outlet upstream to near Queen Creek Road. Although moving the drop structure upstream of the existing Queen Creek outlet would provide additional grade for a short portion of Queen Creek and Sanokai Wash, it was found that this would provide insignificant benefit in reduction of channel improvements to these two watercourses. Thus, Huitt-Zollars' initial recommendation is that option 1 is preferred over option 2, which can be eliminated from further consideration.

Charlie said that there could be a benefit to the EMF with option 3 due a reduction in EMF flows that were found to result if Queen Creek is discharged to the EMF near

Queen Creek Road. However, due to the fact that the Queen Creek/Sanokai Wash analysis is based on hydrology for future watershed conditions and the EMF analysis is based on hydrology for existing watershed conditions, it would be more appropriate to evaluate the Queen Creek confluence change (and Sanokai Wash confluence change) separate from QC/SW channel improvement analyses using solely EMF hydrology (developed as part of the EMF Capacity Mitigation Study).

Tim indicated that this is something that probably should be resolved at this point in time so Huitt-Zollars agreed to evaluate the confluence changes for both Queen Creek and Sanokai Wash in further detail and inform the District and/or Collins-Pina as to the results. *Huitt-Zollars will not change its conceptual-level analysis of EMF capacity mitigation facilities (e.g., re-sizing the Chandler Heights detention basin) based on potential changes in flow conditions in the EMF.*

Tim also questioned why there wouldn't be a benefit in implementing option 3 over option 1 because it might eliminate the need for channel improvements on Queen Creek from near Queen Creek Road to its junction with Sanokai Wash. *Huitt-Zollars will evaluate the potential benefit of option 3 compared to option 1 in more detail relative to impact on the EMF and relative to reducing the extent of channel improvements in the reach of Queen Creek from Queen Creek Road to its junction with Sanokai Wash.*

Queen Creek

As depicted on the photomap presented at the meeting, Huitt-Zollars' analysis shows that Queen Creek will require channel improvements to convey the 100-year flood event at future hydrologic development conditions from its outlet at the EMF to the downstream limit of the Power Ranch development at Recker Road. Upstream of the Power Ranch and proposed Sossaman Estates developments, channel improvements will be needed to Hawes Road, from where the existing channel has been found to be adequate to convey the 100-year flood to the Central Arizona Project (CAP) Aqueduct, the end of the study area on Queen Creek. Due to the long-term constant flow in Queen Creek across the CAP Aqueduct over chute, detention basins are not especially effective in reducing the channel improvements that are needed for Queen Creek. Huitt-Zollars left the channel improvements for the reach of Queen Creek encompassing the Power Ranch and Sossaman Estates developments as proposed by these two developments.

Charlie indicated that Huitt-Zollars' review of the Coe & Van Loo (CVL) hydraulic analysis for Power Ranch showed that this reach of Queen Creek would not convey the 100-year flow developed by Huitt-Zollars. Huitt-Zollars is waiting to receive CVL's final hydraulic analysis, as submitted to FEMA as a LOMR, to confirm this finding.

While detention was found to be relatively ineffective (channel improvements would still be necessary) and Huitt-Zollars recommended channel improvements as the method to contain flow within the channel, detention basins will be included as alternatives to attenuate flows and resolve possible inadequacies through the Power Ranch development

(where channel improvements are not considered feasible). The magnitude of attenuation will depend upon the LOMR information provided by CVL.

Dick pointed out that the hydraulic improvements currently planned for Queen Creek along Sossaman Estates should not be taken as fixed; however, the bridge proposed to be constructed over Sossaman Road should be considered a given. As a result, *Huitt-Zollars will revise its hydraulic model for Queen Creek to eliminate the proposed Sossaman Estates channel improvements and to instead cut new cross sections for the existing conditions as the basis for evaluating improvements on Queen Creek, except that the proposed bridge at Sossaman Road should be included.*

Based on the above, the following three alternatives were agreed upon by the meeting attendees to be included in the Level II analysis of Queen Creek. All analyses will include:

- 12:1 side slopes, trapezoidal channel, except where land is unavailable for this side slope, where steeper side slopes will be allowed,
 - modifying the hydraulic model to replace the Sossaman Estates proposed channel improvements with existing channel conditions, except that the proposed bridge at Sossaman Road will be included in the hydraulic model, and
 - an approximate cost evaluation of detention basin capacity vs. channel improvements to estimate a "near-minimum" combined cost where these facilities are considered in combination.
- a. Alternative 1:
- no detention; channel improvements only
- b. Alternative 2:
- detention at the Hawes Road and Southern Pacific Railroad (SPRR) detention basin sites
- c. Alternative 3:
- detention at the Hawes Road, SPRR, and either the Ellsworth or Crismon Road detention basin sites.

In presenting concept plans of the recommended alternative for Queen Creek, the plan set should include areas where channel improvements are not needed (e.g., upstream of Hawes Road, including the reach in Pinal County). In these areas, the channel should be shown as indicated by the current topography but hydraulic criteria and consistent multi-use facilities should be shown.

Sanokai Wash

Charlie identified portions of Sanokai Wash where channel improvements are considered necessary with or without detention due to the need to incise the channel or the lack of a defined channel. Also identified were areas that are of concern because of limited land available (for channel improvements) and other concerns such as the landfill. Via del Jardin area was identified as an area where an "engineered" channel might be necessary due to land constraints posed by adjacent developed properties. Finally areas where it may be possible to keep in an undisturbed condition with sufficient upstream detention were also identified.

Charlie then identified and discussed the impact of evaluated detention basin sites and recommended sites for inclusion in possible alternatives (Chandler Heights/Sossaman, East/Main confluence area, and Signal Butte).

Based on the above, the following three alternatives were agreed upon by the meeting attendees to be included in the Level II analysis of Sanokai Wash. All analyses will include:

- 12:1 side slopes, trapezoidal channel, except where land is unavailable for this side slope, where steeper side slopes will be allowed, and
- an approximate cost evaluation of detention basin capacity vs. channel improvements to estimate a "near-minimum" combined cost where these facilities are considered in combination.

a. Alternative 1:

- no detention; channel improvements only

b. Alternative 2:

- detention on the Main Branch at the Chandler Heights-Sossaman Roads site and the Main/East Branch confluence area (i.e., approximately at the junction at Riggs and Hawes Roads).

c. Alternative 3:

- detention on the Main Branch at the Chandler Heights-Sossaman Roads site, the Main/East Branch confluence area (i.e., approximately at the junction of Riggs and Hawes Roads), and on the East Branch at the Signal Butte Road site (where inflow concentration facilities will be required).

Tim said that the Main Branch just upstream of its junction with the East Branch should be shown along a northerly alignment, with a slight curvature to the west just prior to the junction, as opposed to the current alignment, which cuts diagonally in a northwest direction through a trailer park. Fred indicated that this alignment may result in substantial erosion control facilities at the junction; however, this would be evaluated later in the Level II analysis.

Multi-Use Considerations

In determining available volume for proposed detention basins, Huitt-Zollars will roughly estimate the storage volume lost by providing multi-use facilities in estimates for basin sizes and costs.

Dick indicated the preference for showing basins at Ellsworth and Crismon on the south side of the wash because of planned developments and also for better street access.

Summary

During and after the discussion of alternatives, several related discussions were held, as indicated below.

Pedro: Did Huitt-Zollars' hydrologic analysis of the EMF include the potential impact of the San Tan Freeway ?

Dave: No, ADOT has not yet developed drainage plans for the freeway.

Charlie: Huitt-Zollars considered the location of the San Tan Freeway in siting potential detention basins.

Dave: Huitt-Zollars also considered the extension of the Williams Gateway Airport runway in siting detention basins.

Pedro: Did Huitt-Zollars factor in sedimentation in its EMF analysis ?

Dennis R.: No, this was not part of the scope for the EMF analysis. Sedimentation will be considered as part of the Queen Creek and Sanokai Wash analyses.

Charlie: Charlie showed a map depicting top widths along Queen Creek and Sanokai Wash based on a normal depth analysis and 4:1 and 12:1 side-sloped trapezoidal channels for the un-detained condition. This was provided to give a general indication of top widths that might be expected, realizing these are "ideal conditions" and that a more refined HEC-RAS analysis will likely result in larger top widths than developed using a normal depth analysis. Generally, the exhibit shows Queen Creek top widths varying from 130'-150' for 4:1 and 230'-250' for 12:1. For Sanokai Wash, top widths varied from 100'-230' for 4:1 and 160'-350' for 12:1.

Fred: The evaluation of multi-use facilities along the EMF was not included in the scope of Huitt-Zollars current project.

Dennis R.: Sedimentation and scour analyses will be limited in the Level II analysis to include only instances where such considerations would impact selection of the preferred alternative. It is anticipated that sedimentation and scour considerations will be equivalent for the Level II alternatives, such that the selection of the preferred

alternatives for Queen Creek and Sanokai Wash will not be affected. The Level III analysis will include the necessary sedimentation and scour/lateral migration analyses to locate and provide conceptual designs of required facilities (e.g., drop structures and channel bank stabilization).

Fred: A follow-up meeting will be held with the District and the Town of Queen Creek approximately one week prior to the next neighborhood open house, which is scheduled for February 3 in Queen Creek.

The meeting ended at approximately noon.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Fred K. Duren, Jr., P.E., P.G.
Project Manager

1/7/00

Date Prepared

attachment

c: Attendees

Gary Burroughs

Mark Seits

Rick Amalfi, ACT

Enamul Hoque, H&A

Barbara Macnider, ACS

John Cahoon, Kenney

SIGN-IN SHEET

INITIAL LEVEL II ALTERNATIVES ANALYSIS MEETING
 PROGRESS MEETING NO. 15
 4-Jan-00

QUEEN CREEK/SANOKAI WASH HMP
 AND
 EAST MARICOPA FLOODWAY
 CAPACITY MITIGATION STUDY

L dbhe@mail.maricopa.gov

Name	Affiliation	Title	Phone
Fred Ouren	H-Z	Proj. mgr.	(602) 952-9123
PEDRO CALZA	Collins-PINA	ENGINEER	(602) 264-7505
✓ Theresa Hoff	FCD MC	ENV. Planner	602-506-8127
● Dennis Holcomb	FCD MC	landscape planner	602-506-4074
✓ TIM PHILLIPS	FCD	PM	602-506-4718
DICK SCHANER	Queen Creek	ENGR.	480-987-3890
DENNIS RICHARDS	WEST Consultants	VICE PRESIDENT	480-345-2155
Glenn Sheaver	HZL	Project Mgr	602-952-9123-
✓ Royo Winfrey	Collins/PINA	LANDSCAPE ARCH	602-264-7505
✓ DAVE DEGERNESS	FCD	HYDROLOGIST	602-506-4730
Charles Joy	Heath-Zollars	ENGR.	602-952-9123

AGENDA

INITIAL LEVEL II ANALYSIS MEETING PROGRESS MEETING NO. 14 JANUARY 4, 2000

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Meeting Objective: Present Initial Findings and Recommendations for Level II Analysis
2. Project Overview
 - a. Level I Analysis
 - b. Future Level II Tasks
 - Neighborhood and Town Council Meetings
 - Final Level II Analysis Meeting
 - Alternatives Selections
 - c. Level III Tasks
3. Meeting Format
4. Outlet Conditions
 - a. Overview
 - b. Findings
 - c. Recommendation
5. Queen Creek
 - a. Overview
 - b. EMF to Power Ranch
 - c. Power Ranch through Sossaman Estates
 - d. Sossaman to CAP
 - e. Detention Basins
 - f. Issues to Resolve
 - g. Findings
 - h. Recommendations

6. Sanokai Wash

- a. Overview
- b. Main Branch
- c. East Branch
- d. Detention Basins
- e. Issues to Resolve
- f. Findings
- g. Recommendations

7. Multi-Use Considerations

8. Summary

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 13 – EMF Submittal Review Meeting
Date: August 24, 1999
Time: 1:30 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
David Degerness 506-4730
Huitt-Zollars
Fred Duren 952-9123
Charlie Joy 952-9123

A meeting agenda was not prepared for this meeting. Action items are italicized in these minutes, with the responsible party shown in bold italics. Attached is a copy of the letter from the District which contains District comments on the EMF submittal.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below.

Meeting Objective

The objective of the meeting was to discuss comments received from the District on August 19, 1999, related to Huitt-Zollars' August 2, 1999, submittal of EMF concept drawings and narrative and to cover several housekeeping items. Each of the District's comments is listed below along with discussions pertaining to the comments. Huitt-Zollars will submit revised concept drawings and narrative in accordance with the discussions presented below.

EMF Review Comment Discussions – General Comments

(Refer to the attached letter for presentation of the District comments.)

1. *Huitt-Zollars will provide a table of contents.*

2. *Huitt-Zollars will make revisions in the hydrologic schematic for the East Mesa ADMP HEC-1 model, which will be supplied by the District in an AutoCAD format. These changes will relate only to the modifications made in this model by Huitt-Zollars in revising the EMF hydrologic models.*

3. *Huitt-Zollars will provide a sketch of the preferred alternative (see Technical Comment 4 below). A brief table will be provided to depict the essential characteristics of the preferred alternative.*

4. *Huitt-Zollars will provide a brief table to summarize the alternatives evaluated in the EMF analysis.*

5. *Huitt-Zollars will provide a table listing the SCS freeboard criteria and assumptions used in performing the EMF analysis.*

6. *A sketch of the EMF outfall to the Gila River will not be provided since it is out of the study area. Huitt-Zollars will provide a statement in the narrative indicating that Reaches 1 and 2 of the EMF will not be adversely affected as a result of the improvements recommended for Reaches 3 through 6.*

7. *Huitt-Zollars will provide an expanded description of the evaluation process that was conducted to arrive at Alternative 1C as the preferred alternative. This description will address the process of using evaluation criteria to provide an initial evaluation of alternatives, the selection of Alternatives 1C and 3 as the two most preferred alternatives, and the rationale used in selecting 1C over 3.*

8. *Huitt-Zollars will provide to the District the EMF hydrologic models for the baseline condition, which are the models that were provided by the District and subsequently updated by Huitt-Zollars. The hydrologic (i.e., routing) model for the EMF mainstem with the selected improvements has already been submitted. The baseline EMF mainstem hydrologic model, which is that without the selected improvements, will also be provided on a separate disk.*

9. *Huitt-Zollars will add to the concept drawings a note to define the parcels owned by the District that fall within the footprint of the selected basins.*

10. *Huitt-Zollars will use the size of the Chandler Heights Detention Basin as an upper limit in assessing the impact on the basin due to the subsequent analysis of Queen Creek and Sanokai Wash. Any change in the size of the basin resulting from the Queen Creek and Sanokai Wash analysis will be included in the Queen Creek/Sanokai Wash recommendation. Should a change in the selected size of the basin result from the Queen Creek and Sanokai Wash analysis, the EMF analysis will not be redone by Huitt-Zollars to include any such change.*

11. *Huitt-Zollars will change the terms "lower flows" to "different watershed conditions."*

12. Huitt-Zollars did not review the Queen Creek ADMP to the extent necessary to verify that all recommendations in that reports are "optimum." Such work is not in the scope of Huitt-Zollars contract with the District. *Huitt-Zollars will add a comment in the EMF narrative to indicate that the selected EMF alternatives are compatible with the recommendations in the Queen Creek ADMP and that the selected EMF alternatives provide an appropriate solution to the EMF capacity problem.*

13. There is an allowance for contingencies in the cost tables of the selected EMF improvements. The presentation of contingencies and engineering will be left as currently shown.

14. *Huitt-Zollars will add a title to the graphic on District-owned lands in the April 15, 1999, meeting minutes.*

15. *Huitt-Zollars will add to the title of Table 7 in the narrative a designation that the table applies to the channel improvements.*

16. This comment is answered under item 14, above,

EMF Review Comment Discussions – Technical Comments

T1. There will be no change in the EMF narrative related to this comment. *Huitt-Zollars will include with the submittal for the Queen Creek and Sanokai Wash recommended improvements a print-out of the sub-basin report, including soils and land use for future and existing conditions.* It was explained by Huitt-Zollars that the information obtained from the District (i.e., mapped sub-basins and sub-basin areas from prior studies) and tabular sub-basin land uses was not amenable to constructing a graphic which depicted sub-basin boundaries superimposed over land use information.

T2. This comment is answered under item T1, above.

T3. It was explained by Huitt-Zollars that changing the watershed models to account for this instance did not seem necessary due to the short distance that would be affected within the models. Thus, the watershed models will be left as they are.

T4. It was mentioned that the bottoms of several of the selected basins are below the corresponding EMF invert elevations at the basin outlets. Thus, these basins will be unable to completely drain by gravity to the EMF. It was concluded that *Huitt-Zollars will develop a reasonable estimate of infiltration rate for the basins (e.g., on the order of 2 feet per day) based on experience at other projects involving infiltration. This value will be applied to each of the basins to determine if they can expected to be empty after a 36-hour period upon cessation of inflow to the basin.* Based on the discussions during the meeting, it was preliminarily concluded that only the Chandler Heights detention basin may be unable to drain by infiltration within the 36-hour period. *Huitt-Zollars will add EMF invert elevations to the concept drawings and will label the information*

provided on the tables on the concept drawings. Due to the apparent significant depth of excavation at the Guadalupe detention basin vs. the storage volume required at that site in Alternative 1C, it was concluded that the preferred alternative may need to be changed from Alternative 1C to Alternative 3. Alternative 1C includes the Guadalupe basin, while Alternative 3 excludes this basin and, instead, incorporates the storage volume of the Guadalupe basin into the Knox detention basin. In the evaluation process leading to selection of Alternative 1C as preferred, it was recognized that later studies (e.g., during pre-design) could indicate a preference for Alternative 3 over Alternative 1C. *Huitt-Zollars will perform a revised cost analysis to compare the cost of individual detention basins at Guadalupe and Knox vs. an expanded Knox basin that would eliminate the need for the Guadalupe basin, as was incorporated in Alternative 3. If the District finds that it is preferred to select Alternative 3 as the recommended alternative, an additional refinement analysis will be required.*

T5. Huitt-Zollars will review the comments provided in the models submitted to the District.

T6. Huitt-Zollars will check its analysis of the Chandler Heights detention basin vs. the analysis prepared by Dave.

T7. Huitt-Zollars will remove the text scale reference and leave the graphic scale. The text scale is incorrect on the concept drawings because the drawings have been reduced to approximately one-half size.

T8. Huitt-Zollars will review this apparent omission and make the appropriate revision.

T9. Huitt-Zollars used its best judgement in developing a unit cost for excavation at the detention basins; however, it is acceptable to a change in the unit value based on direction from the District. Huitt-Zollars referred to District cost information in developing the excavation unit cost. District information suggested a value of \$ 3.00 per cubic yard (cu yd). Huitt-Zollars reduced the value to \$ 2.50 based on the significant volume of material to be excavated, which was expected to slightly reduce the value found in District information. *The District will review in-house information regarding unit costs for excavation and provide Huitt-Zollars with the preferred unit cost value.*

T10. Huitt-Zollars believes the unit cost of \$ 1,500 per acre for seeding is reasonable. Huitt-Zollars does not have responsibility under the scope of work for any recreational or landscaping analyses for the EMF; thus, it does not have an appropriate value to use for this cost element. However, Huitt-Zollars is amenable to adding a cost for recreational and landscaping elements at the basins *upon receipt of a unit cost for these elements from the District.*

T11. Huitt-Zollars has checked with Dick Schaner, Town Engineer for Queen Creek, and Anna Leyva, City of Mesa Civil Engineer, to obtain unit cost estimates for land within their jurisdictions that have been designated for detention basins. The District agreed that this was adequate verification of the unit costs for land used in the narrative.

Housekeeping Items

Huitt-Zollars requested that the District determine if it had a need for the EMF mylars specified in the scope (i.e., Subtask 3.1.2.4). Since Huitt-Zollars did not need these mylars in submittal of the EMF concept drawings, Huitt-Zollars wondered if the District would still require them to be submitted. *Dave will check internally within the District and inform Huitt-Zollars whether these mylars will be required.*

Huitt-Zollars asked if the District wished to consider locating a detention basin in Pinal County, along Queen Creek, if the primary benefit to flow reduction would be confined to the reach of Queen Creek within Pinal County. The District stated that it does not want to locate a detention basin in Pinal County unless it provided significant flow reduction to the reach of Queen Creek within Maricopa County.

The meeting ended at approximately 4:15 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Fred K. Duren, Jr., P.E., P.G.
Project Manager

8/26/99

Date Prepared

attachment

c: Attendees

Gary Burroughs
Jon Girand
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 12 – Level II Analysis
Date: August 18, 1999
Time: 2:00 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
David Degerness 506-4730
Dennis Holcomb 506-4074
Town of Queen Creek
Dick Schaner 480 987-9887
Huitt-Zollars
Fred Duren 952-9123
Glenn Shearer 952-9123
Charlie Joy 952-9123
Aquatic Consulting & Testing
Rick Amalfi 480 921-8044

The meeting agenda was transmitted to the District on August 13. Additional copies of the attached agenda were distributed at the meeting. Action items are shown at the end of the minutes.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below.

Meeting Objective

The objective of the meeting was to select criteria for performing the Level II analyses of the three major Queen Creek/Sanokai Wash alternative improvements and to cover several housekeeping items.

Level II Analysis

Fred recapped the project progress to date. The EMF analysis has been essentially completed and concept drawings and narrative submitted to the District. The screening

of 24 Queen Creek and Sanokai Wash alternatives was performed in the Level I analysis, and three major Queen Creek/Sanokai Wash alternatives were selected for further evaluation in the Level II analysis. The three major alternatives involve maintaining the existing locations of the two watercourses and excluding diversions between them. The three alternatives vary in respect to the outlet conditions. Alternative 1 involves maintaining the existing outlet condition (i.e., existing location of the Queen Creek confluence with the EMF and the existing downstream location of the EMF drop structure). Alternative 2 involves moving the EMF drop structure upstream of the existing Queen Creek confluence, and Alternative 3 involves moving the Queen Creek confluence to a point just downstream of Queen Creek Road and moving the drop structure to just upstream of the re-located Queen Creek confluence.

a. Hydrology

Future conditions selected. It was confirmed that the District selected the future-conditions hydrology as the basis for the Level II analysis of Queen Creek and Sanokai Wash.

Vs. existing channel capacities. Fred indicated that some reaches along Queen Creek and/or Sanokai Wash may be found to be adequate for future-conditions flows as they now exist. He asked for guidance as to whether channel and recreation/landscaping improvements should be considered for reaches where adequate channel capacity exists. It was decided that Sanokai Wash should be left in as natural a state as possible but that channel improvements, including limited removal of existing vegetation, and the inclusion of recreational/landscaping modifications should be considered. Tim said that consistency in recreational/landscaping appearance along Queen Creek reaches should be maintained and, similarly, consistency along Sanokai Wash reaches should also be maintained, even for those reaches where adequate channel capacity may already exist. (See also the discussion on *Channel improvement alternatives* below.)

Detention basin considerations. Charlie provided an overview of the detention basin analysis. He discussed the analysis of the impact on hydrology for four potential detention basin sites along Queen Creek and for four basin sites along Sanokai Wash. He evaluated both in-line and off-line basins at each of these sites. Charlie indicated that several of the basins produced significant reductions in peak flows. Dennis asked that the selection of detention basins take into consideration the potential for coordination with existing and proposed recreational elements in the area. It was agreed that Huitt-Zollars would analyze the detention basins sites further and make a recommendation to the District as to which are found to be most favorable from a hydraulic and recreational usage perspective. Fred indicated that it is important to get District concurrence on the selection of detention basin sites and sizes as soon as possible to enable the project to proceed with the Level II analyses without delay.

Dick asked if there is a significant benefit to a detention basin at the Stagecoach Stop historical site. This could be a benefit to the Town in acquiring land at the site to retain its historical significance. Charlie responded that a basin at this site could be effective.

b. Hydraulics

Scope requirements/Existing models. Fred referred to the scope requirements, which directed Huitt-Zollars to take the existing hydraulic models for the Queen Creek and Sanokai Wash watercourses provided by the District and apply future-conditions flows to each. He indicated that the HEC-RAS model provided by the District for Sanokai Wash was adequate for this purpose; however, the provided Queen Creek HEC-2 model had problems within it such that it did not seem to be adequate for evaluating future-conditions flows nor for Level II analysis for that watercourse.

Dave explained the process that he had followed in combining four separate HEC-2 models into one combined model along Queen Creek from EMF confluence to the railroad tracks. He said there were discrepancies between two of the models when they were combined that he had not yet been able to resolve. Additionally, one of the models had questionable cross section alignments. Dave indicated that it might be more efficient to start from scratch and develop a new HEC-2 model instead of attempting to resolve the discrepancies with the combined HEC-2 models.

Tim asked Huitt-Zollars to review the advisability of developing a new hydraulic model for Queen Creek in lieu of using the existing combined model. He said that Huitt-Zollars could submit a recommendation along with a proposal for developing a new hydraulic model for this reach of Queen Creek, including fee and schedule impacts. Fred said Huitt-Zollars would review this issue and provide the District with a recommendation within a few days.

Sanokai Wash alignment/re-alignment considerations. Charlie reviewed the potential re-alignments of the Main and East Branches of Sanokai Wash. He concluded that re-alignment of the Main Branch (i.e., south of Riggs Road) such that it intersected the East Branch at a ninety-degree angle would present hydraulic and sedimentation problems. He indicated that a sedimentation basin would be required in this instance, which would require additional land acquisition and impose a maintenance issue with sediment removal. It was concluded that Huitt-Zollars would use its judgment in evaluating and possibly selecting a re-alignment of the Main Branch of Sanokai Wash.

Regarding the potential re-alignment of the East Branch of Sanokai Wash, Charlie indicated that a re-alignment was not recommended. Dick asked whether the location of the East Branch along Riggs Road was along the north or south side of the road. Dave said that it is along the north of the road. Dick indicated that improvements were planned for Riggs Road and that this could result in locating the East Branch along the south side of the road.

Incorporation of new developments. The HEC-2 Queen Creek model that Dave was working on included the Power Ranch modifications. Fred said that Huitt-Zollars had just today received the HEC-2 model for Sossaman Estates from Coe & Van Loo.

Charlie provided a copy of the Sossaman Estates HEC-2 computer file for Dave's possible inclusion in the combined Queen Creek hydraulic model.

Channel improvement alternatives. The scope of work states that the Level II analysis of the Queen Creek and Sanokai Wash watercourses is to include an evaluation of three major improvement alternatives and various channel treatments, "ranging from natural, undisturbed appearance to a fully developed type." Fred said that Huitt-Zollars suggests that the requirement to evaluate various channel treatments be handled by evaluating three different channel cross section geometries. These geometries would include trapezoidal sections having side slopes of 4:1, 8:1, and 12:1. The 4:1 side-slope channel would be the minimum-width, minimum-developed alternative. The 8:1 side-slope channel would provide a more natural appearance and would include moderate development of recreational/landscaping features. The 12:1 side-slope channel would be the widest channel and include the greatest level of recreational/landscaping development. Additionally, the 12:1 side-slope channel would meet the requirements for ADA accessibility.

Tim generally agreed with this concept, but he indicated that there may be reaches along Queen Creek and Sanokai Wash where inadequate area exists for channel widths that may be determined for the 8:1 and 12:1 side-slope channels. This may be true along Sanokai Wash at the Via de Jardin. Tim said that the intent of the District is to provide the necessary conveyance as the primary objective. As a result, it may be necessary to consider concrete-lined channels in areas where the more natural-appearing earthen channels are too wide for a particular reach.

Fred said that the three major alternatives on Queen Creek will have identical hydraulics upstream of the farthest downstream hydraulic control on Queen Creek, which would appear to be the Higley Road bridge. Additionally, the three major alternatives on Sanokai Wash will also have identical hydraulics after a short distance upstream from its confluence with Queen Creek. Fred, thus, suggested that the evaluation of various channel treatments be performed by analyzing one of the three channel geometries for each of the three major alternatives upstream of the points where the hydraulics will be identical for both Queen Creek and Sanokai Wash.

Tim suggested that Huitt-Zollars perform an initial hydraulic and sedimentation evaluation of Queen Creek and Sanokai Wash in their downstream reaches where there will be a difference in the hydraulics for the three major alternatives. This evaluation may allow for the reduction of one or more of the three major alternatives in these reaches such that one of the three major alternatives is found to be clearly superior to the other two, or such that one of the major alternatives could be eliminated thereby reducing the analysis to two major alternatives in these reaches.

Tim suggested that Huitt-Zollars prepare an initial hydraulics analysis for Queen Creek and Sanokai Wash utilizing the 4:1 side-slope trapezoidal channel to determine the base condition for conveyance. Fred agreed that this would be done and the results submitted to the District before proceeding with final analysis.

Tim suggested that the recommended plan for development along Queen Creek and Sanokai Wash be termed "development guidelines" rather than a "master plan." This differentiation in terminology could make acquisition of 404 permits more efficient.

Dennis requested that the recommended channels not have straight-line elements but that a curved, irregular section and plan appearance be utilized. He also suggested that a buffer strip be provided along the channel margins and that excavated material obtained from construction of the channel improvements be used to provide a mound-effect longitudinally along the channel within the buffer zone. Fred indicated that the intent was to produce channel sections with irregular sections but that it would be necessary to utilize straight-line elements in the hydraulic model.

Dick mentioned that the principal desire of the Town for recreational/landscaping improvements for Sanokai Wash would be for horse, hiking, and biking trails. The Sanokai Wash could provide access for riders, hikers, and bikers from Queen Creek to the San Tan Regional Park located in northern Pinal County. He also said that the Town envisioned a "brown-belt" appearance for Sanokai Wash with passive recreational features. Dick said the Town envisioned a more active recreational element for Queen Creek, possibly including ramadas.

Dick said that the Town will be responsible for maintenance of the improvements installed on Queen Creek and Sanokai Wash. It was indicated that maintenance of the watercourses would include trimming of vegetation as necessary to maintain the needed hydraulic capacity.

Glenn asked if the Town had an ordinance regarding preservation of habitat. Dick responded in the negative.

Tim requested that drop structures included in the recommended plan be made as natural looking as possible. He has seen some drop structures that had a very natural look.

Dick said that the Town owns land along Sanokai Wash from Sossaman Road to the Via de Jardin development.

c. Mapping

Dave said that the scanned topography from mylars for the areas where District-provided topography was missing will be available from Cooper Aerial by next Friday (August 27). Charlie indicated it was important to get this scanned material to Kenney Aerial as soon as possible.

Housekeeping Items

The District will provide comments on Huitt-Zollars responses to District review comments on the Narrative Summary, and Huitt-Zollars will then finalize that submittal.

Huitt-Zollars will wait until receiving District payment for the latest Huitt-Zollars invoice before determining if the retention has been reduced from ten to five percent and the five-percent refund has been issued.

ACTION ITEMS

1. Huitt-Zollars will review the detention basins sites further and make a recommendation to the District as to which are found to be most favorable from a hydraulic and recreational usage perspective.
2. Huitt-Zollars will review the advisability of developing a new hydraulic model along Queen Creek and provide the District with a recommendation within a few days.
3. Huitt-Zollars will perform an initial hydraulic and sedimentation evaluation of Queen Creek and Sanokai Wash in their downstream reaches where there will be a difference in the hydraulics for the three major alternatives. Huitt-Zollars will determine if one or more of the major alternatives can be found to be clearly superior, thus, eliminating one or more the major alternatives.
4. Huitt-Zollars will prepare an initial hydraulics analysis for Queen Creek and Sanokai Wash utilizing the 4:1 side-slope trapezoidal channel to determine the base condition for conveyance. The results will be submitted to the District before proceeding with final analysis of the 8:1 and 12:1 side-slope channel sections.
5. The scanned topography from mylars for the areas where District-provided topography was missing will be available from Cooper Aerial by next Friday (August 27). The District will provide this information to Huitt-Zollars as soon as possible.
6. The District will provide comments on Huitt-Zollars responses to District review comments on the Narrative Summary, and Huitt-Zollars will then finalize that submittal.
7. Huitt-Zollars will wait until receiving District payment for the latest Huitt-Zollars invoice before determining if the retention has been reduced from ten to five percent and the five-percent refund has been issued.

The meeting ended at approximately 5:10 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

8/20/99
Date Prepared

attachment

c: Attendees

Gary Burroughs

Jon Girand

Mark Seits

Enamul Hoque, H&A

Dennis Richards, WEST

Barbara Macnider, ACS

John Cahoon, Kenney

AGENDA

LEVEL II ANALYSIS MEETING PROGRESS MEETING NO. 12 AUGUST 17, 1999

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Meeting Objective: Select Criteria for Level II Analysis; Housekeeping Items
2. Meeting Format
 - a. Level II Analysis
 - b. Housekeeping
3. Level II Analysis
 - a. Hydrology
 - future development conditions selected
 - vs. existing channel capacities
 - detention basin considerations
 - b. Hydraulics
 - requirements per scope (3.2)
 - existing models
 - Sanokai Wash (HEC-RAS)
 - Queen Creek (HEC-2)
 - Sanokai Wash alignment/re-alignment considerations
 - incorporation of new developments
 - selection
 - consistency in water surface elevations
 - channel improvement alternatives
 - selection (geometry and treatment)
 - methodology of analysis
 - c. Mapping
 - scanned topography status
 - plans
 - existing GIS topography vs. new topography
 - plan scale

4. Housekeeping Items

- a. EMF Mylars
- b. Narrative Summary Comments
- c. Retention Reduction
- d. Schedule Discussion

5. Open

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 11 – Coordination and EMF Summary
Date: June 21, 1999
Time: 1:30 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
David Degerness 506-4730
Huitt-Zollars
Fred Duren 952-9123
Charlie Joy 952-9123

An agenda was not prepared for this meeting. A handout distributed at the meeting is attached to these minutes. Action items are shown at the end of the minutes.

This meeting was requested by Tim to obtain a status report on the project.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below.

EMF Summary

It was re-iterated that Alternative 1C was previously selected as the preferred EMF capacity mitigation alternative.

There was some confusion regarding the consistency of Huitt-Zollars' development of EMF channel capacity flow rates versus the freeboard capacity flow rates developed for the final EMF capacity mitigation alternatives. For some reaches within the alternatives, flows calculated by Huitt-Zollars in the EMF channel were greater than those shown as channel capacities. Charlie explained that the channel capacity values were calculated initially with the HEC-RAS model from the furthest downstream project study point on the EMF (i.e., at the beginning of Reach 3) in an upstream direction without consideration for diversion of EMF flow into off-line detention basins. During development of flows for the alternatives, it was found that reductions in backwater elevations due to diversion of EMF flow into the alternative off-line detention basins

allowed for greater flows in some upstream reaches than those determined initially as channel capacities. This occurred due to the gentle slope of the EMF, which causes backwater elevations to have a significant impact on freeboard capacities of upstream reaches. In retrospect, due to the significant backwater effect, the initial development of channel capacity values was not meaningful to evaluation of the alternatives. Fred indicated that the HEC-RAS model runs performed by Charlie showed that the SCS freeboard requirements were met for all of the alternatives.

Charlie said that he is in the process of making the final adjustments in the EMF flows necessitated by final HEC-1 model revisions and by the inclusion of dual spillways for the Rittenhouse and Chandler Heights detention basins. The dual spillways for these two basins will allow flow to enter the basins from both the EMF and the adjacent Guadalupe and Powerline flood control channels. Charlie has found that there will be some reduction in overall detention storage due to refinements in the models.

In order to prepare preliminary dimensions for the detention basin inlet spillways for the Rittenhouse and Chandler Heights detention basins, Huitt-Zollars will need construction dimension information for the Guadalupe and Powerline flood control channels, respectively. Dave will provide as-built information for these channels.

Fred discussed Huitt-Zollars' proposal regarding the content of the concept drawings showing the recommended EMF facilities. It was agreed by Tim that the detention basin drawings would contain a plan view of the basin footprint superimposed on aerial photography provided by the District, along with a basin cross section and profile. Dimensions would be provided for the spillways and other significant features (e.g., side slopes, access road widths); however, design-level details would not be provided.

Huitt-Zollars will prepare a preliminary construction cost estimate for the selected alternative. Fred asked if the District had unit cost information that could be used for development of the cost estimates. Dave replied that the District has a Bid Tab book available and that Charlie could visit the District to obtain the needed unit costs from the book. Additionally, Fred asked for guidance on land costs. Tim suggested contacting the respective jurisdictional entities to obtain these costs (e.g., Anna Leyva at the City of Mesa for land within the City).

Tim requested that Charlie and Dave meet to go over the model results for the EMF alternatives analysis. Charlie will visit the District on Wednesday morning to discuss the model results and to obtain information on the Guadalupe and Powerline channels and on unit costs.

Fred stated that Huitt-Zollars will submit the EMF final alternative information, consisting of concept drawings, cost estimate, and summary discussion by July 21.

Additional Topographic Information

The District is having topographic contours scanned from mylars for those areas along Queen Creek and Sanokai Wash where topography is missing from the District's GIS files. Dave said that Marta Dent would not be able to start the scanning project until July 1 and that it would take about 5 weeks to complete. Fred mentioned that this could result in a project delay for the Queen Creek and Sanokai Wash analysis since it would take Kenney Aerial additional time to insert the scanned information into the topographic files it had obtained from the District. Tim said he would talk to Marta to see if the District's GIS Department could not start the work earlier.

Narrative Summary

Fred said that Huitt-Zollars intends to submit the narrative summary containing an overview of the alternatives with preliminary cross sections and profiles on Thursday, June 24. The narrative summary will contain profiles and cross sections based on a non-analytical approach.

Future Hydrology for Queen Creek and Sanokai Wash

Charlie said that he would have the future hydrology for Queen Creek and Sanokai Wash completed in about three weeks. Fred said that, in accordance with prior discussions with the District, the District would then make the decision as to which development condition (i.e., current or future) will be the basis for the hydrology for the Level II analysis of Queen Creek and Sanokai Wash.

HEC-2 Model Availability

Dave said that the District has just completed combining the HEC-2 models along Queen Creek, from the railroad tracks to the sedimentation basin into one model. Huitt-Zollars will obtain this model from the District for use in the Level II alternatives analysis.

Level II Alternatives Analysis

Tim asked if Huitt-Zollars was going to evaluate multiple channel configurations during the Level II alternatives analysis for Queen Creek and Sanokai Wash. Fred indicated that the intention was to evaluate each of the three major alternatives, as selected in the Level I analysis, with a single channel option, which was in accordance with his interpretation of the scope. He said that, if multiple channel configurations were required for each of the three major alternatives, the number of alternatives would be increased significantly over the three specified in the scope.

The possibility of using a different channel development option for each of the three major alternatives was discussed. It was agreed that the selection of the channel options

for the Level II analysis would be discussed in more detail at a later date before starting the Level II alternatives evaluation.

The impact of the Power Ranch development on channel options was discussed. It was agreed that, contrary to prior discussions on the subject, the improvements along Queen Creek at Power Ranch would be considered a constraint in alternatives development.

Fred said that Dick Schaner informed him that the City of Mesa was considering a project that would involve discharge of reclaimed effluent along the reach of Queen Creek from near Rittenhouse Road to the EMF. Tim will follow-up on this topic with Mesa and other jurisdictions (e.g., Gilbert) to coordinate these plans by others with the work being done in this project on Queen Creek.

Location of Main Branch of Sanokai Wash

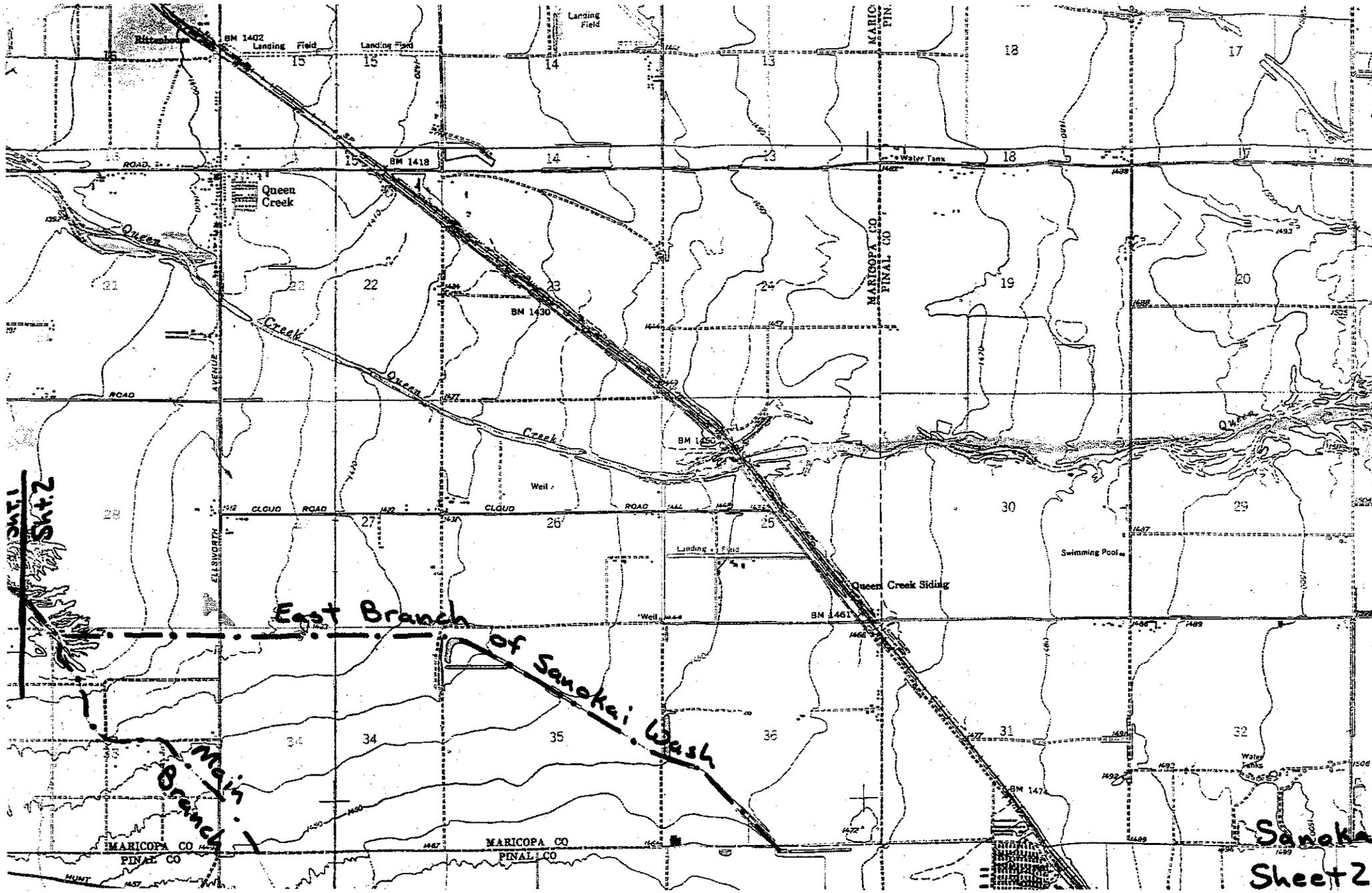
Fred asked the District to provide guidance as to the preferred alignment of the Main Branch of Sanokai Wash between Hunt Highway and Riggs Road. He provided a handout showing the alignment as originally agreed to by the District earlier in the project (attached). Based on input from Dick Schaner, the existing channel of the Main Branch of Sanokai Wash in this area is poorly defined. However, field observation and review of maps and aerial photographs indicate that this channel alignment passes through a newly developing area of manufactured homes. Dick suggested that it would be preferable to re-align the Main Branch in this area to go north from the mid-east/west line of section 33 to join the East Branch near the northerly boundary of section 33. Tim said he would review the matter and get back to Huitt-Zollars with a decision.

Schedule

The status of the project relative to the schedule submitted at the beginning of the project was discussed. It was observed that certain project tasks are ahead of schedule (e.g., the EMF concept drawings) while others are behind (e.g., the Level II alternatives analysis). Fred will revise the project schedule to reflect current project status.

ACTION ITEMS

1. The District will provide as-built information on the Guadalupe and Powerline flood control channels.
2. The District will provide unit cost information for use in preparing a preliminary construction cost estimate for the selected EMF alternative.
3. Huitt-Zollars will contact the respective jurisdictional entities to obtain land costs for the recommended EMF detention basins.
4. Charlie will meet with Dave to explain details of the model runs made during the EMF evaluation.



Sht. 2

Main Branch

East Branch of Sanakai Wash

Sanakai Sheet 2

5. Huitt-Zollars will submit the final EMF products by July 21.
6. Tim will check with the District's GIS Department to see if it can start the mylar scanning for topography before July 1.
7. Huitt-Zollars will submit the narrative summary with profiles and cross sections on Thursday, June 24.
8. The District will provide the combined HEC-2 Queen Creek model.
9. The District and Huitt-Zollars will meet to discuss the channel configuration options to be studied during the Level II analysis for Queen Creek and Sanokai Wash.
10. Tim will coordinate the water and wastewater plans of others (e.g., Mesa's potential Queen Creek recharge project) to allow consideration in the current study.
11. The District will provide a decision on the alignment of the Main Branch of Sanokai Wash between Hunt Highway and Riggs Road.
12. Fred will prepare a revised schedule to reflect current project status.

The meeting ended at approximately 3:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

6/23/99
Date Prepared

attachment

c: Attendees
Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Anna Leyva, City of Mesa
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (200,08)
Subject: Progress Meeting No. 10 – Final EMF Alternatives Resolution
Meeting
Date: May 25, 1999
Time: 9:30 a. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
David Degerness 506-4730
Valerie Swick 506-4872
City of Mesa
Anna Leyva 644-4622
Huitt-Zollars
Fred Duren 952-9123
Charlie Joy 952-9123

The meeting agenda was transmitted to the District on May 21. Attachments to the agenda were distributed at the meeting along with additional copies of the agenda, both of which are attached to these minutes. Action items are shown at the end of the minutes.

This is the last of two meetings regarding selection of the EMF alternative. The reader is advised to refer to the minutes of the prior meeting, held on April 15, 1999, which provide additional information on the EMF selection process.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached in the meeting is presented below.

Meeting Objective and Format

Fred presented the meeting objective and the meeting format. The objective is to discuss the final alternatives developed by Huitt-Zollars for mitigating the EMF capacity deficiency and select the preferred alternative. The meeting format includes a discussion of background issues, followed by discussions of the evaluation parameters used in the EMF analysis, the findings, and the preliminary matrix evaluation. More detailed presentations of this material is contained in the minutes of the April 15 meeting.

Background

The objective of Huitt-Zollars' work on the study is to prepare conceptual plans of facilities that would mitigate the conveyance deficiency of the EMF to allow it to convey the 100-year, 24-hour flood based on the SCS freeboard criteria and the HNTB hydraulic model of the EMF. The District previously selected existing development conditions as the basis for developing the hydrology.

Evaluation Parameters

Several different hydrologic models were used in developing the flood flows for use in the EMF hydraulic model. Huitt-Zollars developed and analyzed more than 30 alternatives in the EMF selection process, covering off-line detention, watershed detention, and channel improvements.

Fred said that Huitt-Zollars did not include future CIP facilities in modeling EMF inflows because the CIP facilities generally produce insignificant reductions in EMF inflows and because the District has indicated a preference for a conservative EMF analysis by its selection of the existing land use condition for modeling. Fred indicated that the locations of the CIP-recommended detention facilities are far enough away from the EMF so that the peak runoff reductions produced by these facilities become insignificant by the time the flow reaches the EMF due to the addition of runoff from downstream sub-basins.

Findings

Charlie said that Huitt-Zollars had developed five final alternatives for EMF capacity mitigation. Each of the five alternatives would mitigate the EMF capacity deficiency based on using the SCS freeboard criteria. Graphics representing these alternatives were tacked to the wall and included as 8.5 x 11-inch attachments to the agenda (see attached graphics). The graphics discussed at the meeting are listed below along with summary related comments.

EMF Alternatives Exhibit

Charlie described the rationale for developing the potential and proposed detention basin sites depicted in this figure. Each of the sites was selected on the basis of either prior identification in the Queen Creek Area Drainage Master Study (ADMS) or on the basis of analysis of aerial photos showing land potentially available for siting detention basins. The availability of storage at each detention basin site was determined on the basis of the available acreage at each site assuming a maximum basin depth from 10 to 15 feet.

Charlie said that he first performed an hydraulic analysis of the EMF to determine the capacity of the floodway based on the SCS freeboard criteria. He indicated that the shallow slope of the floodway was a significant parameter in evaluating capacity because it emphasized backwater effects. Thus, the capacities of many reaches of the floodway

were limited by downstream water surface elevations. In these situations, the capacity was less than that that would be determined based on the individual normal-depth reach capacities without backwater considerations.

All of the alternatives developed by Huitt-Zollars will solve the EMF capacity deficiency problem for flows at existing conditions. Charlie also noted that the total detention basin storage volumes for each of the alternatives are essentially the same.

Certain elements are consistent in each of the alternatives. These elements include a channel modification between Broadway Road and Main Street in Mesa, a watershed basin along the Powerline Floodway, an off-line basin at Rittenhouse Road, and an off-line basin between Chandler Heights and Queen Creek Roads (denoted as the Chandler Heights basin herein).

Alternative 1C

Charlie described this alternative, which consists of off-line detention, watershed detention, and a channel modification. He noted that the reach identified for channel modification should be shown from Broadway Road to Main Street, not from Main to University Drive as depicted on the figure.

This alternative consists of the noted channel modification, a watershed basin along the Guadalupe Channel, an off-line basin at Knox Road, a watershed basin along the Powerline Floodway, and off-line detention basins at Rittenhouse Road and at Chandler Heights Road.

The channel modification between Broadway and Main is necessitated due to the adverse slope through the golf course located immediately downstream and due to the unavailability of detention basin sites in this area of Mesa. This channel modification is proposed to consist of levees added to the top of the existing channel, which is adequate for containing the 100-year flows but does not have the available freeboard. It was found that doubling the channel cross section through the Broadway to Main reach had minimal impact on increasing the channel capacity; thus, the levee solution was determined to be the most desirable based on a conceptual level of analysis.

Alternative 3

This alternative is similar to Alternative 1C except the Guadalupe basin has been eliminated and the Knox Road basin has been enlarged to offset the loss of storage at the Guadalupe site.

Alternative 3C

This alternative is similar to Alternative 3 except that a new off-line detention basin is located at Elliot Road and the Knox Road basin is appropriately reduced in storage capacity.

Alternative 6C

This alternative is similar to Alternative 3C except that the Knox basin is changed to watershed basin and increased in capacity, the Rittenhouse basin is increased in capacity, and the Chandler Heights basin is decreased in capacity.

Alternative 6E

This alternative maximizes the use of watershed detention basins. It is similar to Alternative 6C except that the Elliot basin is eliminated, the Guadalupe watershed basin is added, and watershed basins at Warner and Knox are added.

Summary Discussion

During and after the presentation of alternatives, several discussions were held. These are presented below.

Tim: The purpose of the study is to perform a conceptual analysis, looking at the worst case (i.e., flows under existing conditions). The District will take the results of the study, refine the sizes, and proceed with final design.

Anna: How long will it take the District to develop preliminary design ?

Tim: The District can move quickly to size the basins. Mike Lopez of the District will do the preliminary and final design to expedite EMF improvements.

Anna: North of the San Tan Freeway only off-line detention basins make sense due to the necessity of providing influent drainage improvements to direct flow to watershed basins. Since this area of Mesa is either well-developed or undergoing development, the feasibility of providing the necessary influent drainage improvements associated with watershed basins is poor.

Valerie: The watershed basin at Knox Road in Alternatives 6C and 6E is located on a distinct flow path and would not need significant drainage improvements to convey flow into this basin.

Fred: It should be noted that the sizes of these detention basins are large. Considering a land value in the range of \$ 30,000 per acre, the expense attributable to these basins is significant.

Tim: The District owns land at two of the sites (i.e., at the Guadalupe and Chandler Heights sites) and would not consider the value of land at these sites as part of the project cost.

Anna: Has Huitt-Zollars performed analyses to look at channel modifications in lieu of detention basins, considering the significant size of the basins ?

Charlie: It was found that backwater effects are the primary cause for not meeting freeboard requirements on the EMF. As a result, significant increases in channel cross section were found to have minimal impact on meeting freeboard requirements in those reaches having deficient capacity. Huitt-Zollars performed hydraulic analyses to evaluate channel modifications. It was found that doubling the channel cross section produced an insignificant improvement in capacity. Additionally, due to the need to add detention basins to limit the flow entering Reach 2, flows were typically reduced upstream of the detention basins such that freeboard requirements were met in these upstream reaches.

Matrix Evaluation

Discussions were held regarding the ranking of the alternatives using the evaluation matrix. During these discussions, the rankings depicted in the attached, partially filled out matrix were prepared. As the matrix discussion continued, it was suggested that a global analysis would be a more direct approach to selecting the preferred alternative. Tim requested each meeting attendee to identify his or her first choice of the alternatives, and the following resulted:

Anna	-	1C
Dave	-	3
Valerie	-	1C
Charlie	-	3
Fred	-	3
Tim	-	1C and 3

Based on this approach, Alternative 1C was selected as the preferred "base" alternative. This alternative would be presented by Huitt-Zollars as the selected alternative. Templates would be prepared showing the footprint of the proposed facilities. The District would use these templates as a basis for refining the concepts and developing preliminary and final design. Alternatives 3 and 6C would be considered by the District as alternates in refining the design concept presented in Alternative 1C.

During the discussion of "Implementability," it was suggested by Tim that the ability to drain the various alternative basins by gravity back into the EMF should be considered. Since this information was not readily available at the meeting, it was decided that Huitt-Zollars would provide the District with information on the maximum water surface elevations at the off-line detention basin sites identified in Alternative 1C along with estimated basin depths. The District would evaluate this information to determine if the individual sites could be drained by gravity. It was agreed by Anna and the District that basin depths of 10 feet would be acceptable for all basins except the Chandler Heights basin, which could have a depth of 15 feet.

Open

Tim requested that Huitt-Zollars provide the District with preliminary inlet spillway sizing for the various EMF off-line detention basins in Alternative 1C. He also requested that Huitt-Zollars provide a refined sizing for the Chandler Heights detention basin, if found to be appropriate after completing the Queen Creek/Sanokai Wash hydraulic analysis.

ACTION ITEMS

1. Huitt-Zollars will prepare templates for the facilities identified in the preferred alternative, Alternative 1C.
2. Huitt-Zollars will provide the District with maximum water surface elevations and basins depths at each of the off-line detention basin sites in Alternative 1C.
3. Huitt-Zollars will provide the District with preliminary inlet spillway sizing for the Alternative 1C EMF off-line detention basins.
4. Huitt-Zollars will identify a refined sizing for the Chandler Heights detention basin, if found to be appropriate after completing the Queen Creek/Sanokai Wash hydraulic analysis.
5. The District will evaluate the potential for each of the off-line EMF detention basins in Alternative 1C to drain by gravity to the EMF using information provided by Huitt-Zollars in Action Item 2.

The meeting ended at approximately 12:10 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

5/23/99
Date Prepared

attachments

c: Attendees
Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

AGENDA

EMF ALTERNATIVES RESOLUTION MEETING PROGRESS MEETING NO. 10 MAY 25, 1999

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

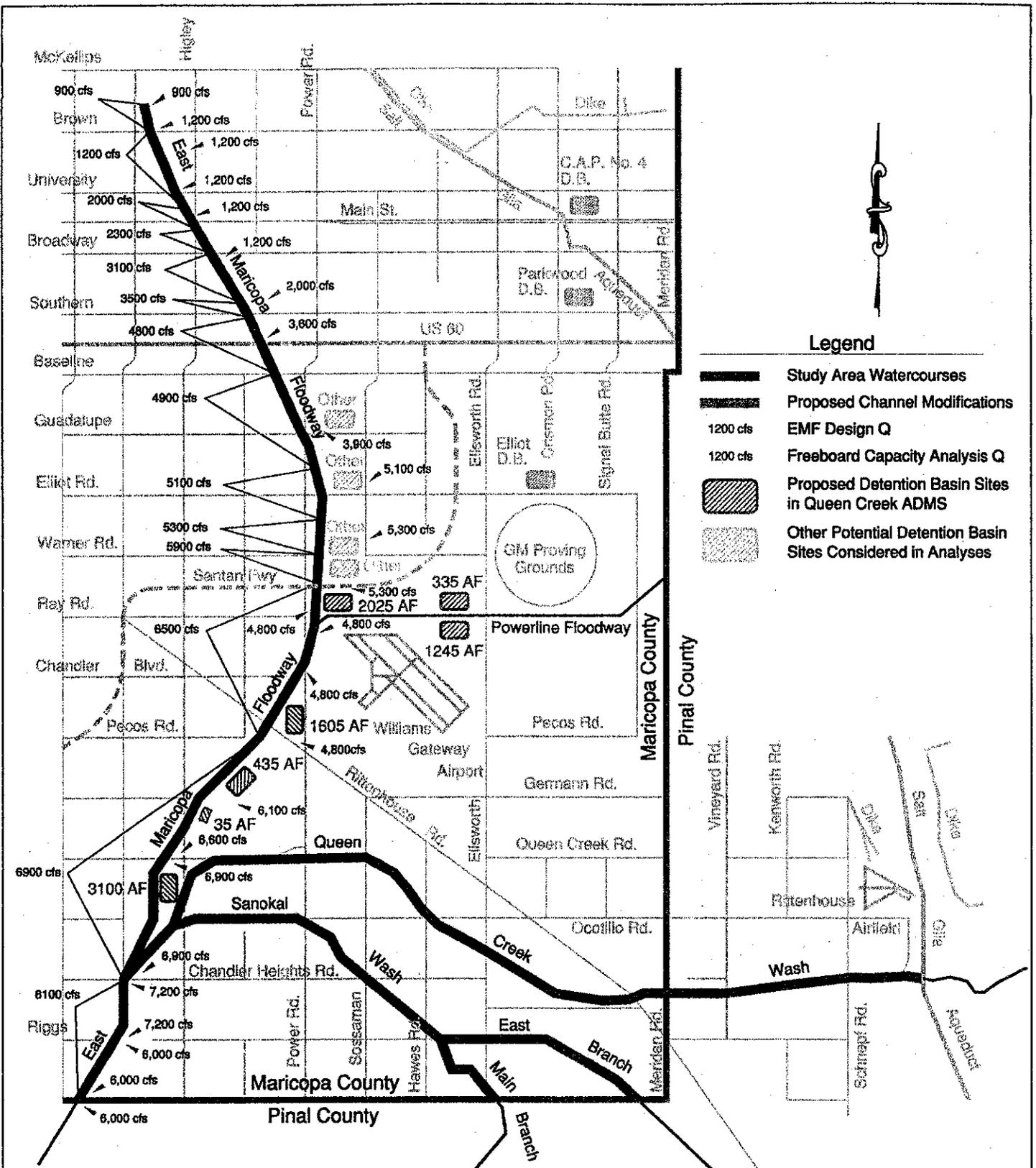
1. Meeting Objective: Discuss final EMF alternatives and rate alternatives using evaluation matrix.
2. Meeting Format
 - a. Background
 - b. Parameters
 - c. Findings
 - d. Matrix Evaluation
3. Background
 - a. EMF Capacity Mitigation Analysis Objective
 - b. Selection of Land Use Condition
 - c. SCS Design/HNTB Study
 - freeboard criterion
 - hydrology
4. Evaluation Parameters
 - a. Models
 - b. Alternatives Development
 - c. Land Use Condition
 - d. Future CIP Improvements
 - e. Freeboard
5. Findings
 - a. Off-Line Storage with Channel Improvement Alternatives
 - overview
 - rationale
 - alternatives presentation

b. Watershed Storage with Channel Improvement Alternatives

- overview
- rationale
- alternative presentation

6. Matrix Evaluation

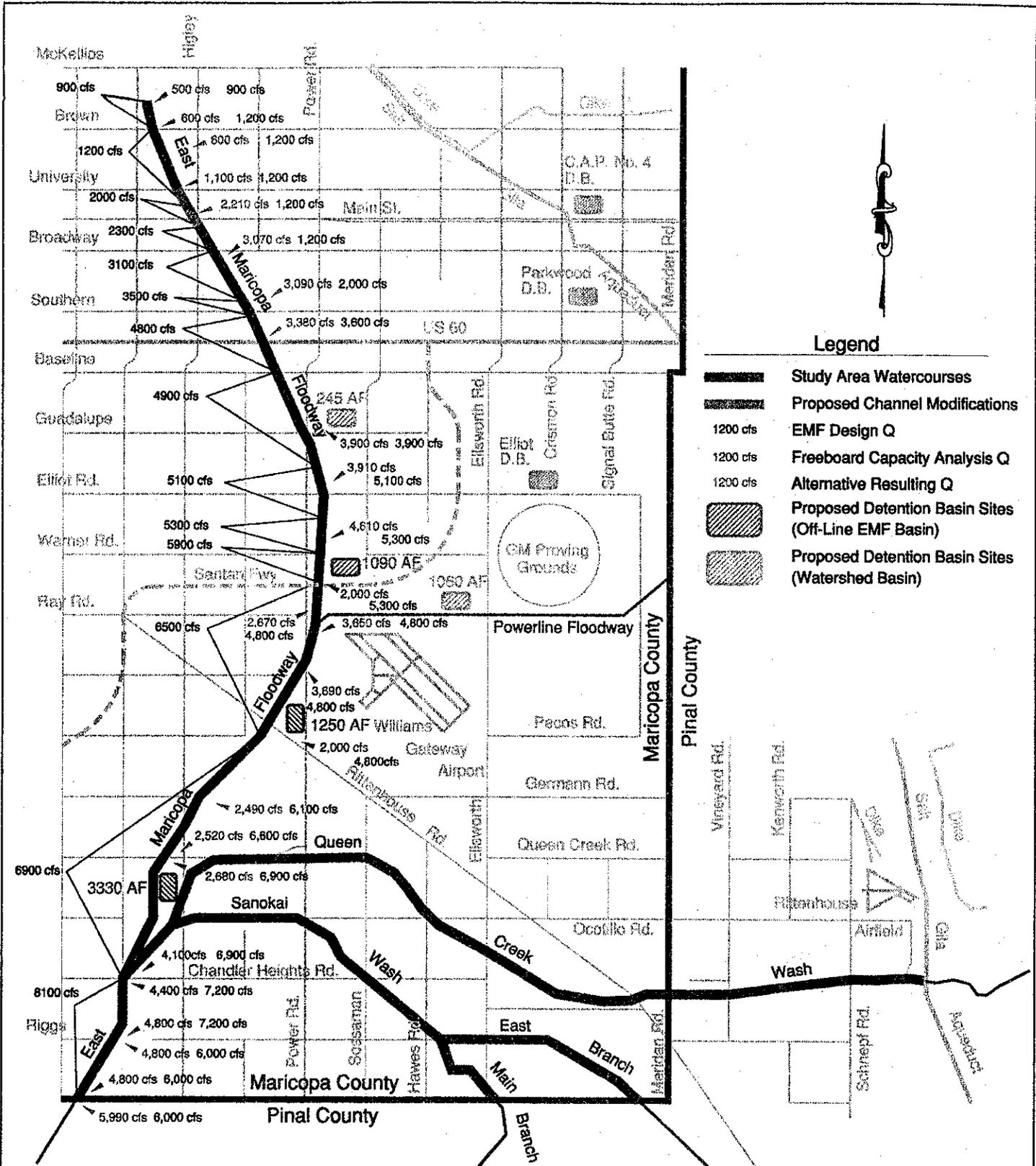
7. Open



Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit: (2nd Meeting)

Regional detention basins proposed in the Queen Creek Area Drainage Master Study and other potential basin sites considered in the EMF analyses



Legend

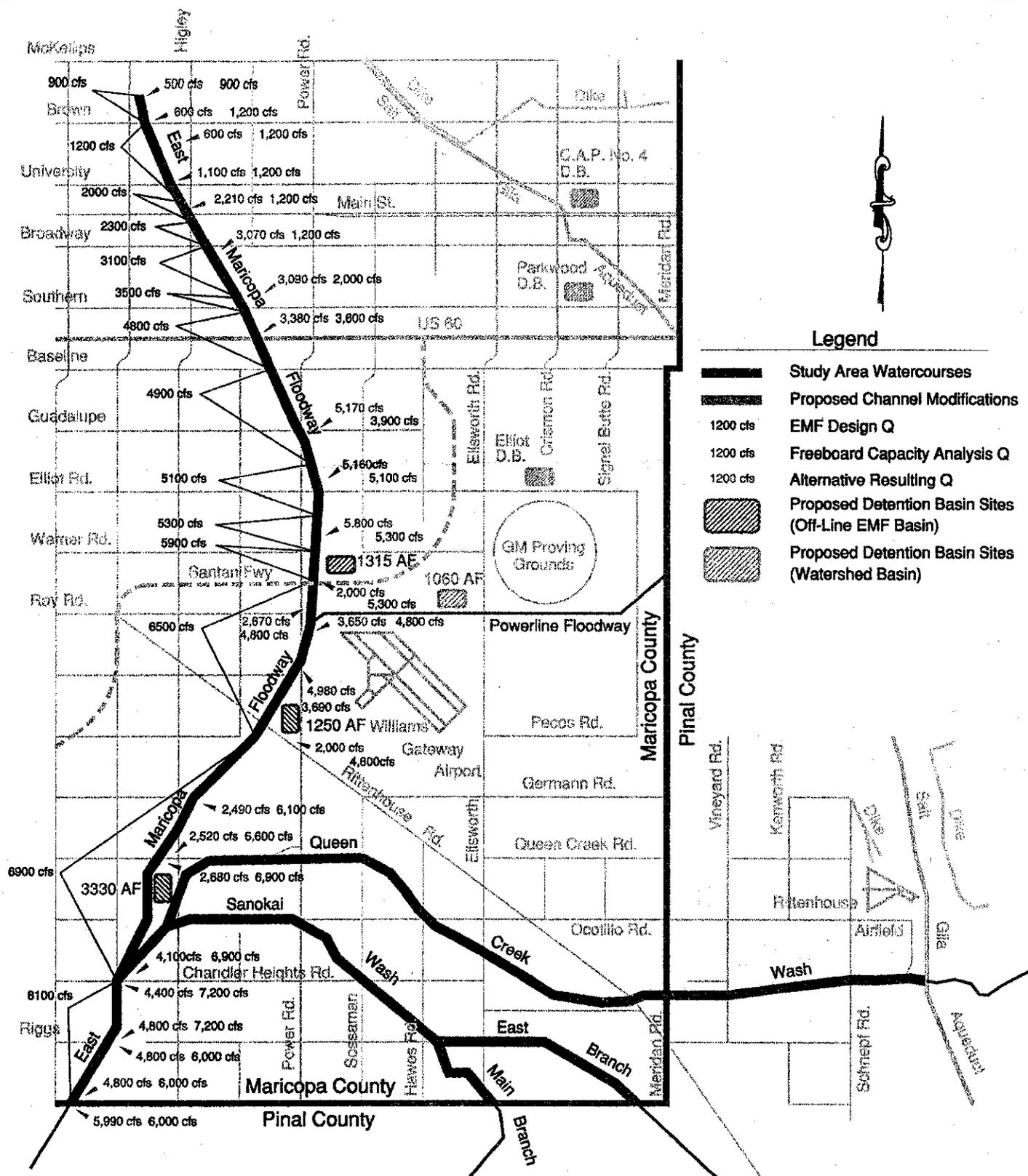
- Study Area Watercourses
- Proposed Channel Modifications
- 1200 cfs EMF Design Q
- 1200 cfs Freeboard Capacity Analysis Q
- 1200 cfs Alternative Resulting Q
- Proposed Detention Basin Sites (Off-Line EMF Basin)
- Proposed Detention Basin Sites (Watershed Basin)

Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit: (2nd Meeting)

Alternative 1C - Channel modifications north of Broadway.
 EMF basins at Knox, Rittenhouse, and Chandler Heights.
 Watershed basins at Guadalupe and Powerline Floodway.

Total Storage
 ~6975 AF



Legend

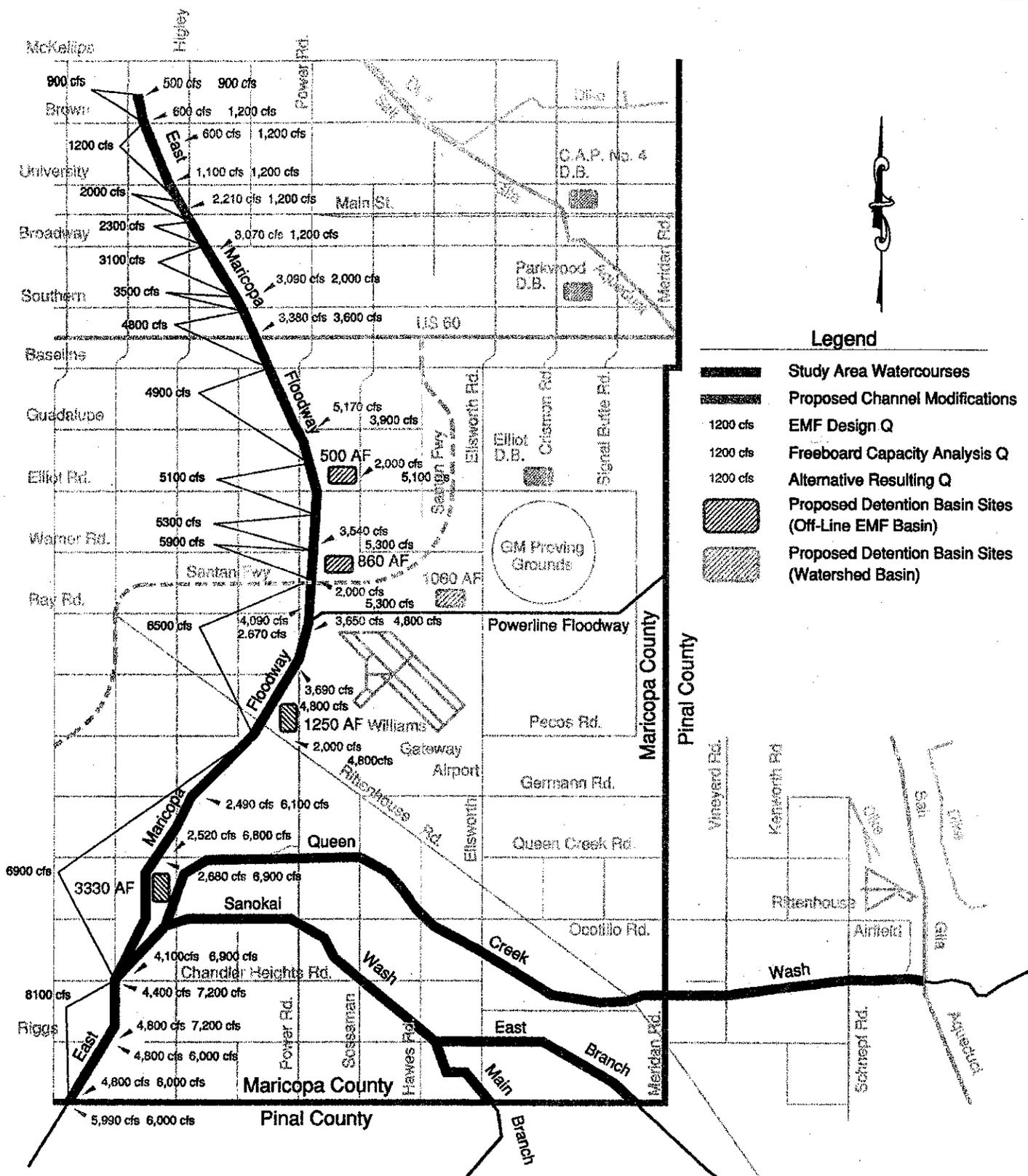
- Study Area Watercourses
- Proposed Channel Modifications
- 1200 cfs
 EMF Design Q
- 1200 cfs
 Freeboard Capacity Analysis Q
- 1200 cfs
 Alternative Resulting Q
- Proposed Detention Basin Sites (Off-Line EMF Basin)
- Proposed Detention Basin Sites (Watershed Basin)

**Queen Creek/Sanokai Wash HMP
& East Maricopa Floodway
Capacity Mitigation Study**

EMF Alternatives Exhibit: (2nd Meeting)

**Alternative 3 - Channel modifications north of Broadway.
EMF basins at Knox, Rittenhouse and Chandler Heights.
Watershed basin at Powerline Floodway.**

**Total Storage
~6955 AF**

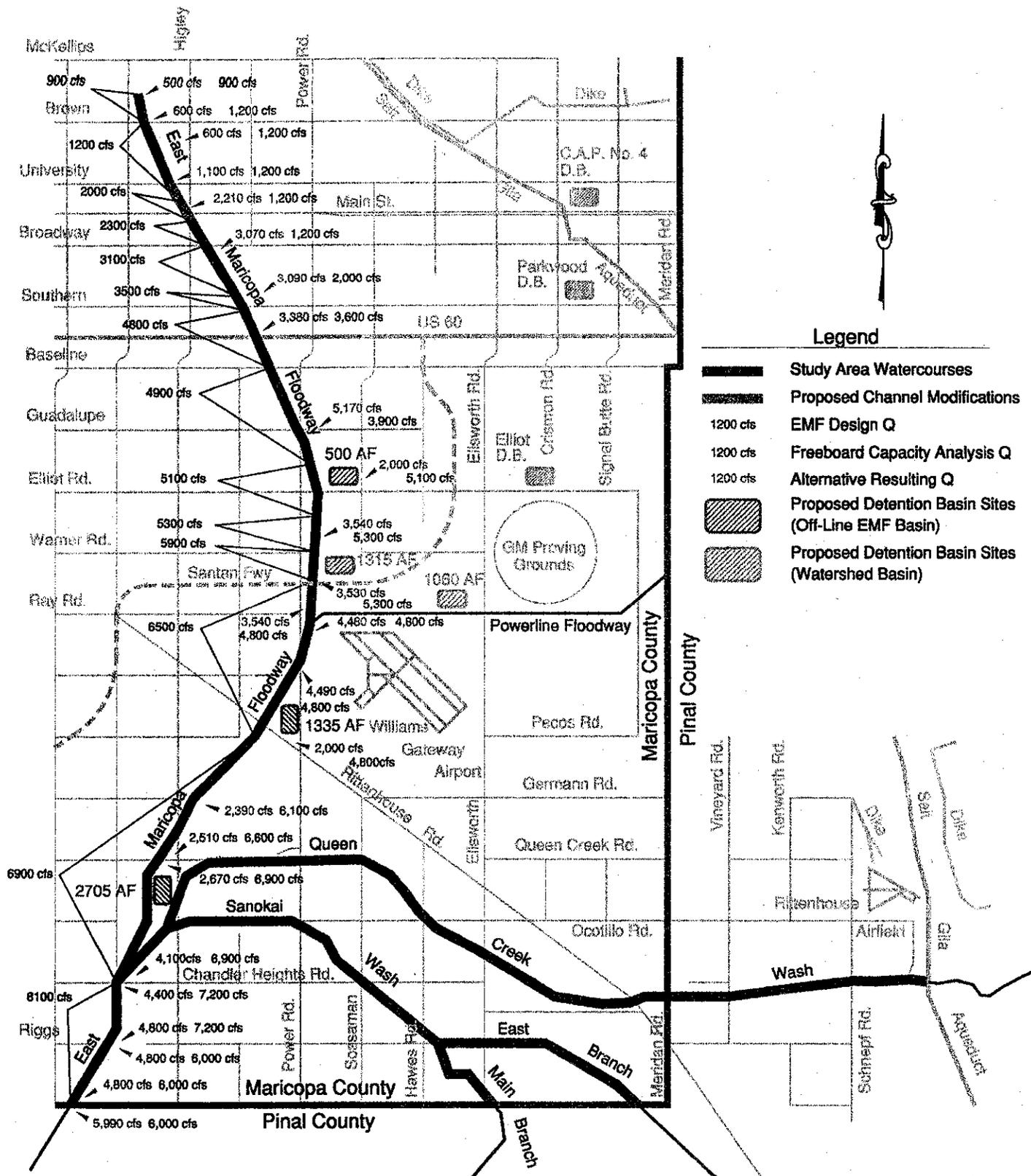


Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit: (2nd Meeting)

Alternative 3C - Channel modifications north of Broadway.
 Emf basins at Elliot, Knox, Rittenhouse, and Chandler Heights.
 Watershed basin at Powerline Floodway.

Total Storage
 ~7000 AF



Legend

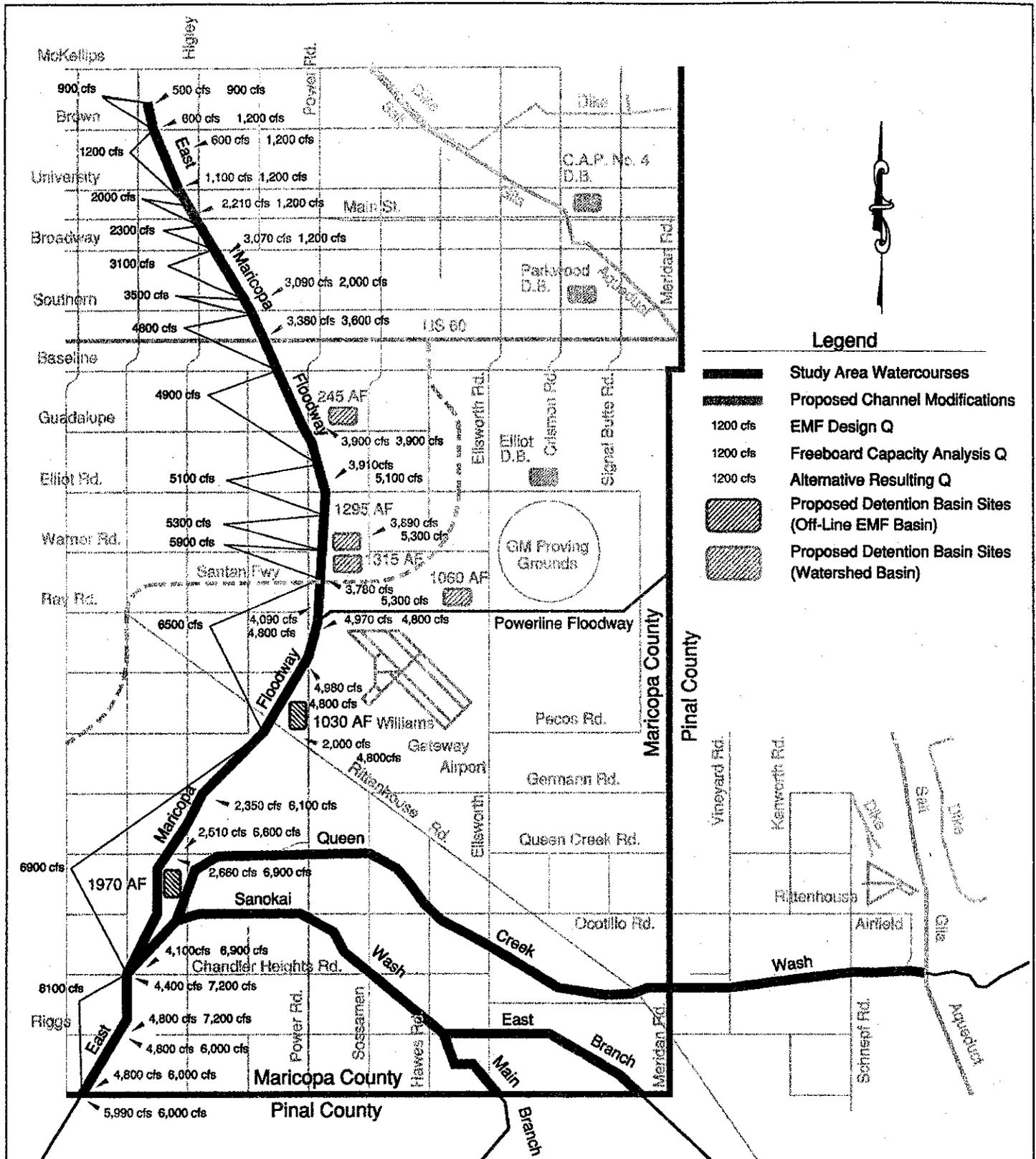
- Study Area Watercourses
- Proposed Channel Modifications
- 1200 cfs EMF Design Q
- 1200 cfs Freeboard Capacity Analysis Q
- 1200 cfs Alternative Resulting Q
- Proposed Detention Basin Sites (Off-Line EMF Basin)
- Proposed Detention Basin Sites (Watershed Basin)

**Queen Creek/Sanokai Wash HMP
& East Maricopa Floodway
Capacity Mitigation Study**

EMF Alternatives Exhibit: (2nd Meeting)

Alternative 6C - Channel modifications north of Broadway.
EMF basins at Elliot, Rittenhouse and Chandler Heights.
Watershed basins at Knox and Powerline Floodway.

Total Storage
~6915 AF



Legend

-  Study Area Watercourses
-  Proposed Channel Modifications
-  1200 cfs EMF Design Q
-  1200 cfs Freeboard Capacity Analysis Q
-  1200 cfs Alternative Resulting Q
-  Proposed Detention Basin Sites (Off-Line EMF Basin)
-  Proposed Detention Basin Sites (Watershed Basin)

Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit: (2nd Meeting)

Alternative 6E - Channel modifications north of Broadway.

EMF basins at Rittenhouse and Chandler Heights. Watershed basins at Guadalupe, Warner, Knox and Powerline Floodway.

Total Storage ~6915 AF

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 9 – Scope and Mapping
Date: May 4, 1999
Time: 12:30 p. m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**

Tim Phillips	506-4718
Pedro Calza	506-4697
Dave Degerness	506-4730

Huitt-Zollars

Fred Duren	952-9123
Charlie Joy	952-9123

The meeting was called to discuss the scope of work related to updating the hydrologic models and the need for acquiring the topographic data for sections of the study areas where the District does not have GIS topographic data.

SUMMARY OF MEETING

The decisions reached during the meeting are summarized below.

Updating the Hydrologic Models

Huitt-Zollars believes that the scope of work calls for: (1) use of the EMF hydrologic models as provided by the District without changes; (2) updating the HEC-1 model for the Queen Creek watershed only to account for existing and future land development conditions; and (3) updating the HEC-1 model for the Sanokai Wash watershed only to account for future land development conditions. Notwithstanding the above, Huitt-Zollars, in response to District requests, has made several revisions to the EMF and Queen Creek HEC-1 models to improve them in areas not associated with land development conditions. In responding to the District's requests, Huitt-Zollars has incurred substantial project costs that negatively impact its ability to complete the hydrologic modeling work with the allotted labor hours. Huitt-Zollars believes that the latest request of the District to make additional changes in the hydrologic models for "non-land-development" parameters is also not within the scope of work.

The District believes that the scope of work, which calls for new hydrology for the Queen Creek HEC-1 model, should be interpreted to mean that development of a completely new HEC-1 model for the Queen Creek watershed is covered. It also believes that during negotiations it informed Huitt-Zollars that other than land use updates to the models would be required. The District agrees with Huitt-Zollars interpretation of the scope of work for the Sanokai Wash modeling. The District believes that the scope of work calls for the inclusion of new Queen Creek and Sanokai Wash HEC-1 models in the EMF hydrologic modeling package.

In consideration of the discussions held on this topic, the District agreed to make the latest round of modifications to the EMF HEC-1 models that it had recently requested of Huitt-Zollars. These changes will be the last required by the District, and the District will turn over the corrected base model to Huitt-Zollars for use in updating for existing and future development conditions and for evaluating alternatives. It was estimated that the District will be able to complete this work with 3 to 4 days' effort. The EMF hydrologic modeling package will then be considered complete by the District. Huitt-Zollars will utilize the complete EMF HEC-1 models to revise its current analyses of EMF alternatives.

Mapping

It was acknowledged that there were missing topographic data in the District's GIS for Queen Creek, Sanokai Wash, and potential detention basin sites. It was agreed that the District would check internally to see if it could develop scanned, digitized topographic data from hard copy maps of the reaches having missing topo data. The District would contact Huitt-Zollars with its finding.

Huitt-Zollars will contact Kenney Aerial to see if it can take hard copy maps and prepare to necessary topo data. Huitt-Zollars will also contact Kenney to inquire about the cost for preparing additional topo data for the detention basin sites that would lie outside the 1,000-foot strip centered along each of the watercourses, as covered in the scope of work. Huitt-Zollars will contact the District with its finding, and the District will consider transferring funds from the optional tasks to cover the cost of preparing the additional topo data.

Miscellaneous

The District said that the Power Ranch modifications should be used as the existing condition in the Queen Creek HEC-1 and HEC-2 models. Additional modifications to Queen Creek through the Power Ranch development should be considered only if there is a resulting significant benefit in the overall Queen Creek channel improvements.

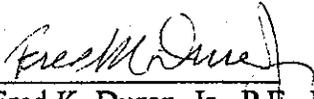
Power Ranch has constructed a bridge over Queen Creek at Recker Road. This bridge needs to be included in the modeling for Queen Creek.

ACTION ITEMS

1. District will make the latest round of modifications to the EMF HEC-1 models that it had recently requested of Huitt-Zollars.
2. Huitt-Zollars will utilize the complete EMF HEC-1 models provided by the District to revise its current analyses of EMF alternatives.
3. The District will check internally to see if it can develop scanned, digitized topographic data from hard copy maps of the reaches having missing topo data. The District will contact Huitt-Zollars with its finding.
4. Huitt-Zollars will contact Kenney Aerial to see if it can take hard copy maps and prepare to necessary topo data. Huitt-Zollars will contact the District with its finding, and the District will consider transferring funds from the optional tasks to cover the cost of preparing the additional topo data.

The meeting ended at approximately 1:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

5/6/99
Date Prepared

c: Attendees
Gary Burroughs
Mark Seits
Glenn Shearer
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (200,08)
Subject: Progress Meeting No. 8 – Initial EMF Alternatives Resolution
Meeting
Date: April 15, 1999
Time: 2:00 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**

Tim Phillips	506-4718
Theresa Hoff	506-8127
David Degerness	506-4730
Tim Murphy	506-4605
Valerie Swick	506-4872

City of Mesa

Anna Leyva	644-4622
------------	----------

Huitt-Zollars

Fred Duren	952-9123
Charlie Joy	952-9123

The meeting agenda was transmitted to the District on April 12. Attachments to the agenda were distributed at the meeting along with additional copies of the agenda, both of which are attached to these minutes. Action items are shown at the end of the minutes.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached in the meeting is presented below.

Meeting Objective and Format

Fred presented the meeting objective and the meeting format. The objective is to present and discuss the four alternatives developed by Huitt-Zollars for mitigating the EMF capacity deficiency. A preliminary rating of the alternatives is also a meeting objective. The meeting format includes a discussion of background issues, followed by discussions of the evaluation parameters used in the EMF analysis, the findings, and the preliminary matrix evaluation.

Background

Fred described that the EMF has been found to be incapable of conveying the 100-year, 24-hour flooding event based on new hydrology developed since the design of the floodway by the SCS. The objective of Huitt-Zollars' work on the study is to prepare conceptual plans of facilities that would mitigate the conveyance deficiency of the EMF.

The selection of land use condition for developing the EMF inflows will have a significant impact on the extent and cost of the required facilities. Existing land use conditions will produce much higher flows than future conditions due to the incorporation of retention in future developments. Consequently, facilities designed to mitigate the EMF capacity deficiency based on existing conditions will be much more costly than those that would be developed on the basis of future land use conditions. The results of the study, which will be based on the land use condition selected by the District, will be used by the District to make a final selection as to the facility sizes on the basis of the degree of conservatism the District desires to incorporate into the project design.

Fred indicated that the HNTB HEC-RAS model shows that the SCS EMF design flows are in excess of the EMF capacity, per SCS freeboard design criteria. Thus, there is difference between the EMF hydraulics analyses of the SCS and HNTB, with the result being more conservative when using the HNTB HEC-RAS model.

Evaluation Parameters

Fred indicated that there are several models involved in the EMF analysis. The HEC-1 models for the various watershed areas provide input to an HEC-1 routing model for the EMF. The flows developed with the HEC-1 routing model are input to the HEC-RAS hydraulic model for development of water surface profiles. The modeling objective is to prepare design concepts of the facilities needed to mitigate the EMF capacity deficiency. Huitt-Zollars has made several revisions to the EMF hydrologic inflow models, including insertion of updated Queen Creek and Sanokai Wash HEC-1 models and inclusion of the Falcon Field detention basin.

As discussed, the scope of work for the EMF study indicates that a minimum of three capacity mitigation alternatives are to be developed, utilizing channel improvements, off-line storage, and watershed storage as components.

Fred related that the District has selected existing land use conditions as the basis for developing inflows to the EMF. The selection of existing land use will result in a more conservative EMF analysis because existing flows are considerably higher than those for future land use conditions, as discussed previously in the meeting.

Fred said that Huitt-Zollars did not include future CIP facilities in modeling EMF inflows because the CIP facilities generally produce insignificant reductions in EMF inflows and

because the District has indicated a preference for a conservative EMF analysis by its selection of the existing land use condition for modeling. Fred indicated that the locations of the CIP-recommended detention facilities are far enough away from the EMF so that the peak runoff reductions produced by these facilities become insignificant by the time the flow reaches the EMF due to the addition of runoff from downstream sub-basins. District representatives agreed with this finding. However, since the planned Elliot Road Detention Basin has a significant capacity and is located closer to the EMF than other CIP-recommended detention facilities, Huitt-Zollars modeled the Elliot Road Detention Basin, using its preliminary storage volume, to determine the basin's impact on EMF inflows. It was found that a minor decrease in EMF inflows resulted from inclusion of the Elliot Road detention basin in the model. Anna pointed out that the Elliot Road Detention Basin has been downsized significantly in volume from its original capacity.

Fred indicated that Huitt-Zollars had used the SCS design flows for the EMF as the basis for determining if freeboard criteria were met. He referred to the earlier discussion in the meeting regarding the difference between the SCS hydraulics analysis and that performed by HNTB, with the HNTB analysis producing significantly higher water surface elevations than indicated in the SCS design. Fred said that Huitt-Zollars took this approach since the District had indicated that the determination of freeboard within the EMF should be based on SCS criteria, which Huitt-Zollars thought would be properly reflected in the SCS design flows.

A lengthy discussion followed in regards to the freeboard criterion that should be used in determining hydraulic capacity in the EMF, and the District representatives decided that the SCS freeboard criterion should be used in conjunction with the HNTB HEC-RAS model. Fred indicated that use of the SCS freeboard criterion with the HNTB HEC-RAS model would add another level of conservatism to the EMF analysis. He suggested that this could possibly increase the cost of facilities required to mitigate the capacity deficiency by two or three times that which would be developed using the SCS design flows as the determination of EMF capacity.

The last of the parameters used in the evaluation of EMF capacity mitigation alternatives is the constraint that no improvements are to be considered for Reaches 1 and 2. Consequently, the flow at the downstream limit of Reach 3 must be no greater than the EMF capacity.

Findings

Fred indicated that the findings to be presented by Charlie in the following portion of the meeting will be changed since the freeboard criterion used by Huitt-Zollars in developing these findings will need to be modified, as discussed above. However, the concepts used in developing and evaluating the alternatives will remain the same. Thus, presentation of the alternative results at this time will be useful. Fred requested that the meeting attendees inform Huitt-Zollars within a week's time if any of the assumptions used in the analyses of alternatives needs to be modified. For example, if any of the detention basin

locations or capacities are known to be invalid by the attendees, Huitt-Zollars requests this information to avoid wasted effort in evaluating infeasible options.

Charlie said that Huitt-Zollars had developed four alternatives for EMF capacity mitigation. Each of the four alternatives would mitigate the EMF capacity deficiency based on using the SCS design capacities. Graphics representing these alternatives were tacked to the wall and included as 8.5 x 11-inch attachments to the agenda (see attached graphics). The graphics discussed at the meeting are listed below along with summary related comments.

Attachment 1 - EMF Alternatives Exhibit: Regional Detention Basins.

Charlie explained that Huitt-Zollars used detention basin location and capacity recommendations from the Queen Creek Area Drainage Master Plan (ADMP) for selecting basins for the lower reaches of the EMF. For the upper reaches of the EMF, Huitt-Zollars used field reconnaissance and 1999 aerial photos to select sites which were considered potentially feasible for detention basin siting.

The lowermost detention basin, between Queen Creek and Ocotillo Roads, is essential in all alternatives since the flow in the EMF at the bottom of Reach 3 (i.e., at the county line) cannot exceed EMF capacity. Channel improvements below this detention basin site, which is the lowermost site recommended in the Queen Creek ADMP, would not be a feasible option for this reason.

Attachment 2 - EMF Alternatives Exhibit: Alternative 1

Charlie described this alternative, which consists solely of off-line detention. Four detention basins, as indicated on the attachment, were found to be adequate. The 2,380-acre-foot basin at the confluence of the Powerline Floodway with the EMF is planned to accept flood flows from both the Powerline Floodway and the EMF. Valerie indicated that the Powerline Floodway will be re-aligned to the north in proximity to the EMF due to the planned northwest extension of the Williams Gateway Airport runway. Valerie said that this could affect the feasibility of locating a basin of the required size at this site. Anna will provide Huitt-Zollars with a copy of the Williams Gateway Master Plan for use in determining the availability of land at the site for use as a basin. Additionally, Art Allan (988-1013) can be contacted to obtain the master plan. Huitt-Zollars will also consider FAA requirements in assessing the suitability of the site for a detention basin. Fred indicated that the Falcon Field detention basin is located at the end of the runway; and, thus, the detention basin considered at the Williams Field site may not be in conflict with FAA requirements. Huitt-Zollars will, however, determine if FAA requirements would prevent siting of a detention basin at the site.

Charlie indicated that it would be possible to include more detention basins in this alternative, as well as in the other alternatives, and, thus, reduce the size of some of the basins included in the alternative. This may be desirable from a recreational-use

perspective. Anna indicated, however, that the City of Mesa would prefer a smaller number of larger basins.

Attachment 3 – EMF Alternatives Exhibit: Alternative 2

As described by Charlie, this alternative consists of off-line detention and culvert/channel improvements at Main Street and Higley Road. This alternative is essentially the same as Alternative 1 except that the 80-acre-foot basin at Brown and Power Roads would be replaced by channel and culvert improvements at Main Street and Higley Road. Charlie indicated that the culvert height at Main and Higley site is only 7 feet, which means that a maximum water surface elevation of 6 feet would be required to meet the SCS freeboard criteria.

Attachment 4 – EMF Alternatives Exhibit: Alternative 3a

Charlie described this alternative, which is similar to Alternative 1 except that channel improvements between Ray and Guadalupe Roads replace the 235-acre-foot detention basin at Guadalupe and Power Roads. His preliminary HEC-RAS analysis of the channel improvements needed for this alternative indicate that a doubling of the EMF channel size is needed in the lower reaches (i.e., for about one mile upstream of Ray Road), while no channel expansions are needed upstream of about Warner Road.

Attachment 5 – EMF Alternatives Exhibit: Alternative 3b

This alternative is similar to Alternative 3a except that the 80-acre-foot basin at Brown and Power Roads would be replaced by channel and culvert improvements at Main Street and Higley Road.

Matrix Evaluation

Fred described the matrix evaluation criteria, as shown on the attached sheet. A discussion was held relative to the interpretations of the eight criteria, and it was concluded by Tim that these criteria would be retained for use in the evaluation of EMF alternatives. It was recognized that some of the criteria may have identical rating values for the alternatives; however, these criteria would not be eliminated from the matrix to show that none of the possible evaluation factors were omitted from consideration. Upon completion of the EMF modeling analysis, the alternatives will be rated with the matrix and the preferred alternative selected.

Open

Anna suggested that the site for the proposed 80-acre-foot detention basin at Power and Brown Roads is not practical. Thus, this site, which was the only significant site Huitt-Zollars was able to find for the upper reaches of the EMF (i.e., above the Superstition Freeway, U.S. Highway 60), will be eliminated from consideration. The possibility of locating a detention basin in the upper reaches on the west side of the EMF (i.e., west of

the Roosevelt Water Irrigation District canal) was discussed. Potential sites were reviewed during the meeting using aerial photographs; however, no readily apparent site was found. Thus, mitigation of the EMF capacity deficiency in the reach north of the Superstition Freeway will be accomplished by channel improvements. This conclusion will reduce the number of EMF alternatives.

Valerie mentioned that Powerline Road is being widened by MCDOT.

Tim provided a land ownership map, showing land owned by the County along the EMF south of Queen Creek Road (see attached).

ACTION ITEMS

1. Meeting attendees will notify Huitt-Zollars within a week if any of the detention basin locations or capacities are known to be invalid by the attendees.
2. Anna will provide Huitt-Zollars with a copy of the Williams Gateway Master Plan for use in determining the availability of land at the site for use as a basin.
3. Huitt-Zollars will consider FAA requirements in assessing the suitability of the Powerline Detention Basin site.

The meeting ended at approximately 4:00 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



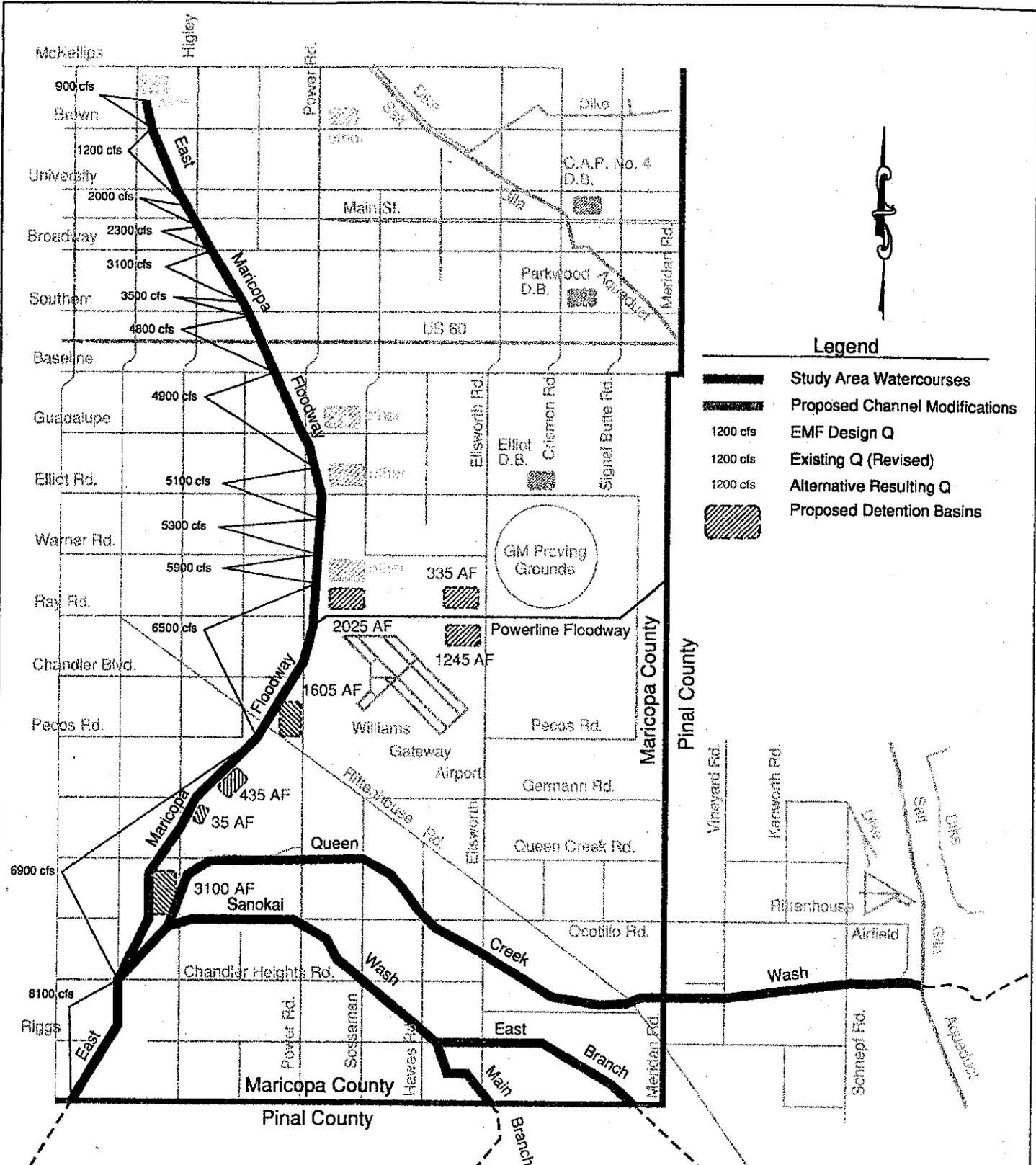
Fred K. Duren, Jr., P.E., P.G.
Project Manager

4/19/99

Date Prepared

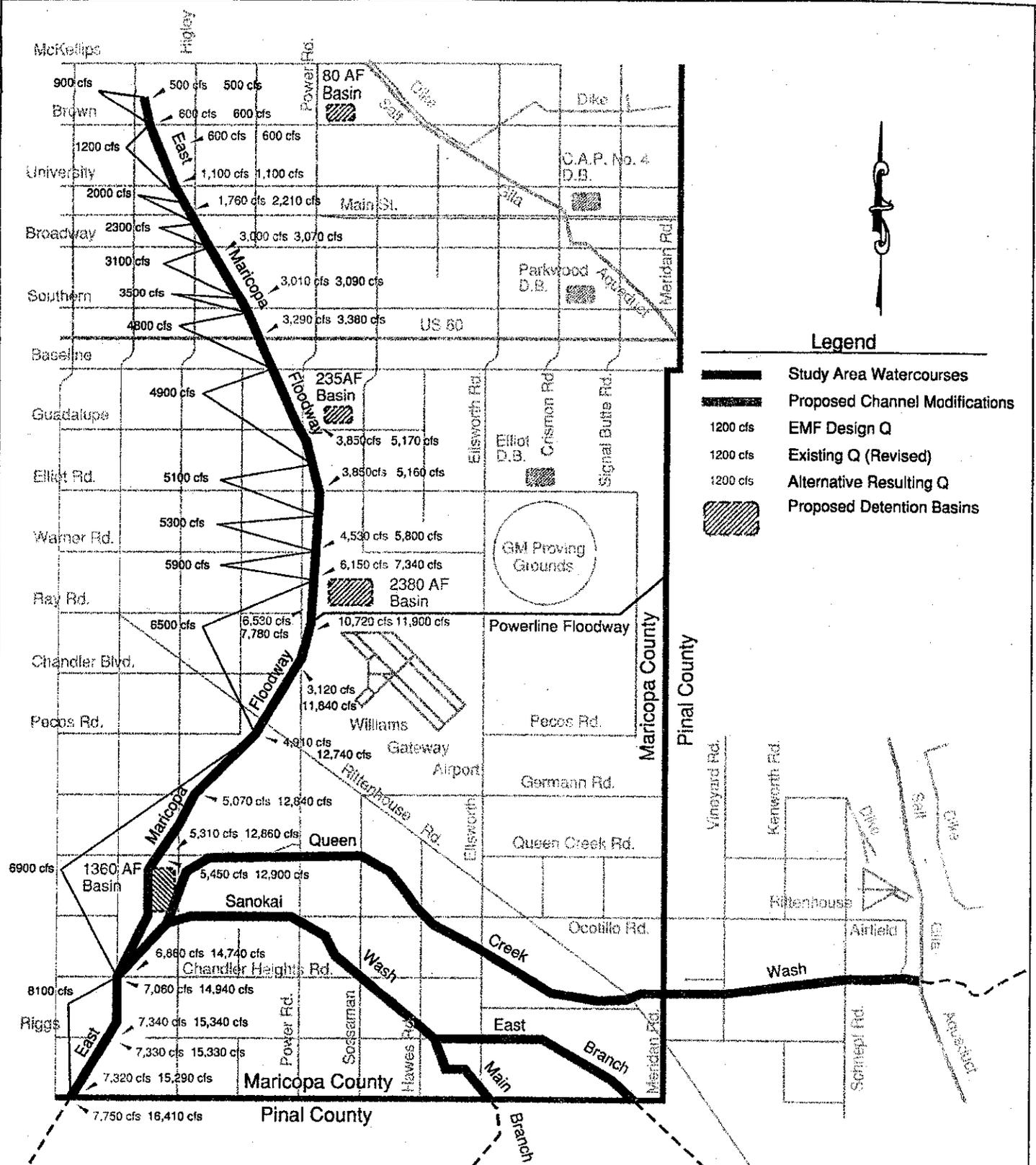
c: Attendees

Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney



Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit:
Regional Detention Basins Proposed
in the Queen Creek Area Drainage Master Study
and other potential basins considered in analyses.

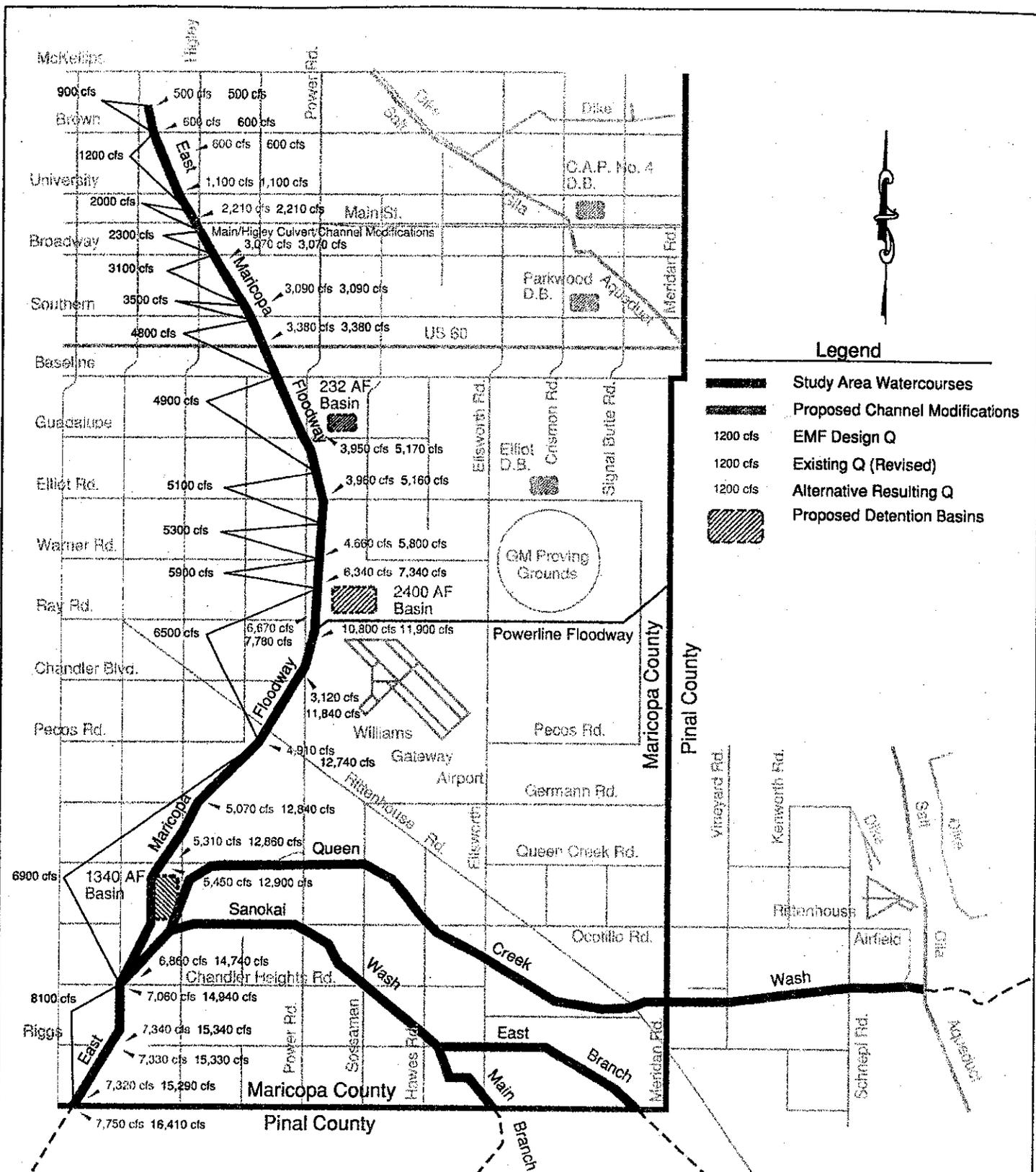


Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit:

Alternative 1 -

One 80 acre-ft watershed basin and off-line basins at Guadalupe, Powerline, and Chandler Heights.



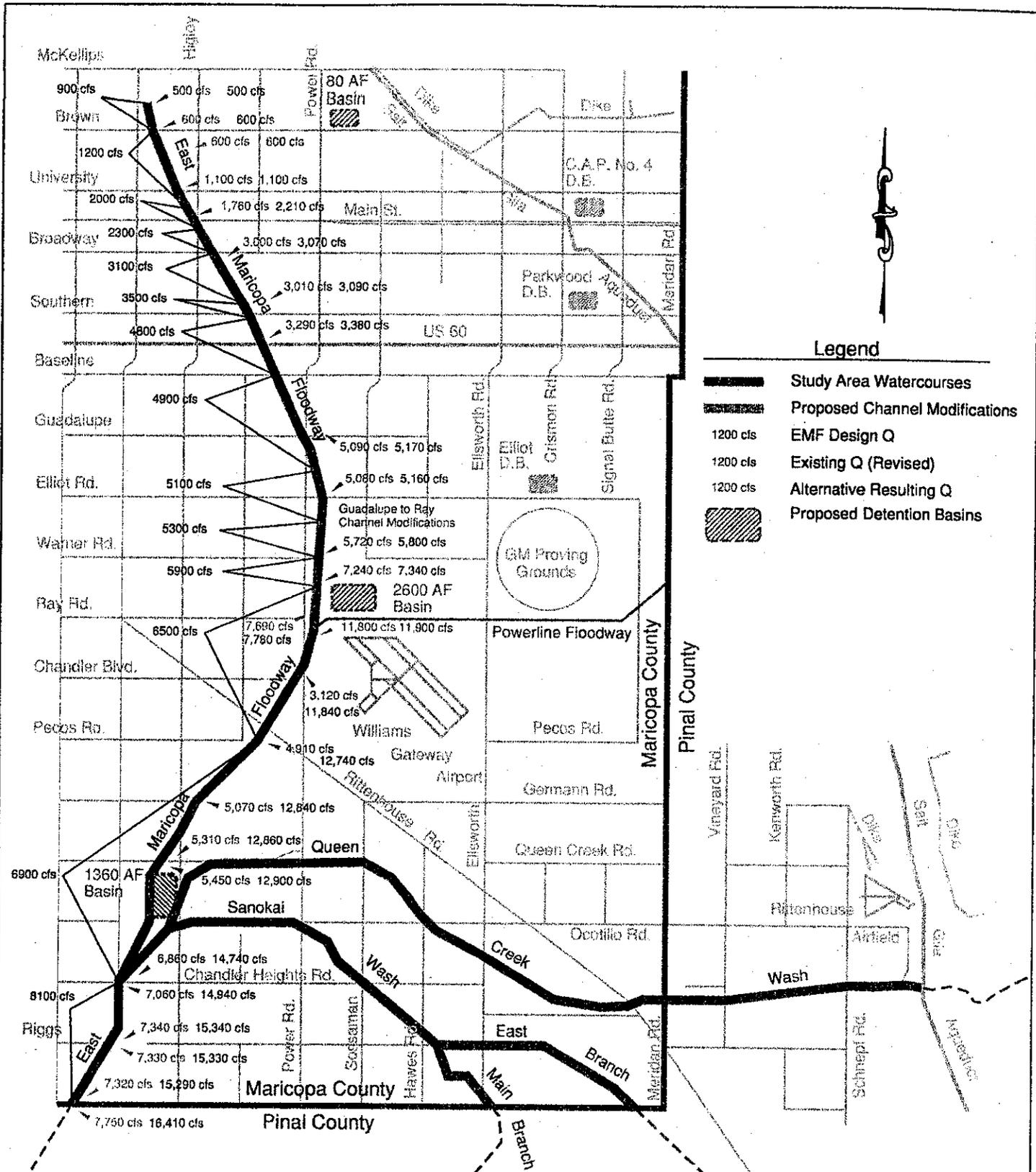
Legend

- Study Area Watercourses
- Proposed Channel Modifications
- 1200 cfs EMF Design Q
- 1200 cfs Existing Q (Revised)
- 1200 cfs Alternative Resulting Q
- Proposed Detention Basins

**Queen Creek/Sanokai Wash HMP
& East Maricopa Floodway
Capacity Mitigation Study**

EMF Alternatives Exhibit:

Alternative 2 -
Culvert/channel modifications at Main St./Higley Rd. and
off-line basins at Guadalupe, Powerline, and Chandler Heights.



Legend

-  Study Area Watercourses
-  Proposed Channel Modifications
- 1200 cfs EMF Design Q
- 1200 cfs Existing Q (Revised)
- 1200 cfs Alternative Resulting Q
-  Proposed Detention Basins

Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study

EMF Alternatives Exhibit:

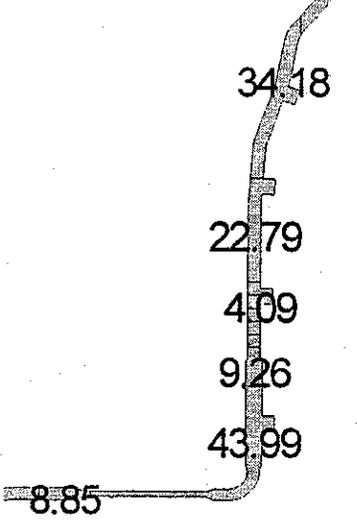
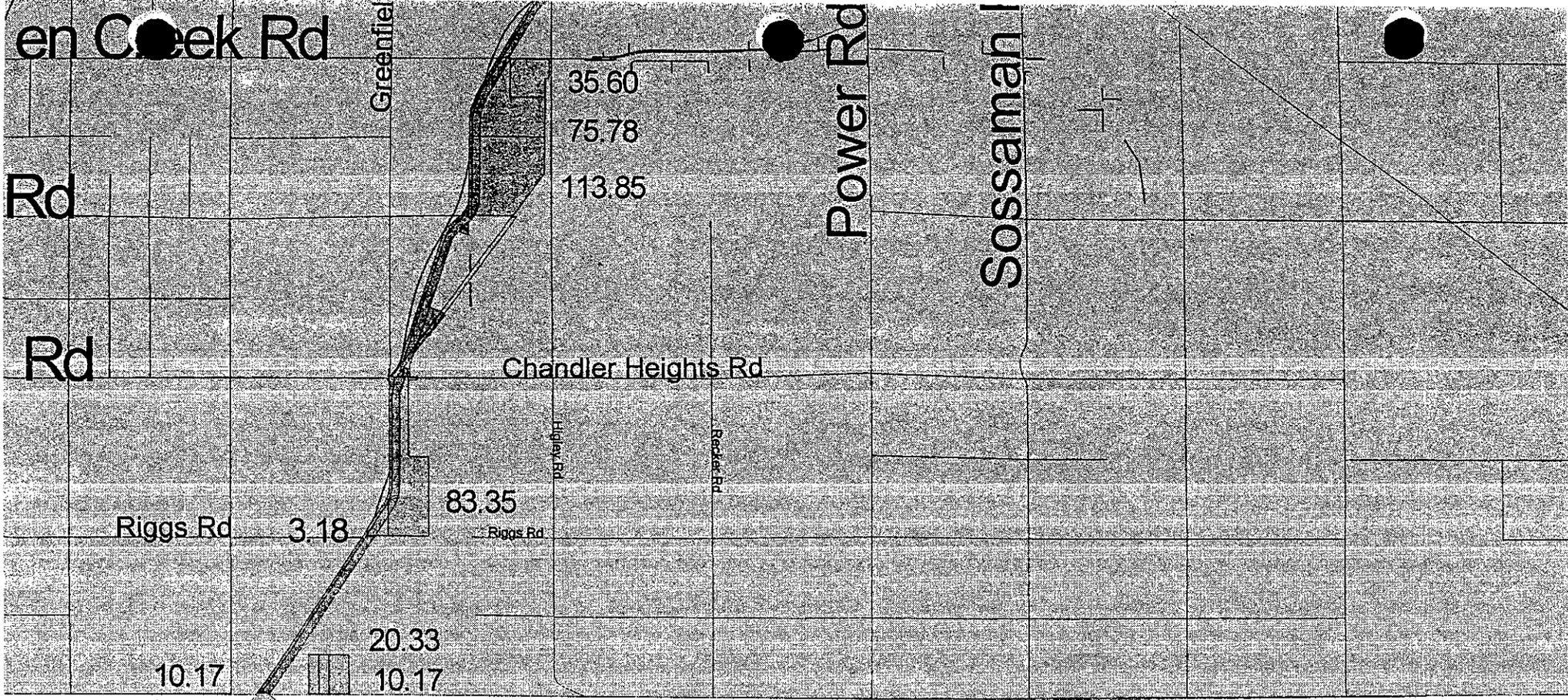
Alternative 3a -

One 80 acre-ft watershed basin, channel modifications from Guadalupe to Ray and off-line basins at Powerline and Chandler Heights.

Preliminary Evaluation Criteria Matrix

For East Maricopa Floodway Capacity Mitigation Alternatives

Evaluation Criterion	Range of Point Value	Alternative			
		1	2	3a	3b
Aesthetics/Landscaping/Recreation	1 - 8				
Biology	1 - 5				
Cost	1 - 10				
Culture	1 - 5				
Environment	1 - 8				
Implementability	1 - 10				
Land Planning	1 - 10				
Public Acceptance	1 - 10				
	Total				



HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (200,08)
Subject: Progress Meeting No. 7 – Third Level I Alternatives Development
Meeting
Date: March 25, 1999
Time: 1:30 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Dave Degerness 506-4730
Town of Queen Creek
Dick Schaner 987-9887
Huitt-Zollars
Fred Duren 952-9123
Charlie Joy 952-9123

The meeting objective was to make final selection of those Level I alternatives that should be considered for study in the Level II analysis. The first Level I brainstorming meeting was held on February 16, 1999. As a result of that meeting, Huitt-Zollars developed 24 potential Level I alternatives. These alternatives were presented to the public in a neighborhood open house on March 18. The second brainstorming meeting was held on March 22, 1999. During this meeting several conclusions were reached as to which of the alternatives could be eliminated; however, final selection of the major alternatives that will be studied in the Level II analysis was delayed until this third brainstorming meeting.

A summary of the meeting discussions is presented below. Action items are shown at the end of the minutes.

SUMMARY OF MEETING

After a discussion of the conclusions reached in the second brainstorming meeting (as documented in the minutes for that meeting), the philosophy for selection of the major alternatives was discussed.

Philosophy of Selection of Level I Major Alternatives

As agreed in the second brainstorming meeting, one major alternative to be studied in the Level II analysis is that identified as Alternative A.1 in the initial list of Level I alternatives. This alternative is considered the baseline condition alternative in that it consists of the existing conditions for all components except that the Queen Creek and Sanokai Wash channels will be improved through incisement to handle the 100-year, 24-hour event. This major alternative is summarized as follows, with the corresponding alternative designation in the initial list of Level I alternatives provided in parentheses:

Major Alternative 1 (Alternative A.1)

- Same Queen Creek confluence point.
- Same East Maricopa Floodway (EMF) drop structure location.
- Same confluence sedimentation basin location, capacity as determined in the Level II analysis.
- Incised channels for Queen Creek and Sanokai Wash where channel improvements are required.
- Detention basins located within the watershed and in-line, as determined in the Level II analysis.
- "Soft" engineered channels, except that more "engineered" channels will be acceptable in areas where existing development infringes upon the channel width required for "soft" engineered channels.
- No diversions from the Queen Creek or Sanokai Wash channels.

After discussion, it was agreed that the other major alternatives should be selected on the basis of changes in significant components of the alternatives. The major changes in alternative components were selected to be:

1. Move the drop structure a few hundred feet upstream to be above the existing Queen Creek confluence point.
2. Move the drop structure and Queen Creek confluence upstream to a point just south of Queen Creek Road.
3. Include the most favorable diversion component to one of the other major alternatives.

Selection of Level I Major Alternatives

Based on the philosophy described above, the remaining alternatives to be studied in the Level II analysis are:

Major Alternative 2 (Alternative A.1., Option1)

- Same as Major Alternative 1, except that the drop structure is moved upstream a few hundred feet to be above the existing Queen Creek confluence point.

Major Alternative 3 (Alternative A.1., Option 2)

- Same as Major Alternative 1, except that the drop structure and Queen Creek confluence are moved upstream to a point just south of Queen Creek Road.

Major Alternative 4 (not included on the initial list of Level I alternatives)

- Add a diversion from Sanokai Wash at its intersection with Riggs Road westward along Riggs Road to the EMF.
- "Soft" engineered diversion channel along Riggs Road.

Major Alternative 4 was not further defined as to what other project components would be included. The District requested that Huitt-Zollars perform a normal depth calculation for a potential Riggs Road diversion to the EMF to develop a preliminary estimate of the channel width. The District will perform a hydrologic analysis to estimate the discharge that would be carried in this channel based on an approximate 50-50 split of flow from Sanokai Wash into the diversion channel (at existing conditions, which include breakouts) and based on the inclusion of tributary drainage into the channel from subbasins tributary to the potential Riggs Road diversion channel. This hydrologic information will be provided to Huitt-Zollars as the basis for the preliminary estimate of channel width. Huitt-Zollars' presentation of the results of the channel width analysis will consist of a one-page summary. If the Riggs Road diversion channel width estimate is determined to be acceptable, the District will consider adding this major alternative to the list of those to be studied in the Level II analysis.

Fred indicated that the inclusion of a diversion in Major Alternative 4 would require additional mapping and additional labor as a result of the added distance of watercourse length to be studied and due to the inclusion of a fourth major alternative. Tim said the District would be receptive to a change order request from Huitt-Zollars for this additional work if the District decided to incorporate Major Alternative 4 into the Level II analysis.

Alternatives Analysis in Level II

Tim requested that Huitt-Zollars perform optimization analyses in developing the components to the major alternatives. He explained that the District would not expect analytical evaluations to develop optimization of the components but that qualitative descriptions would be sufficient. Fred indicated that Huitt-Zollars would provide a certain level of optimization and that qualitative descriptions would be provided in this regards to explain why certain components may have been excluded.

Tim said that he has had contact with various recreational and wildlife agencies (e.g., the Arizona Game & Fish Department) and that these agencies have indicated an interest in

contributing ideas for consideration in the development of the Level II analysis. Fred said that Huitt-Zollars would be interested in getting information from these agencies.

FOLLOW-UP MEETING

After the brainstorming meeting, the District and Huitt-Zollars met to discuss several other project issues.

1. Future Conditions for the Queen Creek and Sanokai Wash HEC-1 Model Development.

The District agreed with Huitt-Zollars' recommendation to use the General Plans of the Towns of Queen Creek and Gilbert in developing the future conditions hydrologic model for the Queen Creek and Sanokai Wash watersheds. Huitt-Zollars prefers this approach as opposed to using the Maricopa Association of Governments (MAG) future land use projections because the Queen Creek and Gilbert General Plans reflect planning projections by local jurisdictions, which would likely have more credibility with local residents than those of MAG, a regional planning authority.

2. Handling Diversions in the Sanokai Wash Model.

Fred indicated that Huitt-Zollars will eliminate the channel diversions in the Sanokai Wash HEC-1 model when performing the Level II analysis of the Sanokai Wash watershed. The District agreed with this approach. Charlie asked how the District would like for Huitt-Zollars to handle the Sanokai Wash diversions in the EMF analysis. Dave indicated that the diversions should be left in the Entellus HEC-1 model when analyzing the EMF because existing conditions are to be used for that analysis.

3. HNTB EMF Products Needed.

In response to the Tim's e-mail of March 11, Huitt-Zollars requested that the District provide one-size plan-profile sheets of the EMF and one copy of the final report.

4. Existing Conditions HEC-1 Schematic for the EMF.

Charlie requested that the District provide the schematic for the existing conditions HEC-1 models for the EMF. Dave will provide.

5. Status of Hydraulic Modeling of Queen Creek.

The District is continuing to work on the hydraulic model for Queen Creek with anticipated completion still assumed to be April. The HEC-2 model is being used by the District for this analysis. The District indicated that Huitt-Zollars could use either HEC-2 or HEC-RAS models for its Level II analysis of Queen Creek channel alternatives. The HEC-RAS model was used by Entellus for the Sanokai Wash hydraulics analysis, and

this model would likely be more convenient for Huitt-Zollars to use in its analysis of Sanokai Wash channel alternatives.

6. Incorporating Future CIP Components into the Existing Conditions EMF HEC-1 Model.

Fred indicated that there was difficulty in incorporating the future CIP components in the EMF watershed into the existing conditions EMF HEC-1 model. There were significant changes in subbasins and routings between the existing conditions and future conditions EMF models such that it was not possible to determine what was done in transforming the existing conditions EMF hydrologic model into the future conditions hydrologic model. Fred suggested a simplified approach in which the major components of the CIP would be included. Tim will look into this situation and get back to Huitt-Zollars.

ACTION ITEMS

1. The major alternatives, as described above, will be analyzed in the Level II analysis.
2. The District will provide flow rates to Huitt-Zollars as a basis for estimating the width of the Riggs Road diversion channel.
3. Huitt-Zollars will perform a normal depth calculation to make a preliminary estimate of the width of the Riggs Road diversion channel based on hydrology provided by the District.
4. The District will decide if Major Alternative 4 will be added to the Level II analysis after Huitt-Zollars submits its normal depth analysis of the potential Riggs Road diversion channel.
5. Huitt-Zollars will use the General Plans of the Towns of Queen Creek and Gilbert in developing future use conditions for hydrologic modeling.
6. Huitt-Zollars will leave the diversions in the Entellus Sanokai Wash HEC-1 model when analyzing the EMF because existing conditions are to be used for that analysis.
7. The District will provide half-size plan-profile sheets of the EMF and one copy of the EMF final report.
8. The District will provide the schematic for the existing conditions HEC-1 model.
9. Huitt-Zollars will use either HEC-2 or HEC-RAS models for its Level II analysis of Queen Creek channel alternatives.
10. Tim will look into the situation of incorporating future CIP improvements into the existing conditions EMF hydrologic model and get back to Huitt-Zollars.

The meeting ended at approximately 3:45 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

3/26/99
Date Prepared

c: Attendees

Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (200,08)
Subject: Progress Meeting No. 6 – Second Level I Alternatives Development
Meeting
Date: March 22, 1999
Time: 2:45 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Dave Degerness 506-4730
Town of Queen Creek
Dick Shaner 987-9887
Huitt-Zollars
Fred Duren 952-9123
Mark Seits (214) 871-3311
Charlie Joy 952-9123

The meeting objective was to select those Level I alternatives that should be considered for study in the Level II analysis. The first brainstorming meeting was held on February 16, 1999. As a result of that meeting, Huitt-Zollars developed 24 potential Level I alternatives. These alternatives were presented to the public in a neighborhood open house on March 18.

The agenda is attached. A summary of the meeting discussions is presented below. Action items are shown at the end of the minutes.

SUMMARY OF MEETING

After introductory remarks and presentation of background information, the meeting objectives were discussed. These objectives are to review the 24 alternatives and, using qualitative methods, select those that should be analyzed from a quantitative standpoint in the Level II analysis. These alternatives are to be combined into not more than three major alternatives for evaluation in the Level II analysis.

Selection Tools

The items listed in the attached agenda were distributed to the meeting attendees for use in evaluating the alternatives. These items are attached.

Alternatives Discussion

The following decisions were reached during the meeting.

1. The diversion SW4/QC4 is eliminated from further consideration. The hydraulic capacity of Queen Creek for several miles downstream of this proposed diversion is believed to be just adequate for handling the 100-year, 24-hour event. Putting additional flow into the creek from Sanokai Wash would be expected to require channel improvements in Queen Creek that may be otherwise avoided.
2. The diversion SW2/QC2 is eliminated from further consideration. There would be significant difficulty in implementing this diversion due to existing development. Additionally, improvements have already been made along a significant length of Queen Creek downstream of this proposed diversion. Since these improvements were based on the "non-diverted" flow, the channel is already improved to handle the "non-diverted" flow.
3. The diversion SW5 is eliminated from further consideration. There is not much developable land along this diversion alignment, and it is believed that there would be difficulty in gaining public acceptance for construction of a diversion channel in this area.
4. Concrete channels will not be considered unless hydraulically required in areas where the required channel width is restricted to the point where "soft" engineered channels cannot provide the needed capacity.
5. Bermed channels are eliminated from consideration.
6. A diversion along Riggs Road from Sanokai Wash westward to the East Maricopa Floodway (EMF) should be added for consideration.
7. Detention will be considered an element in all major alternatives.
8. One major alternative should consist of Alternative 1, as presented in Level I Alternatives discussion of March 3, 1999 (as attached). This alternative would represent the baseline condition of keeping the Queen Creek confluence and EMF drop structure in their current locations, focusing the evaluation on providing incised channels for both Queen Creek and Sanokai Wash, and not including any diversions.
9. Should it be preferable to develop more than three major alternatives, the District will provide a change order to handle the additional engineering required.
10. The diversion along Chandler Heights Road (i.e., SW5) is still under consideration.

Development of Three Major Alternatives

It was requested by the District that further consideration and discussion of the alternatives be undertaken prior to making final selection of the major alternatives to carry forward into Level II. A third Level I Brainstorming Meeting will be scheduled later in the week to make final selection of the major alternatives.

ACTION ITEMS

1. The decisions reached, as described above, will be followed in developing the major alternatives for evaluation in the Level II analysis.
2. A third Level I Brainstorming Meeting will be held later in the week to make final selection of the major alternatives.

The meeting ended at approximately 4:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

3/24/99

Date Prepared

c: Attendees
Gary Burroughs
Jon Girard
Glenn Shearer
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

AGENDA

SECOND LEVEL I BRAINSTORMING MEETING MARCH 22, 1999

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Introductions

2. Background

- a. First Level I Brainstorming Meeting – Feb. 16 (handout)
- b. Scope calls for qualitative selection of Level I alternatives to study quantitatively in Level II
- c. Developed 24 alternatives after first brainstorming meeting
- d. Alternatives for Level II to be selected based on suggestions by the public, local jurisdictions, and the District (2.2.7).
- e. Selections to be made in a meeting with the District, Towns of Gilbert and Queen Creek.
- f. "List of alternatives shall be reduced by (sic) to not more than three major alternatives" at the meeting.

3. Meeting Objective

- a. Reduce 24 alternatives to levels indicated by scope
 - 3 for Queen Creek
 - 3 for Sanokai Wash
 - 4 for drop structure and Queen Creek confluence
 - 3 for Queen Creek confluence sedimentation basin
- b. Combine into up to three major alternatives
- c. Evaluation methodology (matrix vs. ?)

4. Selection Tools (handouts)

- a. Peak flows at key confluence points
- b. Hydrographs
- c. Public comments
- d. Comments (minutes) from first brainstorming meeting
- e. Description of alternatives

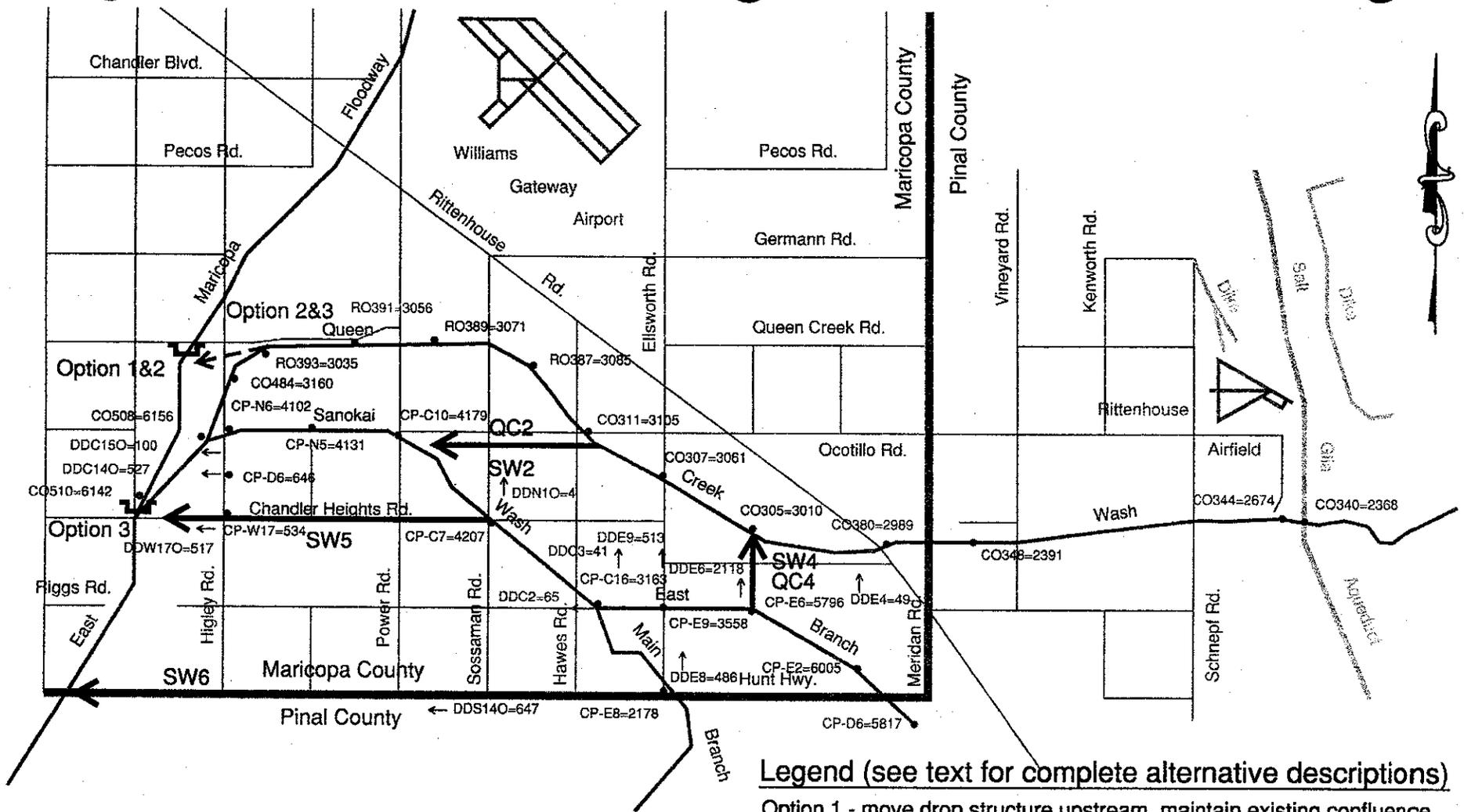
5. Alternatives Discussion

- a. Drop structure
- b. Queen Creek confluence
- c. Queen Creek confluence sedimentation basin
- d. Sanokai Wash
- e. Queen Creek

6. Development of Three Major Alternatives

7. Open

Queen Creek/Sanokai Wash HMP & East Maricopa Floodway Capacity Mitigation Study Level I Alternatives Exhibit

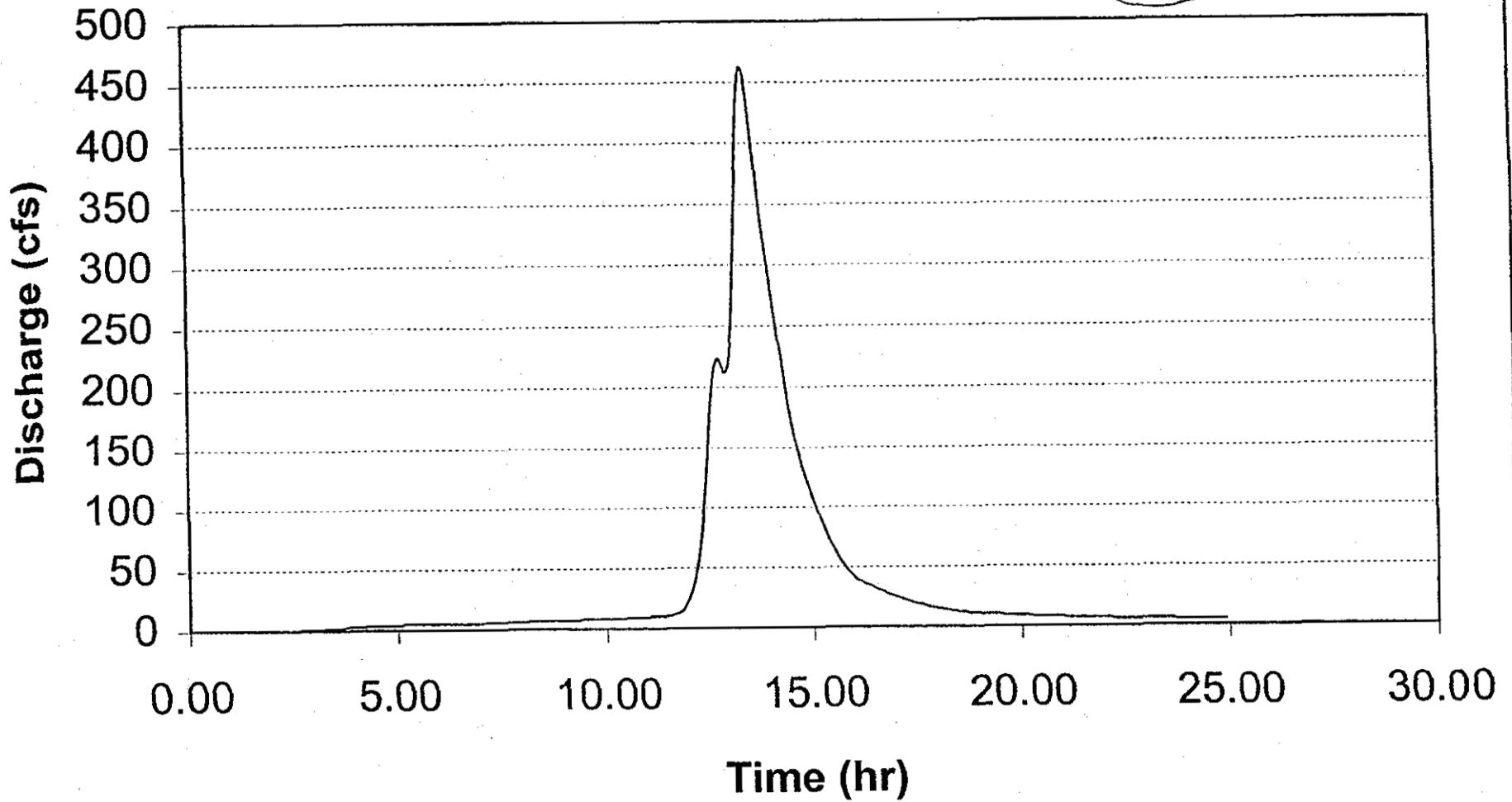


Legend (see text for complete alternative descriptions)

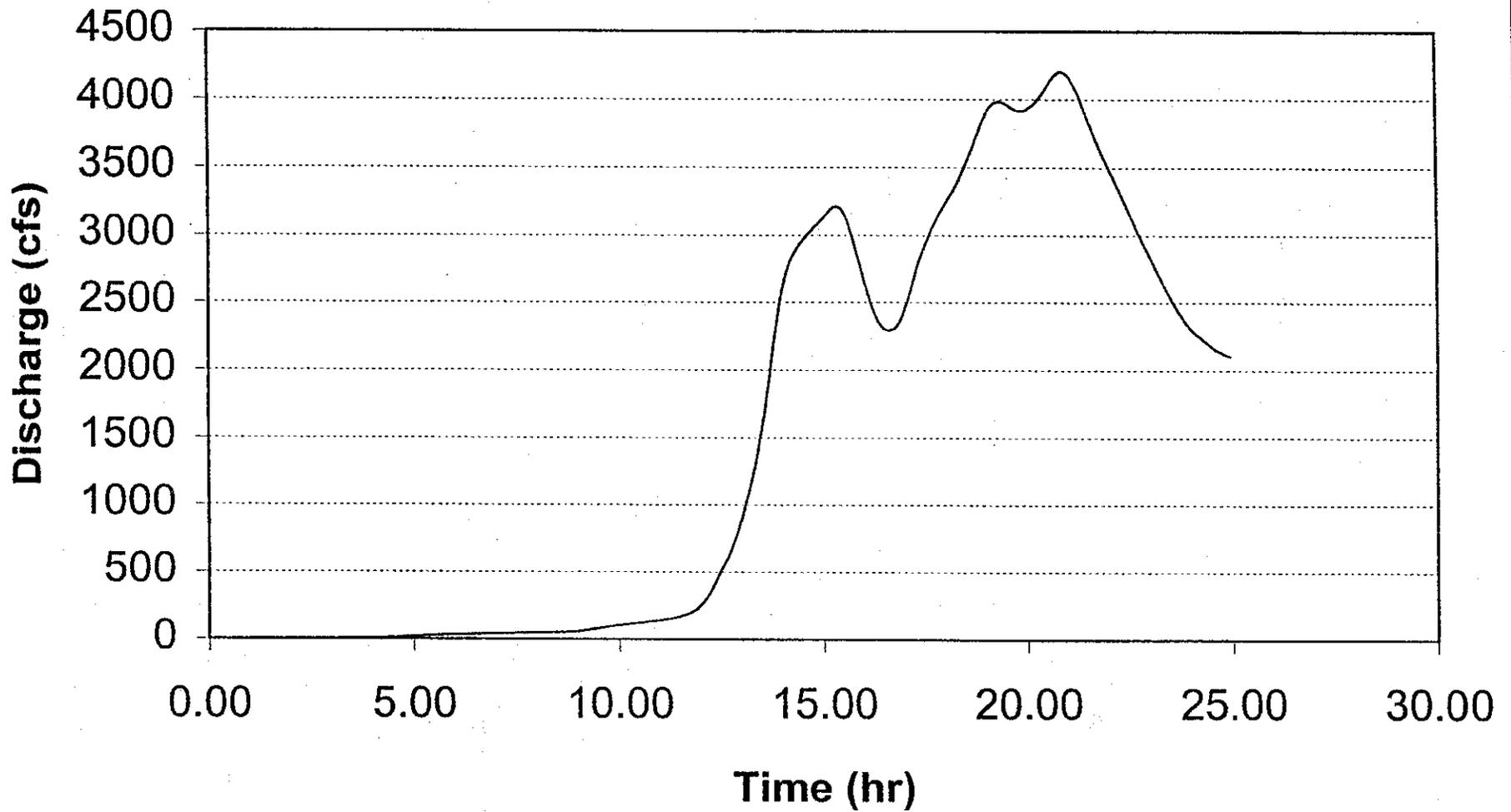
- Option 1 - move drop structure upstream, maintain existing confluence
- Option 2 - move drop structure and confluence upstream
- Option 3 - move confluence upstream, maintain existing drop structure
- QC1 - Queen Creek incised channel (not shown)
- QC2 - Diversion at Ocotillo Rd. (same as SW2)
- QC3 - Queen Creek bermed channel (not shown)
- QC4 - Diversion at Crismon Rd. (same as SW4)
- SW1 - Sanokai Wash incised channel (not shown)
- SW2 - Diversion at Ocotillo Rd. (same as QC2)
- SW3 - Sanokai Wash bermed channel (not shown)
- SW4 - Diversion at Crismon Rd. (same as QC4)
- SW5 - Diversion at Chandler Heights Rd.
- SW6 - Diversion at Hunt Highway

Hydrograph at CP-E8

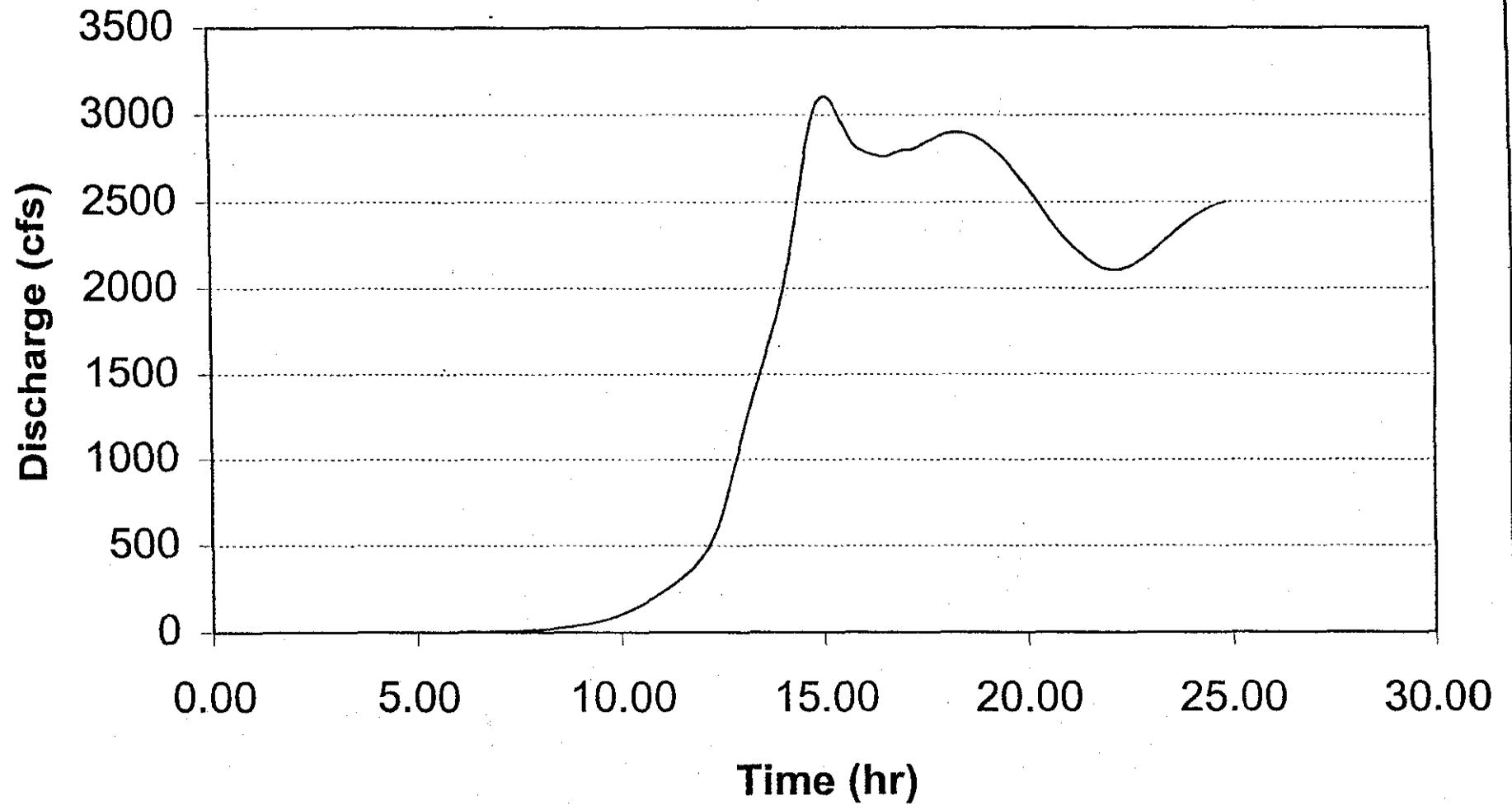
Break out



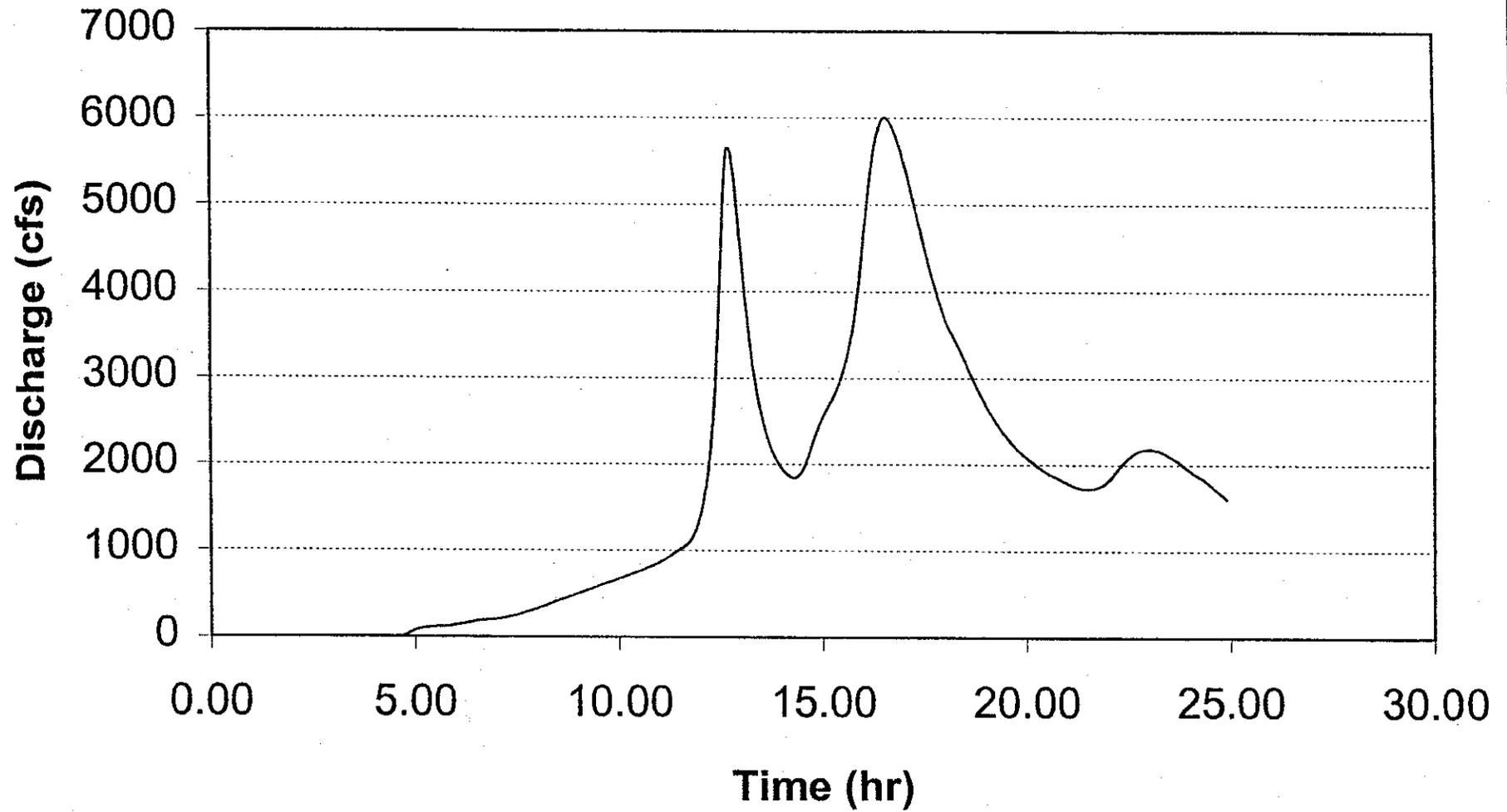
Hydrograph at CP-C7



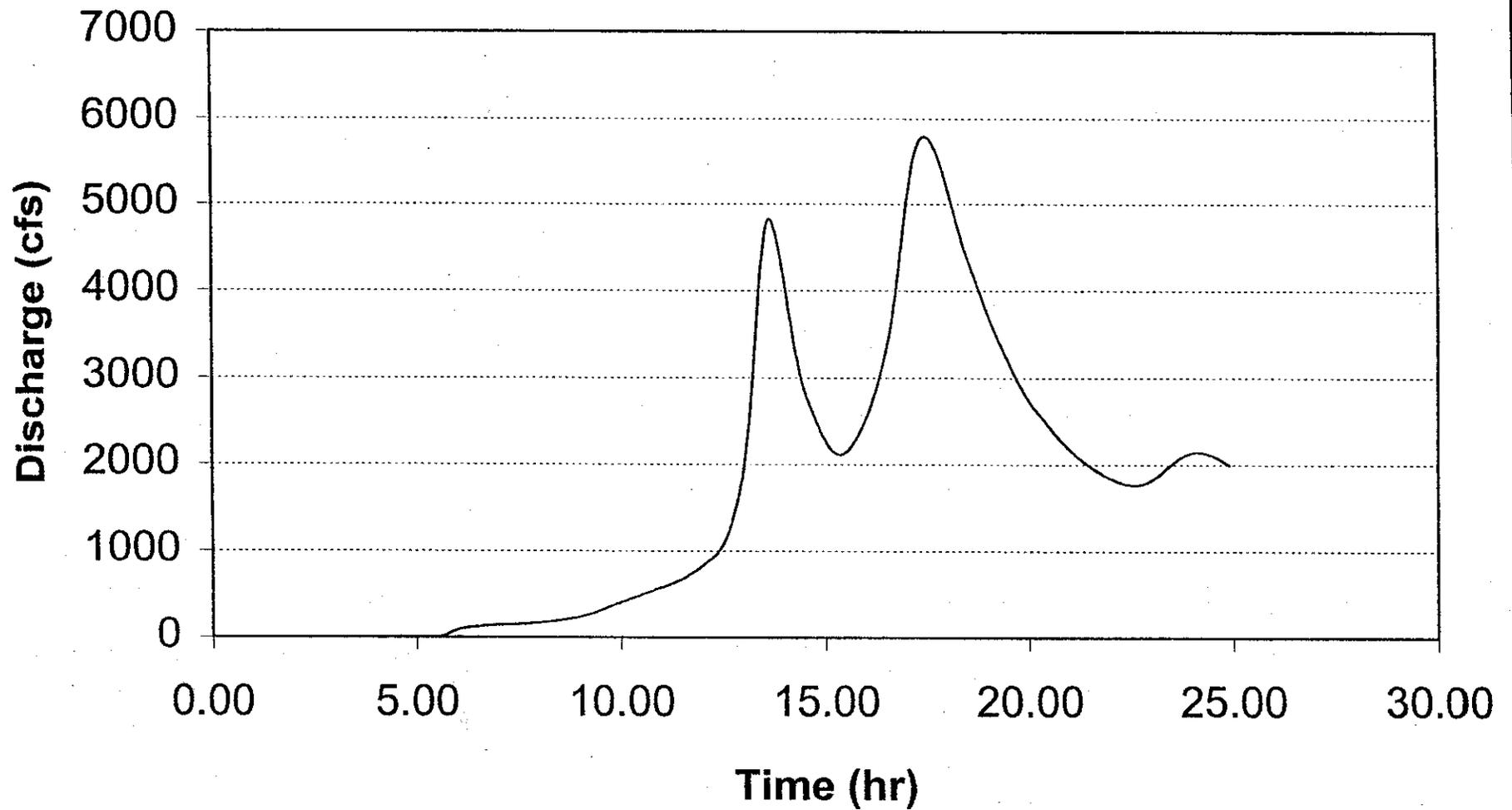
Hydrograph at CO311



Hydrograph at CP-E2



Hydrograph at CP-E6



COMMENTS RECEIVED AT FIRST QUEEN CREEK
NEIGHBORHOOD OPEN HOUSE
(March 18, 1999)

1. Make channels as wide and as shallow as possible to achieve as much "greenbelt" as possible. (Greenbelt was a reference to native vegetation.) Trails are needed. (Cynthia, Town Manager; at least two additional open house attendees agreed with this thought)
2. The potential Hunt Highway Diversion of Sanokai Wash would help solve a significant sheet flow problem between Hawes and Higley Roads from runoff originating in the San Tan Mountains in Pinal County. An east-west equestrian trail could be incorporated with the Hunt Highway Diversion, which should be located on the south side of the highway. This trail should be on the north side of diversion and have a split-rail fence that separates the trail from the high-speed traffic on Hunt Highway. This trail would be ideal for the many horse riders that frequently ride from the Queen Creek area to the San Tan Regional Park in northern Pinal County. (Sylvia Santos)
3. It is important to protect the area at Hawes and Riggs Roads from flooding. This is an area where flow concentrates from the East and Main Branches of Sanokai Wash. It is located immediately west of the Queen Creek Landfill. This area is planned to be a recreational center after the landfill is completed. (Sylvia Santos)
4. No concrete ditches. (Essentially all attendees took this position, including the Town Manager and a councilman.)
5. The main issue is flooding; recreation is secondary. Don't take funding away from the flood control element to finance recreation. (Unknown attendee.) It was explained to this individual that funding was not coming from the District or Town but through developers who would construct the channel and recreational improvements through development arrangements with the Town. It was also explained by the councilman that the primary focus was flood protection and that it was possible to incorporate some recreational elements in the channels for minimal cost. These explanations satisfied this individual's concern.
6. The channels should have equestrian trails on one bank and pedestrian trails on the other bank. The bottom of the channel would be ideal for soccer fields. (councilman).
7. The City has an ordinance (or some other type of authority) that allows it to require developers to donate land within the floodplain of Queen Creek and Sanokai Wash as a pre-condition to approval of a development. This authority also allows the Town to require that developers provide a 20-foot landscaped buffer between a development and the channel bank. John Kross, Town Planner, or Dick Schaner, Town Engineer, can provide information on this authority. (councilman)

8. The City has acquired several pieces of land along Queen Creek (and Sanokai Wash ?) through donation by developers. There is a map on the wall of the Town Hall showing where these lands are. Dick Schaner would be able to identify these lands on a map. (Cynthia)

9. Water-based facilities would be great. Recharge is important. Water in the desert is nice to look at and to use. (councilman and unknown attendee)

10. Impact fees to cover the costs of recreational facilities are being discussed by the Town Council. These fees could be used by the Town to maintain land within the channels that is donated by developers. (councilman)

11. The Town has a Recreational Land Use (or other such name) Subcommittee that is charged with developing recreational facilities within the Town. The subcommittee is interested in developing recreational facilities within the Queen Creek and Sanokai Wash floodplains. (councilman)

HUITT-ZOLLARS, INC.

File Copy

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (200,08)
Subject: Progress Meeting No. 5 - Level I Alternatives Development Meeting
Date: Feb. 16, 1999
Time: 1:15 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**

Tim Phillips	506-4718
Pedro Calza	506-4697
Russ Miracle	506-2961
Joe Tram	506-4607
Theresa Hoff	506-8127
Amir Motamedi	506-4871
Dave Degerness	506-4730

Town of Queen Creek

Dick Shaner	987-9887
-------------	----------

Huitt-Zollars

Gary Burroughs	952-9123
Fred Duren	952-9123
Mark Seits	(214) 871-3311
Charlie Joy	952-9123

Aquatic Consulting & Testing

Rick Amalfi	921-8044
David Benjes	921-8044

Hoque, Peters & Associates

Enamul Hoque	921-1368
--------------	----------

WEST Consultants

Dennis Richards	345-2155
-----------------	----------

The meeting objective was to develop and discuss possible alternatives to consider for study in the Level I analysis. An agenda was not prepared. A summary of the meeting discussions is presented below. Action items are shown at the end of the minutes.

SUMMARY OF MEEETING

Introduction

The meeting began with Fred stating that the general purpose of the meeting was to develop and discuss possible hydraulic alternatives to maintain the 100-yr conveyance capacity of Queen Creek (QC) and Sanokai Wash (SW). Fred then briefly went through the Scope of Work concerning Level I Analysis – Alternatives Formulation/Preliminary Analysis. He indicated that the focus of the brainstorming meeting was to address the currently undefined alternatives that are to be developed in the Level I analysis which include: (1) channel and off-channel improvements for QC, (2) channel and off-channel improvements for SW, and (3) the sedimentation basin alternatives at the confluence of QC with the East Maricopa Floodway (EMF). Other alternatives to be developed and evaluated in the Level I analysis include the EMF capacity mitigation alternatives and the QC confluence alternatives. Both of these sets of alternatives are well defined in the scope of work.

Russ requested that the EMF alternatives be discussed. These alternatives are defined in the scope of work to include: (1) channel improvements, (2) off-line detention, and (3) detention within the watershed. At the end of the meeting, alternatives to mitigate conveyance capacity problems along the EMF were also discussed.

Fred related that the selection of the QC confluence alternative will have an influence on the final recommendation for EMF capacity mitigation. However, the EMF final recommendation would be impacted only in vicinity of the confluence by the selected confluence alternative. Also, any change in the confluence location that might impact the final EMF recommendation could be handled after finalizing the QC confluence recommendation. He said that Huitt-Zollars was proceeding with the EMF analysis at this time. Mark agreed with this approach and mentioned that the alternate to proceeding with the EMF analysis at this point (i.e., waiting until the QC confluence alternative was finalized) would significantly back-load the project to the extent that the completion date would likely need to be extended.

Fred indicated that the QC confluence alternatives are: (1) maintain the existing confluence location and drop structure; (2) move the drop structure upstream of confluence; (3) move the confluence and drop structure to just downstream of Queen Creek Road and: (4) move the confluence to just downstream of Queen Creek Road but maintain the existing location of the drop structure.

General Alternative Concepts and Issues/Constraints for QC/SW Alternatives

Mark began the discussion by outlining four general concepts from which alternatives could be developed: channelization, detention, diversion, and setback.

Channelization. Channel modifications within the watercourses may be approached in different ways, as described below.

A "natural" or "soft" approach, which would maintain native vegetation (to various degrees) but still ensure that the channels will have 100-year conveyance capacities.

A "urban" or "hard" approach, which would emphasize the conveyance capacities of the channels through the use of concrete channels, removal of vegetation, and with less regard for aesthetics.

A "recreational" approach, which would have an emphasis on providing recreational areas and facilities ranging from trails to picnic areas to parks.

Incised channels and raised levees as alternate concepts to provide the 100-year conveyance capacities.

Realignment of the channels.

Detention/Retention. Detention/retention in the watershed also can be considered under different approaches.

Requiring and monitoring onsite retention within new developments may be used to decrease the amount of runoff to the channels.

Regional detention basins within the watershed may be used to reduce peak flows and decrease the conveyance needs of the channels. These basins could include on-line basins or off-line basins, either adjacent to the channel or within the watershed.

The size and number of the basins are also factors in considering detention alternatives. One large basin or several smaller basins that have similar hydrologic impacts may be used.

Phasing of detention/retention may also be used to address interim conditions of development between existing conditions and future conditions. For example, several small basins may be initially required for acceptable channel conveyances; however, upon development within the watershed, a basin(s) may not be required and the land subsequently developed.

Diversions. It may be beneficial to divert flow from one watercourse to the other. Diversions could be included in the Level I analysis where there are locations on either the QC or SW watercourses that could potentially serve as diversion points from one watercourse to the other.

Setbacks. Requiring and maintaining a buffer zone between the channels and future development to include land potentially impacted by flooding is also a

concept for consideration. Use of setbacks would minimize channel improvements and the impact of such improvements.

Fred identified several issues or possible constraints that might effect alternative development.

Environmental Issues. Enamul described some environmental issues that might effect proposed alternatives. From his discussions with the Arizona Game and Fish Department (AGF) and the U.S. Forest Service (USFS), the reach along QC from Vineyard to Higley Roads has been identified as "riparian." These agencies have indicated that any improvements along the channel bottom or side slopes might not be accepted in this reach due to disturbance of wildlife habitat. In addition, the AGF/USFS might require a survey to identify any endangered species, in particular the Pygmy Owl. Enamul has walked a portion of QC within this reach and observed channel banks void of vegetation, the channel bottom thick with vegetation, and significant amount of dumped trash along the channel banks including large appliances, furniture, and agricultural waste. Enamul believes that there are portions of this reach that are not critical to riparian wildlife and that the banks of other portions can be modified without impacting wildlife habitat. Dick indicated that these environmental concerns have not been brought to his attention despite the amount of development in the area.

Cultural Resources. Research on cultural resources has revealed a lack of complete information in the project area, but, at the same time, has identified several major sites within the area. Based on these findings, additional investigations will be required if cultural resources are to be adequately considered in the evaluation of alternatives.

Existing/Planned Development. The presence of Power Ranch was seen as a possible constraint, but Russ and Tim felt that Power Ranch should not be a constraint to proposed alternatives. The Power Ranch development has modified and incorporated QC into its golf course. Modifications to the channel have also dropped QC significantly below the previous outfall elevation. During the course of the meeting, Dick identified a number of other large/small developments that could be impacted by proposed alternatives.

Gravel Mining Operations. Gravel mining operations along QC might also restrict the development of certain alternatives and/or the probable implementation of certain alternatives.

Gilbert/Mesa Ground Water Recharge Facility. A proposed Gilbert/Mesa reclaimed-water recharge facility under consideration near the EMF/QC confluence may impact some proposed alternatives. This facility is planned for the section of land east of Higley Road and between Queen Creek and Ocotillo Roads. However, Dick suggested that this particular facility might not be implemented.

During this discussion it was indicated that there is considerable interest by multiple parties in the County-owned land to the west of the proposed facility. Dick also revealed proposed plans for recharge projects in QC near Rittenhouse Road and at several points along QC. Tim indicated that the Central Arizona Water Conservation District (CAWCD) has identified QC as the most desirable recharge option available in eastern Maricopa County. He suggested contacting Tim Harbor at CAWCD to get information on this issue.

Timing. Due to the speed of development in the area and the desire for developers to bear some of the construction costs where possible, implementation, development, and/or evaluation of alternatives might be impacted.

Implementation. Fred expressed a concern that channel improvements in reaches already improved by developers and in areas where small developments are planned may not be amenable to funding by developers. Prior input from the District indicated that the District intended to have private development fund all improvements for the QC and SW study areas. Tim, however, said that the District would consider funding of improvements where private funding is not readily obtainable.

Queen Creek/Sanokai Wash Improvement Concepts

A number of different improvement concepts were discussed during the meeting, including:

Recommendations contained in the Queen Creek Area Drainage Master Study:

- Channel improvements (widening and profile changes) along QC and SW
- Onsite retention requirements for new developments
- Drainageways to convey runoff from Pinal County to QC and SW
- San Tan Structures (levees in Pinal County along the Santan Mountains)

All these alternatives are considered viable with the exception of the San Tan levees

Detention basins located within Maricopa County along both branches of SW near the Pinal County boundary.

On-line, linear detention basins along the main branch of SW between Hawes and Sossaman Roads and between Sossaman and Power Roads through the use of drop structures.

Realignment of SW around the landfill at Hawes and Riggs Roads.

Utilize Power Ranch Golf Course area as a detention basin.

Diverting flow from SW to QC through a new north-south channel along the Crismon Road alignment.

Diverting flow from SW east to the EMF along Chandler Heights Road through modifications to an existing drainage channel.

Diverting flow from QC to SW through a new east-west channel along an alignment approximately 800 feet south of Ocotillo Road.

Miscellaneous Notes Regarding Queen Creek and Sanokai Wash

What follows are miscellaneous notes made from comments by various attendees regarding QC and SW.

Dick Shaner.

- It is acceptable for the 100-year flow in Queen Creek to be contained within an approximate 200-foot width through the Town (or width similar to that of the Power Ranch portion of QC). The use of a linear, buried, cut-off wall and benched channel side slopes are acceptable through the Town. It is important to maintain the sandy bottom of QC through the Town.
- Some portions of QC are contained within the existing channel; however, he desires that these sections be included in any channel improvements.
- The SW channel is not defined and extensive "breakouts" and inundation of surrounding areas occur; thus, a setback alternative is not feasible.
- Soil samples and percolation tests in the area of the Gilbert/Mesa Recharge project indicate that the feasibility of the site for recharge is marginal.
- Most of the land on the south side of the QC watercourse (within Maricopa County) is under development and/or in the planning process.
- The lack of a defined channel along the East Branch of SW is a major concern.
- Developers haven't proposed any notable trail or recreation improvements along the washes to date (possible exception being Sossaman Estates).
- The Town of Queen Creek may be receptive to trimming trees and other native vegetation within/along the washes; however, it would not be receptive to removal. It is important to retain native vegetation on both watercourses.
- If developers dedicate washes to the Town of Queen Creek, the Town will maintain them.
- East-west "greenbelts" (e.g., to incorporate trails into proposed major east-west channel diversions) are not anticipated.

Joe Tram.

- General intent of implementing any proposed alternatives is to have developers pay for as much as possible.
- Detention along QC may not be effective due to upstream flood retarding structures releasing peak flows over a long period of time (in addition, long releases may adversely impact erosion).
- The District is concerned that Pinal County may be designing bridges along Queen Creek (i.e., on Vineyard and/or Kenworth Roads) for 25-year flows. This situation should be looked into and the District informed of the impacts on Maricopa County. The District will contact Pinal County if the proposed bridges could cause flow diversions away from QC that would not re-enter the watercourse.
- Levees that are considered for QC or SW alternative improvements need to be engineered. The existing QC levees are not engineered.
- The potential for relocating the outlet of SW to below the existing drop structure on the EMF at Chandler Heights Road should be considered.

Amir Motamedi.

- The District would prefer incised channels to levees.
- The District likes the idea of linear detention along Main Branch of SW.
- Developers would prefer a channel cross section with a low flow channel, sandy bottoms, and bank vegetation.
- Sedimentation basins at the bends of QC (Sossaman Road) and SW (Power Road) will likely be necessary

EMF Alternative Development

Alternatives for the mitigation of capacity conveyance problems along the EMF were briefly discussed at the end of the meeting. A summary of the discussion follows.

Fred went through the general alternatives for the EMF which included channel modifications, off-line detention, and detention within the watershed.

Tim said that if improvement recommendations for the EMF result in adequate capacity, per the District's criteria, along the EMF from its upstream limit to its intersection with Hunt Highway the remaining downstream reaches will be considered to have adequate capacity.

Dick said that there is an east-west drainage channel along Hunt Highway. He does not believe that it can convey significant runoff, so EMF hydrology showing flows in this area continuing to the northwest is correct. *[However, a subsequent review of the EMF hydrology (which, in this area, was developed in the Queen Creek ADMS) shows runoff from the Santan Mts. being conveyed west along Hunt Hwy to the EMF and not northwesterly as mentioned during the meeting]*

Fred asked about possible expansion of detention basins.

Tim and Dave said that CAP Basins No.1-4 and the Parkwood Basin would be difficult to expand and not to consider. The Elliot Basin could be considered for expansion; however, Tim indicated that timing would be important on the basin because land acquisition and design are underway.

Siphon Draw Basin (north of Elliot Road near Meridian Road) could possibly be expanded.

Tim said the Powerline Basin would probably not be implemented.

Joe brought up the issue of outflow from the flood retarding structures upstream of the Powerline Floodway. Constant outflow from the FRSs would negate the impact of in-line basins along the EMF. However, it was thought that the models do not incorporate sustained releases from the FRSs. Joe indicated that if this was the case then in-line basins might then have an impact.

Tim indicated that ADOT was proposing a detention basin at/near the intersection of the EMF and the proposed Santan Freeway alignment and that it might possibly be considered in alternatives.

Miscellaneous Items

Tim said the District is reviewing how EMF design capacities were determined and is in the process of determining EMF capacity requirements.

Rights of Entry for the soil-sampling plan should be available within 45-60 days from last week.

Tim has MCDOT information for Power Road bridge available.

Tim requested that HZI convert about 4 to 5 additional subbasins in the EMF model for QC from curve number to the Green-Ampt loss methodology. Since there were only a few of these basins, Fred agreed for HZI to make this conversion.

Tim suggested contacting Brian Henning, CAWCD, at 869-2567, or Dean Hangstrom, USBR, to obtain hydrographs for QC at its crossing of the CAP Aqueduct.

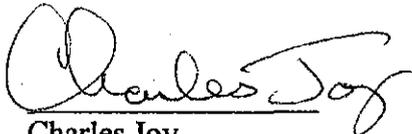
ACTION ITEMS

- Huitt-Zollars, Inc. (HZI) will review Pinal County information in regards to QC bridges on Vineyard and/or Kenworth Roads.
- HZI will convert curve number loss methodology in 4 to 5 additional subbasins in the EMF model for QC and SW to Green-Ampt methodology to conform to the District's standard for infiltration parameters.

- HZI will review how hydrologic models treat releases from upstream FRSs and how this might impact the study. In addition, HZI will pursue release information from the CAWCD and/or the Bureau of Reclamation for QC hydrographs at the CAP crossing. Possible contacts include Brian Henning of the CAWCD (869-2567) and/or Dean Hankstrom of the USBR.
- HZI will develop alternatives for Level I analysis based on the improvement concepts generated in the brainstorming meeting.
- Tim and Theresa will determine if the District wishes to undertake additional cultural surveys for the QC and SW areas.
- The District will establish criteria for EMF freeboard/capacity.

The meeting ended at approximately 3:45 p.m.

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy

2/17/99
Date Prepared

c: Attendees
Jon Girand
Glenn Shearer
Barbara Macnider
John Cahoon

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.2)
Subject: Progress Meeting No. 4 – Data Collection Report Review
Date: February 3, 1999
Time: 3:00 p.m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (Project Manager) 506-4718

Huitt-Zollars
Charlie Joy, EIT (Hydrology/Hydraulics) 952-9123
Fred Duren, P.E., P.G. (Project Manager) 952-9123

An agenda was not prepared for this meeting, which was called to obtain District comments on the draft Data Collection Report. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Tim provided the drawings for the EMF hydraulic analysis performed by HNTB. There are approximately 50 sheets in the drawing set. Tim said that the design discharge shown on these plans is not the 100-year event, but is somewhere between the 50- and 100-year events. He cautioned to look closely at the drawing legend in interpreting the results.

Tim said that the District has decided to use the existing conditions hydrology for the EMF analysis instead of the future-with-selected-CIP condition, as previously determined.

Tim said that the District has not yet decided upon the freeboard criterion for Huitt-Zollars to use in analyzing capacity mitigation for the EMF. He is waiting for someone else in the District to respond to his request for this criterion. Tim will inform Huitt-Zollars shortly regarding the criterion to use in the EMF capacity mitigation analysis.

Tim said that the District will decide on the development condition to be used in hydrologic modeling for Queen Creek and Sanokai Wash after Huitt-Zollars develops the hydrology for existing and future conditions.

Fred referred to Tim's e-mail of February 1, 1999, regarding the hydrologic conditions for Huitt-Zollars to use in the modeling for the EMF and Queen Creek/Sanokai Wash studies (attached). Charlie pointed out that the comment in the e-mail regarding the three EMF hydrology models being consistent with District standards was not correct. Charlie said that some of the East Mesa ADMP-EMF HEC-1 models use the Queen Creek ADMP model, which contains SCS curve numbers for infiltration losses. Additionally, there is an area south of Sanokai Wash along the EMF which is not in the Sanokai Wash watershed. This area was modeled with curve numbers and will remain that way since it is outside of the on-going Sanokai Wash Floodplain Delineation Study. Since the District standard is the Green and Ampt loss analysis, these two instances represent models that are not consistent with District standards.

A discussion on rights-of-entry for soil sampling was held. Fred said that WEST Consultants had informed him that the rights-of-entry should be obtained as soon as possible. Fred said that the schedule had this work being done by the end of January, but WEST had indicated that a 45- to 60-day turn-around for rights-of-entry previously stated by Tim should allow them to complete the soil sampling without extending the contract period.

Tim provided the following review comments on the draft Data Collection Report.

- There needs to be more substance in the report.
- Suggested including meeting minutes as an attachment.
- Wants to see general plans in the report.
- Better define what was collected.
- Mention existing studies.
- Provide existing and future development map.
- Draw conclusions from the available data.
- Discuss existing flooding problems.

Fred said that Huitt-Zollars had prepared the report in accordance with its understanding of the scope of work and in the sense that it was to document the data collected. It had been assumed that the District did not want raw data and data compilations or interpretations included in the report since the volume of data collected was very large and since the interpretation of data was believed to be more appropriately included as part of the Level I analysis. However, Fred said that Huitt-Zollars would develop a second draft report for District review in response to Tim's comments. Tim left his marked-up copy of the draft report.

Action Items

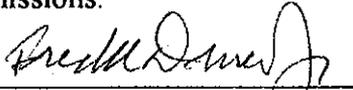
1. Huitt-Zollars will use the existing conditions hydrology for the EMF analysis instead of the future-with-selected-CIP condition.

2. Tim will inform Huitt-Zollars shortly regarding the freeboard criterion to use in the EMF capacity mitigation analysis.

3. Huitt-Zollars will prepare and submit a second draft of the Data Collection Report, based upon District review comments on the first draft.

The meeting ended at approximately 4:00 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Fred K. Duren, Jr., P.E., P.G.

2/12/99

Date Prepared

attachment

c: Attendees
Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing
Dennis Richards

Duren, Fred

From: Duren, Fred
Sent: Monday, February 01, 1999 10:25 AM
To: Tim Phillips - FCDX
Cc: Hammock, Ginger
Subject: RE: Queen Creek/Sanokai Wash/EMF Master Plan - Hydrology Condition

Tim,

Thanks for the thorough input on hydrology/hydraulics. I've scanned this but haven't really digested it yet. I'll get back to you if we have any questions.

Fred

(10.10)

-----Original Message-----

From: Tim Phillips - FCDX [SMTP:tsp@mail.maricopa.gov]
Sent: Monday, February 01, 1999 10:07 AM
To: 'Fred Duren, Hult-Zollars, Inc'
Cc: Dave Degerness - FCDX; Amir Motamedi - FCDX; Russ Miracle - FCDX; Tim Murphy - FCDX; Valerie Swick - FCDX
Subject: Queen Creek/Sanokai Wash/EMF Master Plan - Hydrology Condition

Fred, regarding the issue on which hydrologic condition to use, I offer the following guidance:

Sections 3.3.2.2, 3.3.2.3 and 3.3.2.4 talk specifically about the models for the area and what the consultant will perform. In section 3.3.2.2 on the EMF it indicates that model provided by the District will include the existing, future and future with CIP. This indicates that you should not need to do any work regarding the EMF model. Section 3.3.2.3 indicates that the District will give you the existing conditions model for the Sanokai Wash area and the consultant will generate the future condition. This model is that which was associated with recent work on the FIS. This model is to the District's current standard of Green-Ampt. The remaining slice of area between the East Mesa ADMP-EMF model and the Sanokai Wash model is the model put together for the 1991 Queen Creek ADMP. This model utilizes curve numbers and is not to the District's current standard. The scope under section 3.3.2.4 indicated the consultant will generate new hydrology for the Queen Creek (the remaining slice) based on the ADMP model provided by the District. The task indicates the consultant will establish existing and future conditions. It is implied that this will be under the Green-Ampt standard. Based on this tasking the result is the availability of 3 models, with existing and future conditions defined for all three and the availability of future with CIP for one model. All models would now be to District standards.

What is implied but not specifically defined is what will be the base condition for developing alternatives. Because it is not specifically defined the District will provide this direction. We will be looking at the EMF model existing, future and future with CIP tomorrow (2/2/99) and determine which is the appropriate model for alternative formulation for the area north of Rittenhouse. The District will let you know which model (with/without CIP features) should be used for the EMF. In order for the District to define the appropriate base model for alternative formulation for Queen Creek and Sanokai Wash, however, we need for you to update the Sanokai Wash model for future conditions, and to upgrade the Queen Creek model for existing and future conditions using the Green-Ampt method. With

the availability of these models it will be easy for the District to determine the base model for alternative formulation.

Regarding the EMF HEC2 model. The model will base capacity on overbank conditions. The District's Drainage Design Manual, Volume II Hydraulics Section 6 on Open Channels defines the design criteria/requirements for the EMF. I am furthering the discussion with the District's Engineering staff to determine if there is any adjustments/changes to the standard as it applies to the EMF as it was a facility originally built to SCS standards. Further, the plans which show the cross-sections on the EMF should be available by Thursday 2/4/99 for your use.

I hope this clarifies the direction on the hydrology and hydraulics. Call if you have any questions.

HUITT-ZOLLARS, INC.

File

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 3
Date: Jan. 14, 1999
Time: 9:00 a.m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (Project Manager) 506-4718
David Degerness (Hydrology/Hydraulics) 506-1501

Huitt-Zollars
Charlie Joy, EIT (Hydrology/Hydraulics) 952-9123
Fred Duren, P.E., P.G. (Project Manager) 952-9123

Kenney Aerial Mapping
John Cahoon (Mapping) 258-6471

The attached agenda presents the order of discussion during the meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Agenda Item 1 – Generalized Schedule Review

Fred provided an overview of the schedule (see attached). In general, some of the project subtasks are ahead of schedule and some are slightly behind schedule, primarily due to slower than expected data collection progress. No change in completion date for the project is envisioned. The draft Data Collection Report is to be submitted to the District tomorrow, January 15.

Agenda Item 2 – Mapping Status, Needs, Questions

John said that all the project study area has been flown and that the aerotriangulation for the Pinal County work was very successfully completed. Fred said that the ground panels set by Huitt-Zollars for the Pinal County work have been removed. John indicated that Kenney had stopped all work on the project until the District decided whether it wanted Huitt-Zollars to undertake the additional mapping work in the area of the three flood retarding structures (FRS).

Kenney would like to know within a week whether the additional mapping would be requested by the District, otherwise it was going to proceed with the mapping work for the Queen Creek project. Tim said he would talk to Joe Tram to see if he has made a decision yet on the additional mapping and would get back to Huitt-Zollars within a week.

Tim provided the District's topographic data on CD for Kenney's use in proceeding with preparation of the concept drawings.

Fred re-iterated the problem that will occur in some areas from using the District's topographic data, in that areas that have been developed since the District's topography was prepared will have topography different than that on the District's files. Fred suggested that these areas could be shown with no topography on the drawings, accompanied by a note that the area has already been developed and is not available for further modification. Tim would like to see the new topography incorporated on the drawings if possible. John indicated that this could present a potential problem due to a difference in datum between the new topography and the District topography. Tim said that he would contact Power Ranch to see what was available in the way of as-built topography (and as-built structures and hydraulic modeling) and then get back to Huitt-Zollars/Kenney for a determination by Kenney as to the potential for incorporating the Power Ranch new topography onto the drawings. It was assumed that the only change in topography that would affect the District's topography was at Power Ranch.

Charlie asked about getting additional mapping computer files for various attributes (e.g., soil maps, subbasin boundaries), which are available from the District's HIS group. Tim responded that Huitt-Zollars should inform him of these mapping needs and that he would process this request through the HIS group.

John left the meeting at about 9:30 a.m. after completion of the discussion of mapping.

Agenda Item 3 – Work Accomplished to Date

Fred summarized the work completed to date. *Data Collection* (Subtask 2.1) is nearly completed, except for:

- submission to the District of the draft Data Collection Report (to be submitted tomorrow), review by the District and affected jurisdictions, and preparation and submittal of the final report
- completing data collection from those agencies/jurisdictions that have not yet provided the needed information.

Fred mentioned that, although the project schedule shows completion of the data collection activities in late January, the data collection process will actually extend throughout the project as new data needs are discovered due to findings during the study.

Work on the *Level I Analysis* (Subtask 2.2) has consisted of identifying concepts for use in the alternatives analysis through discussions with the District and public agencies and development of preliminary concepts for detention basin alternatives for the EMF capacity mitigation analysis.

Tim provided to Huitt-Zollars a diskette containing the HEC-RAS models for the EMF, as recently submitted by the District's consultant contractor on the EMF hydraulic analysis, HNTB. These models contain hydraulic analyses for three development conditions: existing, future without CIP, and future with CIP.

Fred indicated that Huitt-Zollars would start on the EMF analysis immediately but would need the District to specify the development condition to use as a first step. (See discussion of Level I analysis under agenda item 4 below for more detailed discussion of development condition.)

Based on the original schedule, the Level I EMF analysis is to be conducted over an approximate 2-month period. Assuming the same period for completion based on a January 15 start would result in a completion date of around March 10; however, Huitt-Zollars will attempt to complete this analysis by mid to late February.

Fred said that the evaluation matrix is to be used to select a recommended plan from among the three EMF alternatives to be studied. Thus, in order to complete the EMF analysis, which will require selection of the recommended plan by mid to late February, the evaluation matrix will need to be finalized sufficiently in advance to allow its use in the EMF analysis.

Fred expressed concern about getting public consensus of the evaluation matrix. Tim said that the District, representatives of the Towns of Gilbert and Queen Creek, and Huitt-Zollars would develop the final matrix and present it to the public at a neighborhood open house. If public comments are received about the evaluation matrix, they will be considered in possibly modifying the matrix.

No work has been completed on the *Level II Analysis* (Subtask 2.3) and the *Level III Analysis* (Subtask 2.4).

WEST Consultants has completed several items of work on the *Sediment Transport* (Subtask 2.5) and *Lateral Migration* (Subtask 2.6) analyses, including collection of needed information and preparation of a sediment sampling plan. Fred said that WEST has selected sites for sediment sampling and needed rights-of-entry for these sites. Charlie had prepared a list of landowners to submit to the

District (see *Landownership, Right-of-Way, and Easements* (Subtask 3.4) discussion below); however, Tim requested that Huitt-Zollars review the sampling sites to see if any could be moved from land owned by private individuals to that on existing rights-of-way or easements for public agencies, to that owned by companies, or to privately owned large landholdings. Huitt-Zollars will coordinate with WEST to determine if some of the sites can be moved to these types of landowners/agencies in order to facilitate the acquisition of rights-of-entry. Huitt-Zollars will provide a final request for rights-of-entry for soil sampling sites to the District after WEST reviews its original sites for possible adjustment.

Dave provided to Huitt-Zollars several large aerial photographs/photographic mosaics and a report that had been requested by WEST. Huitt-Zollars will forward these materials to WEST.

No work has been completed on the *Maintenance Plan* (Subtask 2.7) and the *Implementation Plan* (Subtask 2.8).

Field Surveying and Mapping (Subtask 3.1) work has been performed as described above in Agenda Item 2.

Hydraulic Analysis (Subtask 3.2) work has consisted of review of models received from the District. As previously described Tim provided the EMF HEC-RAS model in diskette format. Tim will provide digital files of the EMF drawings prepared by HNTB in about 1 to 1.5 months. He will provide a copy of the drawings by February 1.

Hydrologic Analysis (Subtask 3.3) work has consisted of review of models received from the District and initial work on changing the loss methodology in the Queen Creek HEC-1 model from curve numbers to the Green and Ampt methodology. Huitt-Zollars agreed to make this adjustment in loss methodology in the Queen Creek watershed portion of the model.

Dave said that the new Sanokai Wash HEC-1 model prepared by Entellus has subbasins that overlap some of the Queen Creek subbasins in the Queen Creek model. He requested that Huitt-Zollars modify the subbasins in the Queen Creek model to agree with the Sanokai Wash subbasins and that Huitt-Zollars submit a revised subbasin map for the Queen Creek model to the District. Dave will then have the District's HIS staff develop soil and other hydrologic information in GIS format for the revised Queen Creek subbasins and submit this information to Huitt-Zollars. Modification of the Sanokai Wash HEC-1 model (i.e., not containing break-outs) prepared by Entellus will be used unchanged by Huitt-Zollars as the base hydrologic model in the Level II and Level III analyses. Huitt-Zollars will update this model for future conditions.

Landownership, Right-of-Way, and Easements (Subtask 3.4) work has consisted of obtaining the Metroscan database and related map from the District and the use of this information in defining landowners to be impacted by the soil sampling program. (See *Sediment Transport* (Subtask 2.5) and *Lateral Migration* (Subtask 2.6) discussion above.)

No work has been done under *Environmental Permits and Approvals* (Subtask 3.5).

Biological Survey Analysis (Subtask 3.6) has consisted of contacting the appropriate agencies to collect needed data and information.

The Archaeological Assessment, under *Cultural Resources* (Subtask 3.7), is nearly completed by Archaeological Consulting Services (ACS) and is due to be submitted shortly to Huitt-Zollars. (ACS is waiting for information to be submitted to it by the Arizona State Museum and the Queen Creek Historical Society in order to complete the report.) Fred indicated that ACS has found that there are numerous archaeological sites along Queen Creek and Sanokai Wash and this finding may preclude the flexibility of shifting the alignment of channel alternatives to avoid these sites.

Work on *Environmental Regulatory Records Review* (Subtask 3.8) has consisted of contacting the appropriate agencies to collect needed data and information.

Numerous utilities, agencies, and jurisdictions have been contacted under *Utilities* (Subtask 3.9) to obtain information on major utility corridors and as-built drawings. Much information has been collected; however, some agencies and jurisdictions have not been responsive to date. Tim asked Huitt-Zollars to inform him of any problems encountered in obtaining essential project information, and he may contact these agencies and jurisdictions to see if he can facilitate the data collection.

Several *Site Visits* (Subtask 3.9) have been performed by the Huitt-Zollars project team. These site visits will continue on an as-needed basis throughout the project.

Three progress meetings with the District and numerous meetings with utilities, agencies, and jurisdictions have been completed under *Meetings* (Subtask 3.10).

No *Public Involvement* (Subtask 3.11) work has been completed to date.

Project Management (Subtask 3.12) has been on going throughout the project to date.

The draft Data Collection Report is to be submitted tomorrow, January 15, to the District as the first report submittal under *Reports* (Subtask 3.13). Tim requested

that Huitt-Zollars provide five copies of the draft report: three for the District and one each for the Towns of Gilbert and Queen Creek.

Agenda Item 4 – Work to be Performed in Next 30 Days

In the next 30 days, work will be started or continue to be undertaken on numerous subtasks, as described below.

Data Collection work will be continued to complete the initial data collection from those utilities, agencies, and jurisdictions not yet providing the requested information. (A Data Collection Report review meeting will be held with the District, and the final reports prepared and submitted.)

Work in the *Level I Analysis* will be expanded to include development of EMF alternatives and modification of the hydrologic and hydraulic models necessary to evaluate these alternatives (e.g., inclusion of detention basins or channel modifications). Development of conceptual alternatives for Queen Creek and Sanokai Wash will also be started. A brainstorming meeting will be held between the District, possibly Dick Shaner of the Town of Queen Creek, and Huitt-Zollars on February 16 to discuss Level I alternatives.

Tim said that the District is interested in determining the project alternatives, especially for the confluence of Queen Creek and the EMF. The District owns 230 acres of land in this area, and developers are waiting to see if the District will make any of this land available for sale.

Fred asked about the inclusion of “planned man-made drainage facilities” that are to be included on the Existing Facilities Exhibit in the Data Collection Report. He said that the District had previously indicated that it would be selecting those planned facilities that were considered feasible from the District’s perspective. Fred said that Huitt-Zollars had planned to use the information on planned facilities provided in the East Mesa Area Drainage Master Plan (ADMP), including only large detention basins, for the exhibit and also for use in the alternatives evaluation of the EMF. Tim said use of the East Mesa ADMP planned facilities would be a good place to start.

The need to define the development condition for use in the hydrologic modeling was discussed. The District is reviewing this issue to determine if existing or future conditions should be the basis for developing project hydrology. The relative merit of using either of these two conditions was discussed. Dave said that prior District experience has shown that existing conditions typically produce greater design flows than future conditions due to the inclusion of retention for future development. Fred suggested that this might not be true for the Queen Creek project since development retention is based on the 100-year, 2-hour event, whereas the project will use the 100-year, 24-hour event as the basis for alternatives evaluations. Thus, Fred contended, the storage volume retained for

the 2-hour event could be filled and unavailable for attenuation of the peak flow for the 24-hour event. Dave said that the District has usually accounted for retention in developments by showing the volume of retention as an initial diversion in the HEC-1 model. Selection of the development condition will be necessary in order to proceed with the EMF analysis in Level I.

No work is anticipated to be performed for the *Level II* and *Level III Analyses* in the next 30 days.

Work will continue on the *Sediment Transport* and *Lateral Migration* analyses with the anticipated completion of the sediment-sampling program.

No work is anticipated to be performed for the *Maintenance and Implementation Plans*.

Development of the EMF and Queen Creek (in Pinal County) concept drawings base maps will be completed under *Field Surveying and Mapping*, assuming that the additional mapping for the three FRS's is not undertaken. If the additional mapping is requested, that mapping will be completed during the next 30 days, assuming receiving notice-to-proceed by the District by January 22.

Work on the *Hydraulic and Hydrologic Analyses* will primarily consist of definition of the models to be used, modification of the EMF models for alternatives evaluation, and submittal of revised subbasins for the Queen Creek HEC-1 model to the District.

No significant work is expected to be performed on the *Landownership, Right-of-Way, and Easements* subtask during the next 30 days.

The need for approvals from other regulatory agencies will be completed during the next 30 days under the *Environmental Permits and Approvals* subtask.

Work will continue on the *Biological Survey Analysis, Cultural Resources, and Environmental Regulatory Records Review*. The Archaeological Assessment will be completed within the next 30-day period.

Work will continue on collecting needed information on major utility corridors under the *Utilities* subtask, with all needed information expected to be collected within the next 30 days.

Site Visits will continue on an as-needed basis, as will *Project Management* activities.

The Data Collection Report review meeting will be held under the *Meetings* subtask. A meeting to discuss hydrologic and hydraulic models to be used in the project will be held at the District's office on January 26. Huitt-Zollars will

attend the Flood Control Advisory Board meeting on January 27 to hear Tim's presentation on flood control/drainage work being undertaken and planned in eastern Maricopa County. Additionally, the first Queen Creek Town Council meeting is scheduled for February 3. Tim will be responsible for the presentation and Fred will attend to provide back-up information as needed. Tim will coordinate the meeting arrangements with Dick Shaner.

Tim suggested a mid-March timeframe for the first neighborhood open-house meeting. No formal presentation will be required at this meeting. It will consist of displaying graphics depicting project alternatives and other related information (e.g., the evaluation matrix) for casual public review.

No reports are planned to be submitted during the next 30 days under the *Reports* subtask.

Agenda Item 5 – Meetings

All discussions on meetings are contained in the above portions of the minutes.

Agenda Item 6 – Field Work and Rights-of-Entry

All discussions on field work and rights-of-entry are contained in the above portions of the minutes.

Agenda Item 7 (Shown as item 8 on Agenda) – Data/Decisions Needed From District

Dave informed Huitt-Zollars that the Sanokai Wash HEC-1 model that was provided earlier by the District is the one to be used in the Queen Creek study. The HEC-1 model currently being developed by Entellus is the one containing break-outs, which would not apply to the Queen Creek study.

The combined HEC-RAS model of Queen Creek within Maricopa County that is to be prepared by the District is expected to be available by mid-April. Pedro Calza's group is working on combining the two existing hydraulic models for Queen Creek.

Tim also provided base-mapping data prepared by the District's HIS group on CD computer files.

Tim said that the District will provide to Huitt-Zollars computer files on ultimate watershed build-out for use in modifying the Queen Creek and Sanokai Wash HEC-1 models for future conditions.

Other topics listed under this agenda item are discussed above in these minutes.

Agenda Item 8 (Shown as item 9 on Agenda) – Open

No discussions were held under this agenda item.

Action Items

1. Tim will talk to Joe Tram to see if he has made a decision yet on the additional mapping and will get back to Huitt-Zollars within a week.
2. Tim will contact Power Ranch to see what is available in the way of as-built topography (and as-built structures and hydraulic modeling) and will get back to Huitt-Zollars/Kenney for a determination by Kenney as to the potential for incorporating the Power Ranch new topography onto the drawings.
3. Huitt-Zollars will inform Tim of the additional mapping that is needed and available from the District, and Tim will process this request through the District's HIS group.
4. Huitt-Zollars will coordinate with WEST to determine if some of the soil sampling sites originally selected by WEST can be moved to land owned by companies, to agency easements or rights-of-way, or to large private landholdings in order to facilitate the acquisition of rights-of-entry.
5. Huitt-Zollars will provide a final request for rights-of-entry for soil-sampling sites to the District after WEST reviews its original sites for possible adjustment, per action item 4.
6. Huitt-Zollars will forward to WEST the large aerial photographs/photographic mosaics and report provided by the District that had been requested by WEST on a data collection visit to the District.
7. Tim will provide digital files of the EMF drawings prepared by HNTB in about 1 to 1.5 months. He'll provide a copy of the drawings by February 1.
8. Huitt-Zollars will make an adjustment in loss methodology in the Queen Creek model, converting the Queen Creek subbasins from the curve number methodology to the Green and Ampt methodology.
9. Huitt-Zollars will modify the Queen Creek subbasins in the Queen Creek model to agree with the Sanokai Wash subbasins and submit a revised subbasin map for the Queen Creek model to the District.
10. Dave will have the District's HIS staff develop soil and other hydrologic information in GIS format for the revised Queen Creek subbasins and submit this information to Huitt-Zollars.

11. Huitt-Zollars will inform Tim of any problems encountered in obtaining essential project information from utilities, agencies, and jurisdictions, and he may contact these entities to see if he can facilitate collection of the needed information.

12. Huitt-Zollars will submit five copies of the draft report to the District on January 15: three for the District and one each for the Towns of Gilbert and Queen Creek.

13. Huitt-Zollars will attend the Flood Control Advisory Board meeting on January 27 to hear Tim's presentation on flood control/drainage work being undertaken and planned in eastern Maricopa County.

14. A brainstorming meeting will be held between the District, possibly Dick Shaner of the Town of Queen Creek, and Huitt-Zollars on February 16 to discuss Level I alternatives.

15. The first Queen Creek Town Council meeting is scheduled for February 3. Tim will be responsible for the presentation and Fred will attend to provide back-up information as needed. Tim will coordinate the meeting arrangements with Dick Shaner.

The meeting ended at approximately 10:45 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.

1/19/99
Date Prepared

attachments

c: Attendees
Gary Burroughs
Jon Girand
Mark Seits
Glenn Shearer
Steve Long
Ray Steele
Rick Amalfi
Barbara Macnider
Enamul Hoque
Brian Doeing

AGENDA

PROGRESS MEETING NO. 3 JANUARY 14, 1999

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Generalized Schedule Review
2. Mapping Status, Needs, Questions
 - a. Ground Control and Flight Completed
 - b. Historic Topo Needed
 - c. Question Regarding Revised Topo vs. Historic Topo
3. Work Accomplished to Date
 - a. Data Collection
 - b. Level I Analysis
 - Queen Creek and Sanokai Wash
 - EMF
 - c. Level II Analysis
 - d. Level III Analysis
 - e. Sediment Transport
 - f. Lateral Migration
 - g. Maintenance Plan
 - h. Implementation Plan
 - i. Field Survey and Mapping
 - j. Hydraulic Analysis
 - k. Hydrologic Analysis
 - l. Land Ownership, Right-of-Way, and Easements
 - m. Environmental Permits and Approvals
 - n. Biological Survey Analysis
 - o. Cultural Resources
 - p. Environmental Regulatory
 - q. Utilities
 - r. Site Visits
 - s. Meetings

- t. Public Involvement
- u. Project Management
- v. Reports

4. Work to be Performed in Next 30 Days

- a. Data Collection
- b. Level I Analysis
 - Queen Creek and Sanokai Wash
 - EMF
- c. Level II Analysis
- d. Level III Analysis
- e. Sediment Transport
- f. Lateral Migration
- g. Maintenance Plan
- h. Implementation Plan
- i. Field Survey and Mapping
- j. Hydraulic Analysis
- k. Hydrologic Analysis
- l. Land Ownership, Right-of-Way, and Easements
- m. Environmental Permits and Approvals
- n. Biological Survey Analysis
- o. Cultural Resources
- p. Environmental Regulatory
- q. Utilities
- r. Site Visits
- s. Meetings
 - H&H with District
 - Queen Creek Town Council
- t. Public Involvement
- u. Project Management
- v. Reports

5. Meetings

6. Field Work and Rights-of-Entry

- a. Sediment Sampling

8. Data/Decisions Needed From District

- a. Models
 - Sanokai Wash (HEC-1)
 - Combined HEC-RAS for Queen Creek
 - EMF HEC-RAS (to be provided at meeting)
- b. Base Map Computer Files (to be provided at meeting)

- c. Historic Topo
- d. Future Development Conditions (Ultimate Watershed Build-out; 3.3.2)
- e. Hydrologic Modeling Condition

9. Open

Queen Creek/ Sanokai Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule

ID	Task Name	Cost	1999																	
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	QC/SW HMP & EMF CAPACITY MITIGATION STUDY	\$609,311.00	\$609,311.00																	
2	2.0 SPECIFIC TASKS	\$216,665.00	\$216,665.00																	
3	2.1 Data Collection & Existing Conditions Analysis	\$19,836.00	\$19,836.00																	
4	2.1.1 Data Collection	\$10,536.00	\$10,536.00																	
5	2.1.2 List of Development	\$2,505.00	\$2,505.00																	
6	2.1.3 Investigate Master/General Plans	\$629.20	\$629.20																	
7	2.1.4 List of Existing/Planned Recreational Facilities	\$406.12	\$406.12																	
8	2.1.5 Become Familiar with Local Landscaping Concepts	\$291.72	\$291.72																	
9	2.1.6 Prepare Alternatives Matrix	\$2,962.96	\$2,962.96																	
10	2.1.7 Update Data Collection Information (OPTIONAL)	\$2,505.00	\$2,505.00																	
11	2.2 Level I Analysis - Alternatives Formulation/Preliminary Analysis	\$55,211.00	\$55,211.00																	
12	2.2.1 Develop at Least 3 Queen Creek Preliminary Alternatives	\$9,655.36	\$9,655.36																	
13	2.2.2 Develop at Least 3 Sanokai Wash Preliminary Alternative	\$9,655.36	\$9,655.36																	
14	2.2.3 Develop at Least 4 Confluence Alternatives	\$1,795.92	\$1,795.92																	
15	2.2.4 Develop at Least 3 Confluence Sedimentation Basin Alternatives	\$1,801.80	\$1,801.80																	
16	2.2.5 Eliminate Alternatives Based on Minimal Analysis	\$1,813.24	\$1,813.24																	
17	2.2.6 Consider 3 Design Concepts	\$4,423.80	\$4,423.80																	
18	2.2.7 Identify Concepts Suggested by Public, Local Jurisdictions, and District	\$7,085.28	\$7,085.28																	
19	2.2.8 Submit Sketches and Narrative Report	\$5,502.64	\$5,502.64																	
20	2.2.8.1 FCDMC Review Period	\$0.00	\$0.00																	
21	2.2.9 Develop at Least 3 Preliminary Alternatives for EMF Reaches 3, 4, 5, and 6	\$5,857.28	\$5,857.28																	

Project: Project Schedule
Date: Thu 1/14/99

Task: [Symbol] Milestone
Split: [Symbol] Summary
Progress: [Symbol] Rolled Up Task

Rolled Up Split: [Symbol]
Rolled Up Milestone: [Symbol]
Rolled Up Progress: [Symbol]

External Tasks: [Symbol]
Project Summary: [Symbol]

**Queen Creek/ Sanokai Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule**

ID	Task Name	Cost	1999																
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
22	2.2.10 Prepare Landscape/Recreation Design Guidelines	\$7,620.32						\$7,620.32											
23	2.3 Level II Analysis - Alternative Analysis	\$26,410.00						3/11				3/31							
24	2.3.1 Provide Costs for Major Construction Items	\$4,523.20										4/15						10/1	
25	2.3.2 Base Designs on Available Topography	\$0.00																	
26	2.3.3 Evaluate Alternatives	\$10,261.68																	
27	2.3.4 Identify Appropriate Environmental Impacts	\$1,320.50																	
28	2.3.5 Prepare Alternatives Analysis Report	\$1,456.62																	
29	2.3.6 Develop Water Based Recreation (OPTIONAL)	\$8,848.00																	
30	2.4 Level III Analysis - Preferred Alternative Analysis	\$49,374.00																	
31	2.4.1 Refine Design and Cost Estimates of Recommended Plan	\$8,202.48																	
32	2.4.2 Prepare Conceptual Plans for Queen Creek and Sanokai Wash	\$24,064.20																	
33	2.4.3 Prepare Preferred Analysis Report	\$0.00																	
34	2.4.4 Prepare Conceptual Plans for EMF Alternatives	\$12,475.32																	
35	2.4.5 Finalize Water Base Recreation (OPTIONAL)	\$4,632.00																	
36	2.5 Sediment Transport	\$49,694.00																	
37	2.5.1 Include ADWR Standard 5-96	\$26,069.67																	
38	2.5.2 Determine Long-Term Stability	\$10,692.66																	
39	2.5.3 Prepare Sampling Plan	\$12,931.67																	
40	2.6 Lateral Migration	\$4,185.00																	
41	2.6.1 Determine Potential Lateral Migration and Impact Factors	\$4,185.00																	
42	2.7 Maintenance Plan	\$3,478.00																	

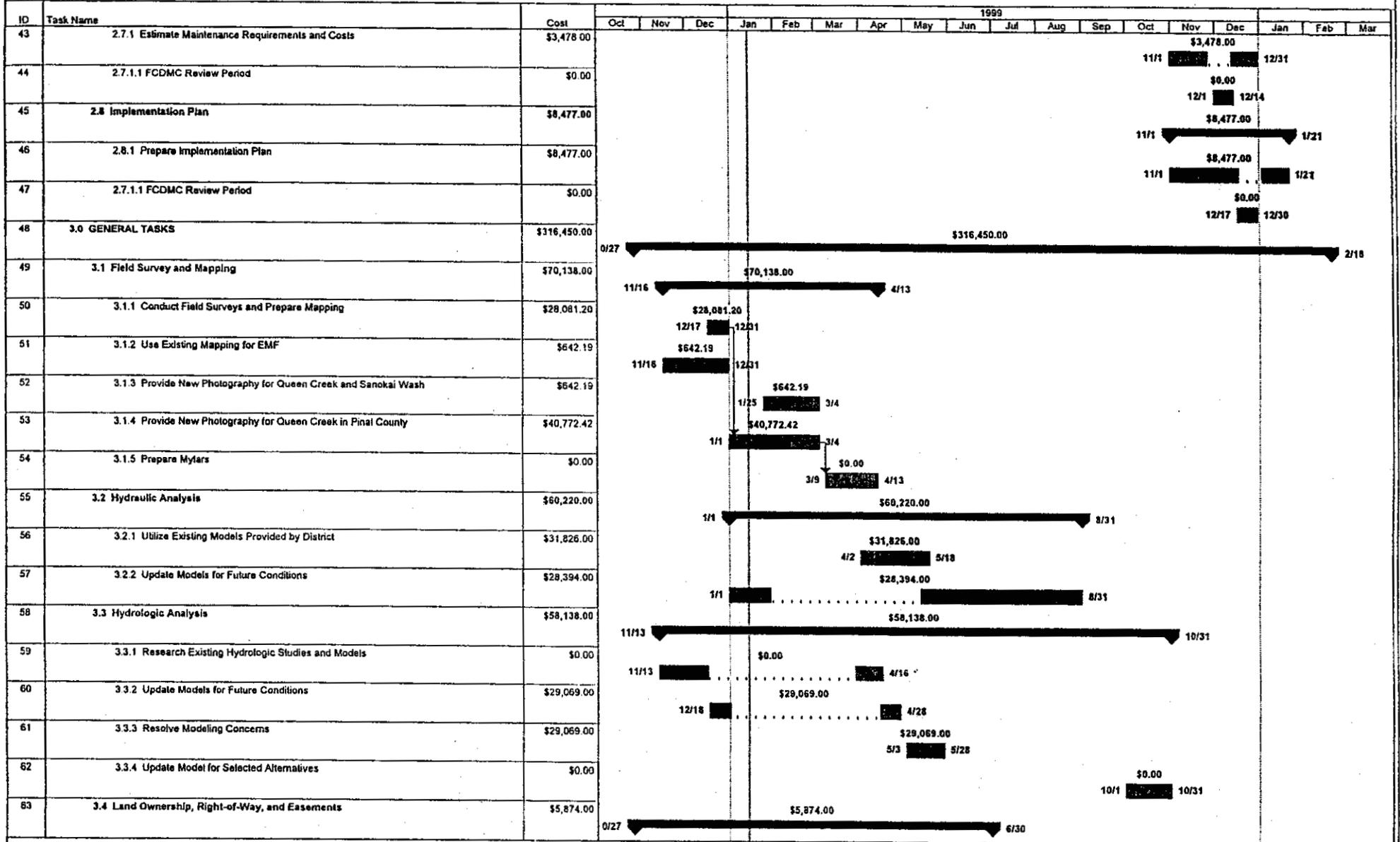
Project: Project Schedule
Date: Thu 1/14/99

Task: [Symbol] Milestone
Split: [Symbol] Summary
Progress: [Symbol] Rolled Up Task

Rolled Up Split: [Symbol]
Rolled Up Milestone: [Symbol]
Rolled Up Progress: [Symbol]

External Tasks: [Symbol]
Project Summary: [Symbol]

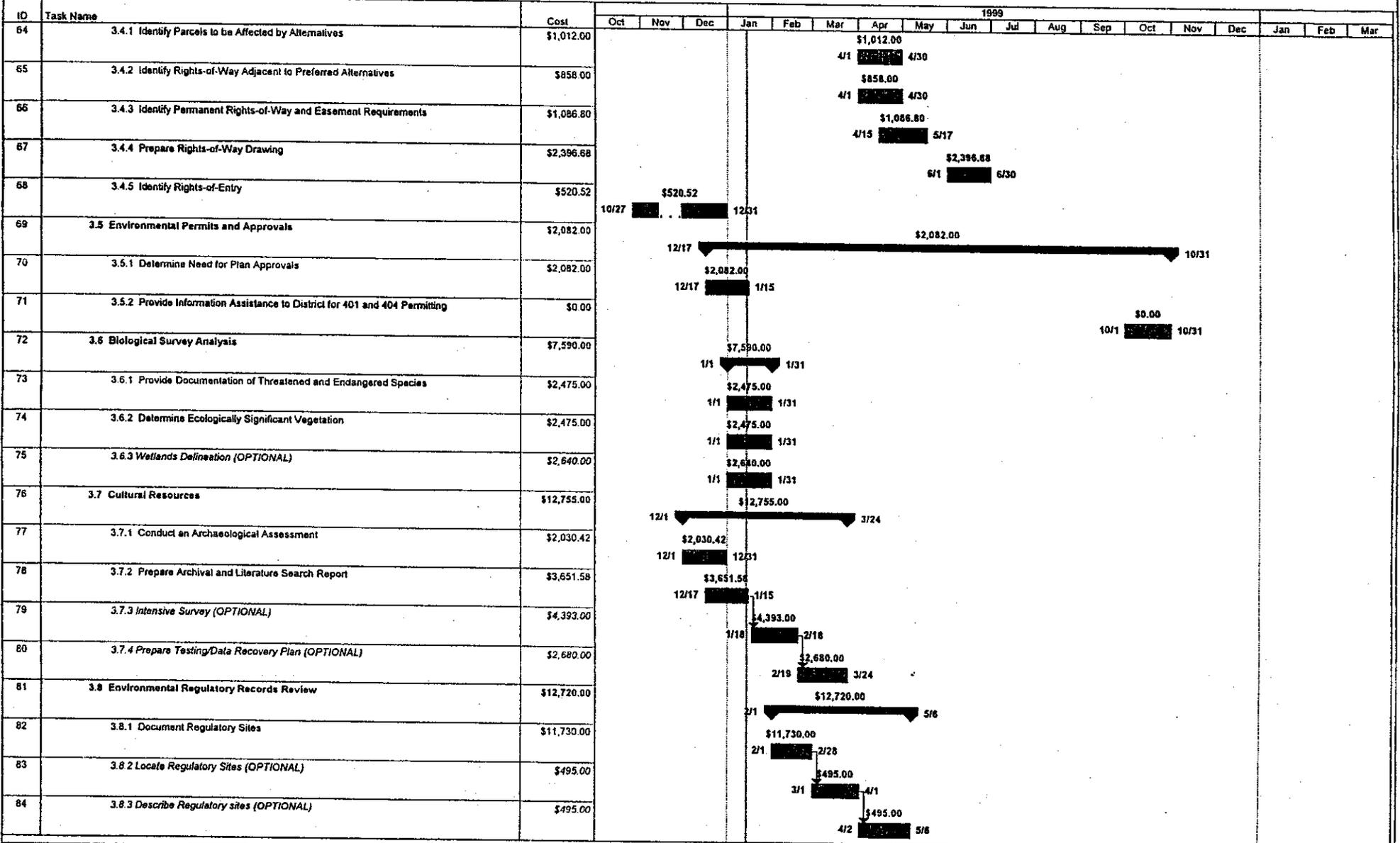
Queen Creek/ Sanokai Wash HMP
 East Maricopa Floodway Capacity Mitigation Study
 Project Schedule



Project: Project Schedule
 Date: Thu 1/14/99

Task		Milestone		Rolled Up Split		External Tasks	
Split		Summary		Rolled Up Milestone		Project Summary	
Progress		Rolled Up Task		Rolled Up Progress			

Queen Creek/Scottsdale Wash HMP
 And
 East Maricopa Floodway Capacity Mitigation Study
 Project Schedule



Project: Project Schedule
 Date: Thu 1/14/99

Task		Milestone		Rolled Up Split		External Tasks	
Split		Summary		Rolled Up Milestone		Project Summary	
Progress		Rolled Up Task		Rolled Up Progress			

Queen Creek/Scottsdale Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule

ID	Task Name	Cost	1999																
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
85	3.9 Utilities	\$4,422.00				1/1	[Bar]												10/31
86	3.9.1 Identify Major Existing Utility Corridors	\$1,882.32				1/1	1/31	[Bar]											
87	3.9.2 Show Utilities on Planimetric Mapping	\$0.00				2/1	2/28	[Bar]											
88	3.9.3 Include Utilities on Conceptual Design Plans	\$2,539.68												10/1	10/31	[Bar]			
89	3.9.3 Coordinate Utility Relocations	\$0.00												10/1	10/31	[Bar]			
90	3.10 Site Visits	\$12,348.00	0/27	[Bar]															10/28
91	3.10.1.1 Initial Site Visit	\$4,116.00	10/27	10/27	2/25	[Bar]													
92	3.10.1.2 Second Site Visit	\$4,116.00				2/26	6/29	[Bar]											
93	3.10.1.3 Third Site Visit	\$4,116.00												6/30	10/28	[Bar]			
94	3.11 Meetings	\$49,500.00	0/27	[Bar]															2/16
95	3.11.1 Meet with Jurisdictions and Others	\$7,025.84	10/27	[Bar]															10/31
96	3.11.2 Prepare Minutes	\$1,624.35	10/27	[Bar]															10/31
97	3.11.3 Conduct Progress Meetings	\$35,832.99	10/27	[Bar]															2/16
98	3.11.4 Attend 1 Queen Creek Town Council Meeting	\$3,460.82												7/15	8/1	[Bar]			
99	3.11.5 Extra Council Meeting (OPTIONAL)	\$1,556.00															1/3	1/19	[Bar]
100	3.12 Public Involvement	\$6,729.00				2/15	[Bar]												1/9
101	3.12.1 Plan and Conduct 2 Neighborhood Open House Meetings	\$6,729.00				2/15	1/9	[Bar]											
104	3.13 CLOMR Submittal	\$13,934.00				2/15	1/9	[Bar]											
105	4.0 PROJECT ADMINISTRATION	\$76,196.00	0/27	[Bar]															3/3
106	4.1 Schedule	\$2,299.00	0/27	0/27	12/4	[Bar]													
107	4.1.1 Submit and Update Schedule	\$2,299.00	10/27	10/27	12/4	[Bar]													

Project: Project Schedule
Date: Thu 1/14/99

Task: [Bar] Milestone: [Diamond] Rolled Up Split: [Dotted Line] External Tasks: [Bar]
 Split: [Dotted Line] Summary: [Bar] Rolled Up Milestone: [Diamond] Project Summary: [Bar]
 Progress: [Bar] Rolled Up Task: [Bar] Rolled Up Progress: [Bar]

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Progress Meeting No. 1 (Hydrologic & Hydraulic Coordination)
Date: Nov. 17, 1998
Time: 1:00 p. m.
Place: Flood Control District - Phoenix

Attendees: **Flood Control District of Maricopa County**

Tim Phillips (Project Manager)	506-4718
Pedro Calza	506-1501
David Degerness	506-1501
Scott Ogden	506-4071
Tim Murphy	

Huitt-Zollars

Mark Seits, Associate (Hydrology/Hydraulics)	214 871-3311
Charlie Joy, EIT (Hydrology/Hydraulics)	952-9123

The attached agenda presents the order of discussion during the meeting. Action items are shown at the end of the minutes with the responsible party identified. Mr. Phillips attended the meeting for approximately the first 30 minutes during which time all but Agenda Items 1a through 1d were discussed. Mr. Murphy joined the meeting for approximately the last 15 minutes to discuss the status of the ongoing EMF study (Agenda Item 1b).

Summary of Essential Issues Discussed:

Agenda Item 1 – H&H Modeling/Data Files

a. Verification of Models/Files Provided

Queen Creek, Sanokai Wash and EMF hydrology and hydraulics will be provided by the District and modified by HZI in the HEC-1 and HEC-RAS formats, respectively. The current HEC-2 model for Queen Creek from Rittenhouse to Hawes will be converted to HEC-RAS by the District and attached to the ongoing HEC-RAS model(s) for Hawes to Higley to form a single model. A summary of the HEC-1 and HEC-RAS models previously provided by the District (to be used for the project) is attached. The only files currently considered to be "final" are

the HEC-1 files for Queen Creek (Existing Condition per the Queen Creek ADMP) and the EMF (Existing, Future and Future w/CIP). All other studies are still ongoing (see Agenda Item 1b).

b. Status of Ongoing District Studies

Queen Creek – Queen Creek ADMP HEC-1 model has already been provided. District to complete hydraulic study from Hawes to Higley by “first of the year” and combine with Rittenhouse to Hawes model in HEC-RAS format.

Sanokai Wash – Entellus HEC-1 model (Existing Condition) to be completed by February 1, 1999. Base Inundation Study for Main Branch to be completed by March 29, 1999. Schedule provided by Scott (see attached).

EMF – District HEC-1 models have already been provided. HEC-RAS models still ongoing by HNTB with no known date for completion. Models to be adjusted for n-values as specified by the District. Capacity Study also to be done (bank-full discharges). Schedule unknown due to the closing of the HNTB Phoenix office. District considering options for completing the study.

Mark discussed the potential impacts to the project schedule if these studies are not available by the first of the year. The EMF analysis is scoped to be done as part of the Level I analysis, which is scheduled to begin mid-December. If the capacity study is not completed until later next year, this could delay the completion of the Level I analysis. An option to waiting for the Capacity Study completion was also discussed. Since the Capacity Study will be providing bank-full capacities (i.e. no freeboard), and the alternatives analysis will be based on District standards for freeboard, we could use the original design discharges as the maximum allowable discharges for each reach (for alternates that do not consider channel improvements). This or other options will be discussed further with Tim Phillips.

The only portion of the study that will be available to begin by mid-December is the update to the Queen Creek hydrology (Existing and Future conditions). As soon as the data collection efforts are completed, the HEC-1 model update can commence.

c. Verification of Conditions(s) to be used to Model Alternatives

Mark raised the question as to which watershed condition (Existing, Future or Future w/CIP) would be used to evaluate the project alternatives for the three streams. Tim Phillips had left the meeting prior to this discussion and neither Dave, Pedro nor Scott knew the answer. Mark or Fred Duren will follow up with Tim on this issue.

d. Overview of Modeling Sequence

Mark gave a short overview of the anticipated modeling sequence for the hydraulic analyses. The EMF alternatives will be evaluated first, with a preferred alternative selected during the Level I analysis. The EMF/Queen Creek confluence analysis will then follow, based on the previously selected EMF alternative. It may not be possible to select a recommended confluence alternative without quantifying the impacts on the Queen Creek and Sanokai Wash hydraulics. Since the Level I analysis is only supposed to include qualitative analyses for Queen Creek and Sanokai Wash, we won't be able to evaluate the full effects until the Level II analysis. We will likely be able to eliminate at least two of the four confluence alternatives during the Level I analysis, which will reduce the number of alternatives to be evaluated in Level II.

e. Clarification of EMF Alternatives

The definition of "off-line storage" is the use of a retention facility adjacent to the main channel where excess flows are discharged from the channel to the retention facility via a side-channel weir (or by other means).

The definition of "attenuation of flows within the watershed" is the use of regional detention/retention facilities located within the watershed that detain/retain flows prior to getting into the main channel.

f. Modeling Assumptions East of County Line

The capacity of the CAP overchute will be used as a baseflow input to account for the area east of the CAP. The same baseflow will be used for Existing and Future conditions.

The previous HEC-1 models for Queen Creek included triangular hydrograph inputs at two points along the SPRR. These are to be replaced by actual computed hydrographs in the updated hydrology.

g. Source of Future Information

Direct communication between Mark or Charlie and Dave is okay as long as it is not disruptive to Dave's other work. Tim suggested reducing the number of calls by waiting until there are several issues to discuss and making one call instead of several. Dave encouraged Mark and Charlie to call at any time.

h. Copies of Reports

Mark inquired as to the number of copies of District reports that would be available for possible distribution to other team members. Tim said they typically

only have one copy which is available (and will likely need to be returned). Additional copies will need to be made by project team members.

Agenda Item 2 – Additional Data Collection Items

Tim went through the list provided at the Kick-off Meeting and said they were in the process of collecting all of the items. Some of the information is very difficult to copy and he will provide a description of what is available and project team members can view the information at the District office and decide if copies are really necessary. Tim will collect all of the data and send it over at one time. Tim did provide the three reports indicated in his November 10, 1998 e-mail to Fred Duren. These reports are to be returned to Tim.

Agenda Item 3 – Topography for Developed Areas

Mark discussed the issue of what to do for topography in the areas where development has occurred since the aerial topography was flown. The primary area of concern is in the reach of Queen Creek through Power Ranch. Pedro thought that they could get a CADD file of the channel improvements that could be spliced into the aerial file. Tim Phillips will follow up with Fred on this issue to see if this can be done by the District or by Kenny Aerial.

Agenda Item 4 – Schedule for 1st Public Meeting

Tim Phillips will follow up with Fred as to scheduling the first Public Meeting.

Agenda Item 5 – Next Progress Meeting

Although a December Progress Meeting may not be necessary, Tim Phillips would like to go ahead and schedule one and cancel it if not needed. Tim will coordinate a day and time with Fred.

Agenda Item 6 – Other

Mark provided three (3) copies of the updated Project Schedule to Tim Phillips along with a file on diskette.

Tim provided the following items to Huitt-Zollars at the meeting:

Reports:

1. FEMA CLOMR Submittal for a portion of Queen Creek, Power Road to Recker Road, dated 5/27/98.

2. Final Conceptual Design Report for Rittenhouse Road Channel from Signal Butte Road to the EMF, dated August 1993.

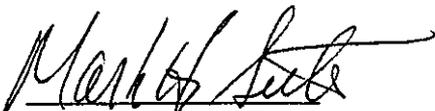
3. Technical Data Notebook (including AutoCad and HEC-2 files) for the Application for LOMR, Queen Creek LOMR, Hawes Road to SPRR, dated July 1997.

4. East Mesa ADMP Hydrologic Analysis, Volumes 1 & 2, dated October 1998. The report binders included the HEC -1 data files.

Action Items

1. Mark and/or Fred to discuss with Tim Phillips the following issues:
 - Should we wait for the EMF Capacity Study to be completed by HNTB?
 - Which watershed condition should be used to analyze project alternatives?
2. Tim Phillips to coordinate dates and times for 1st Public Meeting and the next Progress Meeting.
3. Tim Phillips to provide remainder of data requested.

The preceding minutes were prepared by Mark Seits, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Mark H. Seits, P.E.

11/18/98
Date Prepared

attachments

c: Attendees
Fred Duren
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

AGENDA

H&H DATA COLLECTION/PROGRESS MEETING NOV. 17, 1998

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. H&H Modeling/Data Files
 - a. Verification of Models/Files Provided
 - b. Status of Ongoing District Studies
 - c. Verification of Condition(s) to be used to Model Alternatives
 - d. Overview of Modeling Sequence
 - e. Clarification of EMF Alternatives
 - f. Modeling Assumptions East of County Line
 - g. Source of Future Information
 - h. Copies of Reports, etc.
2. Additional Data Collection Items
3. Topography for Developed Areas
4. Schedule for 1st Public Meeting
5. Next Progress Meeting
6. Other

**SONOKAI WASH FDS
FCD 97-11**

Tentative Schedule

Capacity Analysis:	December 4, 1998
Pre-Final Hydrology:	January 4, 1998
Final Hydrology and TDN:	February 1, 1999
Preliminary Inundation Results:	February 15, 1999
Final Inundation Results & Preliminary TDN:	March 29, 1999
Final TDN Deliverables:	April 12, 1999
HIS Coverages:	April 26, 1999
Final Deliverables:	May 8, 1999

SUMMARY OF HEC-1 DATA FILES

STREAM	EXISTING	FUTURE	FUTURE W/CIP
QUEEN CREEK			
UPPER REACH (Pinal Co.)	HZI TO CREATE	HZI TO CREATE	N/A
MIDDLE REACH Rittenhouse to Hawes	FCD TO PROVIDE FILE: SMQC.DAT (HZI TO UPDATE)	HZI TO UPDATE	N/A
Hawes to Power	FCD TO PROVIDE FILE: SMQC.DAT (HZI TO UPDATE)	HZI TO UPDATE	N/A
LOWER REACH Power to Higley	FCD TO PROVIDE FILE: SMQC.DAT (HZI TO UPDATE)	HZI TO UPDATE	N/A
ALTERNATIVES			
SANOKAI WASH			
MAIN BRANCH	FCD TO PROVIDE FILE:	HZI TO UPDATE	N/A
EAST BRANCH	FCD TO PROVIDE FILE:	HZI TO UPDATE	N/A
ALTERNATIVES			
EMF			
REACHES 3-6	FCD TO PROVIDE FILE: EMF-E.DAT	FCD TO PROVIDE FILE: EMF-F.DAT	FCD TO PROVIDE FILE: EMF-FCIP.DAT
ALTERNATIVES			
CONFLUENCE OPTIONS			

SUMMARY OF HEC-2 DATA FILES

STREAM	EXISTING	FUTURE	FUTURE W/CIP
QUEEN CREEK			
UPPER REACH (Pinal Co.)	HZI TO CREATE	HZI TO CREATE	N/A
MIDDLE REACH Rittenhouse to Hawes	FCD TO PROVIDE FILE: (HZI TO UPDATE)	HZI TO UPDATE	N/A
Hawes to Power	FCD TO PROVIDE FILE: (HZI TO UPDATE)	HZI TO UPDATE	N/A
LOWER REACH Power to Higley	FCD TO PROVIDE FILE: (HZI TO UPDATE)	HZI TO UPDATE	N/A
ALTERNATIVES			
SANOKAI WASH			
MAIN BRANCH	FCD TO PROVIDE (BASE INUNDATION) FILE:	N/A	N/A
EAST BRANCH	N/A	N/A	N/A
ALTERNATIVES			
EMF			
REACHES 3-6	FCD TO PROVIDE FILE:	FCD TO PROVIDE FILE:	FCD TO PROVIDE FILE:
ALTERNATIVES			
CONFLUENCE OPTIONS			

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 7
Date: May 24, 2000
Time: 9:00 p. m.
Place: Flood Control District

Attendees:	Flood Control District of Maricopa County	
	Tim Phillips	506-4718
	Huitt-Zollars	
	Fred Duren	952-9123

An agenda was not prepared for this meeting.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below. Action items are italicized.

Remaining Project Submittals

Tim confirmed that the final project submittals would consist of: (1) Project Study report, including 11 x 17-inch concept drawings; (2) Project Technical Report; and (3) Executive Summary. The other remaining submittals mentioned in the scope would not be required, including the final of the Alternatives Analysis report and the Preferred Alternative report.

Format and Outline for Project Study Report

Tim provided a revised version of a partially completed Project Study report for Huitt-Zollars' consideration. *Huitt-Zollars is to use this version as it sees fit in preparing the draft Project Study report.*

Comments made during the discussion of the Project Study report are provided below.

1. *Huitt-Zollars will produce the report in an 11 x 17-inch format.*

2. *Tim will provide to Huitt-Zollars a computer file containing all District photographs of the Queen Creek and Sanokai Wash area. Huitt-Zollars will use applicable photographs in the body of the report.*
3. *Huitt-Zollars is to contact Dave Degerness to obtain a corrected version of the photo map shown on page 7 of the provided report and identified as "Flows of Queen Creek and Sanokai Wash."*
4. *Dave Degerness will provide Huitt-Zollars with the sketch of the Queen Creek and Sanokai Wash floodplain delineation indicated on page 8, suitable for insertion in the report.*
5. *Huitt-Zollars will use its existing map showing new and planned development in the second insert on page 8.*
6. *Huitt-Zollars will enlarge the multi-use sketches on pages 9 and 10 to cover about two columns. Huitt-Zollars will attempt to change the gray background of the sketches to white.*
7. *Huitt-Zollars will use its existing list of utility providers for the insert on page 12.*
8. *Huitt-Zollars will review the potential of including the subbasin boundary map, where indicated on page 13. However, the size of this map may dictate placing it in the appendix.*
9. *Huitt-Zollars will consider the applicability of the section on Corridor Opportunities & Constraints in Part 3 – Hydrology/Hydraulics. This section may better fit in another part of the report. Tim suggested listing what constraints and opportunities were known after completing the hydrologic and hydraulics analyses.*
10. *In the Alternatives Development discussion, Huitt-Zollars will consider adding a short discussion on an analysis of "Re-engineered Berms" alternative.*
11. *The discussion of the Alternatives Evaluation can be made a separate part in the report, as opposed to its current location in the Alternatives Development part.*
12. *Under the part for Recommended Plan, the Key Success Factors in the Implementation Plan, page 26, could include:*
 - a. *Interior drainage is to adequately handled*
 - b. *Implementation should be coordinated to minimize adverse impacts*
 - c. *The Town of Queen Creek adopts the plan as a tool*
13. *Palettes of recommended plant materials should be shown in the Implementation Plan.*

14. Under Identification of Follow-Up Work in the part for Recommended Plan, tasks such as permitting (e.g., 404, 401) and cultural resources surveying should be included.

15. *Huitt-Zollars will submit partially completed drafts to Tim via e-mail as they become available.*

16. During Tim's absence from the District, Dave Degerness will be the responsible contact for questions and decisions.

Schedule

Tim has prepared a change order request to extend the schedule for 90 days, which would take the completion date from June 28, 2000, to September 26, 2000.

Change Order Request

Fred will review the work involved in the preparation of the final reports, as compared to that currently contained in the scope of work, and submit a draft change order request to Tim describing any additional work and engineering fee.

The meeting ended at approximately 10:30 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr., P.E., P.G.
Project Manager

Date Prepared

Attachment

c: Attendees
Dave Degerness, Flood Control District
Gary Burroughs
Charlie Joy
Glenn Shearer
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 6
Date: May 9, 2000
Time: 1:30 p. m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123

An agenda was not prepared for this meeting.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below. Action items are italicized.

Level II Analysis Results

Tim said to proceed with the preferred alternatives as developed in the Level II analysis. Tim noted that the Level II hydrologic analysis for the East Branch of Sanokai Wash was at a greater level of refinement than that for Queen Creek and the remainder of Sanokai Wash. Fred explained that it was necessary to do a more refined hydrologic analysis for the East Branch because there was no channel along this alignment. Essentially, a near-Level-III analysis was performed for the East Branch as a result.

Hydrologic Modeling of Queen Creek

Huitt-Zollars will revise the HEC-1 model for Queen Creek such that the normal depth routing method is used along the watercourse.

Final Submittals

Tim requested that Huitt-Zollars provide three report submittals to document the project: (1) Study Report, (2) Executive Summary, and (3) Final Technical Report. These reports would suffice for the remaining report requirements; and, thus, the finalization of the

draft Alternatives Analysis Report and the Preferred Analysis Report would not be required.

The three reports were described as follows:

Study Report

This report would describe how the study progressed (i.e., "how we went from point A to point BF"). It would be based on the outline provided by Tim at an earlier date. Tim suggested that each section of this report contain a brief summary.

This report would be geared toward a technical user; however, it would not contain all supporting detailed information. The supporting information would be contained in the Final Technical Report.

The Study Report would be in an 11- x 17-inch format. It would contain the concept drawings, including basic hydrologic and hydraulic information on the facing page. This basic information on the concept drawings would be in a format similar to that contained in the East Mesa ADMP report, except that it would be less detailed since this study is at a conceptual level, as opposed to the pre-design level in the East Mesa ADMP. Since the scale of the concept drawings will be 1 inch = 200 feet, only the channel top widths and thatweg will be shown. Also shown on the concept drawings would be essential cultural and environmental sites, with brief descriptions included on the drawings, and locations of reaches where cottonwoods are to be protected.

Tim said that photographs and channel cross sections should be included in this report. The District has numerous photos of existing channel conditions that it will provide for the report. He would also like to see several of the graphics developed by Huitt-Zollars for prior reports included, such as land use map and hydrologic basin map.

Tim will provide Huitt-Zollars an example of the Study Report with comments by May 23. This example will be similar to that already provided by Tim; however, Tim will augment the prior example with comments as to suggested content.

Executive Summary

This report is to be written for the non-technical reader. It would be about three pages in length and could contain the summaries of each section of the Study Report. This report should also contain multi-use graphics as developed by Glenn Shearer.

Final Technical Report

This report would contain all the necessary technical and other back-up information for the study. This type of information would include: (1) hard copies of the final runs for the preferred alternatives; (2) meeting minutes; (3) survey annex; (4) administrative

annex; (5) a disk containing the model runs for the three Level II analyses for Queen Creek, Sanokai Wash, and the EMF-Queen Creek confluence; and (6) other essential documentation.

Schedule

Huitt-Zollars will provide a revised completion date for the project after reviewing the decisions reached in this meeting.

Change Order Request

Fred will review the work involved in the preparation of the final reports, as compared to that currently contained in the scope of work, and submit a change order request to Tim describing any additional work and engineering fee and schedule revision.

The meeting ended at approximately 2:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr., P.E., P.G.
Project Manager

Date Prepared

Attachment

c: Attendees
Gary Burroughs
Charlie Joy
Glenn Shearer
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 5
Date: April 11, 2000
Time: 9:00 a. m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123
Charles Joy 952-9123

The attached agenda was prepared for this meeting.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below. Action items are italicized.

EMF Report Comments

Tim will check with Afshin to see if he has any comments on the final report and will get back to Fred with this information. Fred indicated that Huitt-Zollars had received comments from Dave Degerness on the final report and that Charlie Joy indicated that the responses to Dave's comments could be easily handled in any one of several different formats. *If Afshin has no comments, Charlie will coordinate with Dave as to the format for responding to Dave's comments. Huitt-Zollars will then provide the final changes to report.*

Selection of Preferred Alternatives

The attached spreadsheet shows the ranking of the Level II alternatives, as performed by the District, Dick Schaner, Charlie, and Fred. As indicated in the ranking, the District and Dick agreed that Alternative 1 for Queen Creek was preferred; however, the District and Dick did not agree on the preferred alternative for Sanokai Wash. Dick did not rank the EMF Confluence Alternatives. *Tim will check with District staff to see if the District's comparative ranking of Alternatives 1 and 3 were close enough to go with Dick's selection of Alternative 3 as preferred.*

Tim asked that a "No Action" alternative be included in the ranking and that Huitt-Zollars respond to him today as to the impact this would have on the ranking of alternatives. *Huitt-Zollars will add a "No Action" column to the matrix and prepare matrix evaluations for each of the three options evaluated. Huitt-Zollars will provide this information today (i.e., April 11) to Tim, as an addition to the rankings summary attached to these minutes. This rankings summary will include evaluations previously prepared by the District, as well as evaluations prepared independently by Charlie and Fred.*

If there is no change in the preferred alternatives due to the "No Action" alternative and the District will accept the Sanokai Wash Alternative 3 as preferred, *Tim will authorize Huitt-Zollars to proceed with the Level III analyses for the following two preferred alternatives:*

*Queen Creek
Sanokai Wash*

*Alternative 1
Alternative 3.*

If the "No Action" alternatives for Queen Creek and Sanokai Wash prove to be preferred based on the rankings by the District and Huitt-Zollars, *Tim will contact Dick Schaner by Thursday to get Dick's ranking of the "No Action" alternative. After this contact, Tim will coordinate with Huitt-Zollars to identify the preferred alternatives for Queen Creek and Sanokai Wash.*

Tim will meet with Lonnie Frost and the RWCD tomorrow, and he will ask them about their preferences for the EMF confluence alternatives. Depending on their responses, the preferred alternative for the EMF confluence will be determined.

Tim will inform Huitt-Zollars by noon Thursday, April 13, what EMF confluence alternative is preferred.

Schedule

Fred indicated that the current schedule completion date of June 28 could be achieved if everything progressed very smoothly and no additional work was added to the project. Tim suggested that a schedule extension might be advisable to cover any chances that additional time would be needed to complete the project in a satisfactory manner. It was decided to defer a decision on a schedule extension until later when a better understanding of the work to be completed will be available.

Budget

Fred indicated that Huitt-Zollars' budget is very thin and that there are several reasons for this, including the difficulty in preparing scopes for studies such as this project.

Final Report Format

Huitt-Zollars will review the final report outline provided by Tim to see if it is workable and if Huitt-Zollars believes it would result in out-of-scope work. Huitt-Zollars will contact Tim with this information. Additionally, Tim will contact Dick Schaner to see if Dick would prefer an 8.5 x 11-inch report format or an 11 x 17-inch format.

Miscellaneous

Charlie came to the meeting to present examples of some of the 24- x 36-inch concept drawings base sheets, which are at a scale of 1 inch = 200 feet (per the scope). The channel widths of the Queen Creek and Sanokai Wash preferred alternatives would only show at slightly more than one inch at this scale. *Tim will meet with Dick Schaner to discuss the scale at which Dick would like to see the concept drawings, and Tim will contact Fred with this information.*

Tim requested that Huitt-Zollars include engineering information for each concept drawing on the page opposite the drawing in the final report, as done in the East Mesa ADMP.

Tim will discuss with Theresa Hoff the need for including an alternative that would involve making the Queen Creek levees engineered (i.e., to meet FEMA requirements). Tim will contact Fred with this information.

Fred asked about getting the District comments on the draft Alternatives Analysis report. *Tim will coordinate with District staff and get back to Fred with the District comments, so that the report can be finalized.*

The meeting ended at approximately 10:15 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr., P.E., P.G.
Project Manager

Date Prepared

Attachment

c: Attendees
Gary Burroughs
Mark Seits
Rick Amalfi, ACT

Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 4
Date: March 13, 2000
Time: 10:00 a. m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123

An agenda was not prepared for this meeting.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below. Action items are italicized.

Significant Comments/Conclusions/Action Items

1. Fred distributed a handout showing the Proposal for Project Completion (see attached). It was noted that the critical point on the schedule is holding the brainstorming meeting to select the Level II preferred alternatives. *Tim will check his schedule to see which of the dates suggested by Huitt-Zollars will work from the District's standpoint.*
2. *Tim requested that a copy of Huitt-Zollars Alternatives Analysis report be sent to Lonnie Frost in Gilbert. Huitt-Zollars will provide.*
3. Tim said that the Town Council meeting and another Neighborhood Open House will be handled by Dick Schaner.
4. Fred asked Tim to consider modifying the contents of the Final Report, as indicated in the scope, due to the fact that it would be excessively large since numerous prior reports are called to be included in this report. Tim agreed and asked that Huitt-Zollars consider following the report format he has worked up for an ADMP. *Tim will forward this format to Fred, who will review it and respond to Tim if this can be readily done.*

5. *Tim asked for Huitt-Zollars to get back in touch with him before making the final reports to determine the number of copies that will be needed because some of the reports may not need to be provided in as many copies as indicated in the scope.*
6. *Tim suggested that Huitt-Zollars discuss maintenance items/costs and implementation items with Dick Schaner.*
7. *Tim said that Afshin and Dave are preparing comments to Huitt-Zollars final EMF report. Fred indicated that Huitt-Zollars had responded to all prior comments by the District on the draft report and that it would best for Charlie to sit down with Dave and/or Afshin to go over all of Huitt-Zollars responses to the draft report comments. Charlie will call Dave or Afshin to set up a meeting to go over Huitt-Zollars changes in the final report that were made in response to the District's draft report comments.*

The meeting ended at approximately 10:45 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

3/13/00
Date Prepared

Attachment

- c: Attendees
Gary Burroughs
Charlie Joy
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

PROPOSAL FOR PROJECT COMPLETION
QUEEN CREEK/SANOKAI WASH HMP
And
EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Complete draft of Alternatives Analysis Report and submit to District by March 10.
2. Meet with District, Dick Schaner, and project team in brainstorming meeting to select preferred alternative for Queen Creek confluence, Queen Creek, and Sanokai Wash – Mar. 23 or 24, unless District and D. Schaner are available on Mar. 15
 - a. Current hydrology and hydraulics analyses adequate for Level II analysis
3. District submits review comments by March 24 (2-week review).
4. Hold Town Council Meeting and Third Open House (if required) by April 1.
5. Submit final Alternatives Analysis Report to District by April 7, or two weeks after last of the meetings in item 4.
 - a. Assumes no major changes in Level II alternatives due to meeting(s).
6. Start Level III Analysis by March 27.
7. Complete HEC-1 preliminary Level III model by April 17 and submit to District.
8. Complete HEC-RAS refined Level III models by May 15.
 - a. Assume 3 weeks for WEST to perform scour/sedimentation analysis.
9. Start concept drawings final preparation by May 16.
10. Complete draft concept drawings by May 30 and submit to District.

11. Submit draft Preferred Alternative Report, Final Project Report, Administrative Report, Implementation Plan, and Maintenance Plan by May 30.

12. Receive District comments on draft items under 11, above, and drawings by June 13.

13. Submit final drawings, Preferred Alternative Report, Final Project Report, Final Administrative Report, Implementation Plan, and Maintenance Plan by June 27. End of project.

14. Submit final billing by June 29.

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 3
Date: December 1, 1999
Time: 9:30 a. m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123

An agenda was not prepared for this meeting. (The previously scheduled November 17 project manager meeting was handled by a phone call instead of as a meeting.)

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below. Action items are italicized.

Significant Comments/Conclusions/Action Items

1. Tim said that change orders no. 1 and 2 were being processed and that he expected approval shortly. *After receiving District approval of the change orders, Huitt-Zollars will submit a revised fee projection schedule to Tim.*
2. Tim will be gone on vacation the week of December 27; therefore, the project manager meeting of December 29 will not be held.
3. The revised schedule and list of milestones was reviewed (attached). It was noted that the next neighborhood open house is schedule for January 31, which is near the end of alternatives analysis subtask in the Level II analysis. *Tim will inform the District's PIO of this meeting.*
4. The submittal of the scanned topography from Cooper Aerial was discussed. The District has accepted Cooper's submittal of the first scanning, pending acceptance by Cooper of review comments from Mark Brewer, who reviewed the submittal (see attached e-mail message from Mark Brewer). *Tim will forward to Huitt-Zollars in the next couple of days the computer file containing the scanned topography for the first*

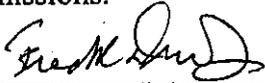
scanning submittal. Regarding the submittal of the second scanning (i.e., that along the northern side of Riggs Rd.), Tim said that Cooper may have scanned the wrong area. *He will coordinate with Dave Degerness on this issue and get back to Huitt-Zollars.*

5. Tim requested that Huitt-Zollars consider moving ahead with the hydraulics analysis for Sanokai Wash without delaying the project by waiting to get Cooper's second scanning submittal, which covers a reach along that watercourse. Fred said that the only other topography that was available was from the USGS topo maps, which had a contour interval of about 5 feet. Fred said that the first scanning submittal may make it possible to proceed with the Queen Creek hydraulics, such that the Sanokai Wash scanned topography could be not needed for several weeks. Tim thought that it might take longer than this to get the second submittal from Cooper and get it approved. *Huitt-Zollars will consider the impact of proceeding with the Sanokai Wash hydraulic analysis based on using cross sections developed from the USGS topo maps.*

6. The next project manager meeting will be held on December 15.

The meeting ended at approximately 10:15 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Fred K. Duren, Jr., P.E., P.G.
Project Manager

12/1/99

Date Prepared

Attachments

c: Attendees
Gary Burroughs
Charlie Joy
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

Key Project Milestones
Queen Creek/Sanokai Wash HMP and
EMF Capacity Mitigation Study
(Revised 11-11-99 Re: Change Orders No. 1 and 2)

East Maricopa Floodway	
<u>Preferred Alternative Analysis Report & Concept Plans</u>	
Initial Submittal.....	December 14, 1999
FCDMC Review.....	December 15, 1999 to December 30, 1999
Final Submittal.....	January 14, 2000

Queen Creek/Sanokai Wash	
<u>Meetings</u>	
Alternatives Development.....	December 17, 1999
Second Neighborhood Open House.....	January 31, 2000
Queen Creek Town Council Meeting.....	February 8, 2000
Preferred Alternative Selection.....	February 14, 2000
Interim Preferred Alternative Review.....	March 9, 2000
Alternative Analysis Report Review.....	March 16, 2000
Preferred Alternative Review and Concept Design Plans Submittal Meeting.....	May 2, 2000
<u>Site Visits</u>	
Alternative Analysis Visit.....	December 28, 1999
Preferred Analysis Visit.....	March 13, 2000
<u>Alternative Analysis Report</u>	
Initial Submittal.....	March 1, 2000
FCDMC Review.....	March 2, 2000 to March 16, 2000
Final Submittal.....	March 30, 2000
<u>Preferred Alternative Analysis Report & Concept Plans</u>	
Initial Submittal.....	April 17, 2000
FCDMC Review.....	April 18, 2000 to May 2, 2000
Final Submittal.....	May 17, 2000
<u>Technical Report Annex</u>	
Initial Submittal.....	June 7, 2000
FCDMC Review.....	June 8, 2000 to June 15, 2000
Final Submittal.....	June 30, 2000
<u>Project Administration Report</u>	
Initial Submittal.....	June 7, 2000
FCDMC Review.....	June 8, 2000 to June 15, 2000
Final Submittal.....	June 30, 2000
<u>Project Final Report</u>	
Initial Submittal.....	June 7, 2000
FCDMC Review.....	June 8, 2000 to June 22, 2000
Final Submittal.....	June 30, 2000

Queen Creek/ Sanokai Wash HMP & East Yuma Floodway Capacity Mitigation Study
 Project Schedule
 (Revised 11-11-99 Re: Change Orders No. 1 and 2)

ID	Task Name	Cost	Duration	Start	Finish	1999												2											
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
1	QC/SW HMP & EMF CAPACITY MITIGATION STUDY	\$609,311.00	453 days	Mon 10/19/98	Fri 6/30/00	\$609,311.00																							
2	2.0 SPECIFIC TASKS	\$216,665.00	423 days	Thu 10/22/98	Wed 5/24/00	\$216,665.00																							
3	2.1 Data Collection & Existing Conditions Analysis	\$19,836.00	64 days	Tue 10/27/98	Thu 1/21/99	\$19,836.00																							
4	2.1.1 Data Collection	\$10,536.00	40 days	Tue 10/27/98	Fri 12/18/98	\$10,536.00																							
5	2.1.2 List of Development	\$2,505.00	26 days	Sun 11/15/98	Fri 12/18/98	\$2,505.00																							
6	2.1.3 Investigate Master/General Plans	\$629.20	26 days	Sun 11/15/98	Fri 12/18/98	\$629.20																							
7	2.1.4 List of Existing/Planned Recreational Facilities	\$406.12	26 days	Sun 11/15/98	Fri 12/18/98	\$406.12																							
8	2.1.5 Become Familiar with Local Landscaping Concepts	\$291.72	17 days	Thu 11/26/98	Fri 12/18/98	\$291.72																							
9	2.1.6 Prepare Alternatives Matrix	\$2,962.96	17 days	Thu 11/26/98	Fri 12/18/98	\$2,962.96																							
10	2.1.7 Update Data Collection Information (OPTIONAL)	\$2,505.00	10 days	Fri 1/8/99	Thu 1/21/99	\$2,505.00																							
11	2.2 Level I Analysis - Alternatives Formulation/Preliminary Analysis	\$55,211.00	105 days	Fri 12/11/98	Fri 4/30/99	\$55,211.00																							
12	2.2.1 Develop at Least 3 Queen Creek Preliminary Alternatives	\$9,655.36	31 days	Wed 2/3/99	Mon 3/15/99	\$9,655.36																							
13	2.2.2 Develop at Least 3 Sanokai Wash Preliminary Alternative	\$9,655.36	32 days	Tue 2/2/99	Mon 3/15/99	\$9,655.36																							
14	2.2.3 Develop at Least 4 Confluence Alternatives	\$1,795.92	23 days	Thu 1/21/99	Thu 2/18/99	\$1,795.92																							
15	2.2.4 Develop at Least 3 Confluence Sedimentation Basin Alternatives	\$1,801.80	23 days	Thu 1/21/99	Thu 2/18/99	\$1,801.80																							
16	2.2.5 Eliminate Alternatives Based on Minimal Analysis	\$1,813.24	12 days	Mon 3/1/99	Mon 3/15/99	\$1,813.24																							
17	2.2.6 Consider 3 Design Concepts	\$4,423.80	20 days	Tue 2/2/99	Sun 2/28/99	\$4,423.80																							
18	2.2.7 Identify Concepts Suggested by Public, Local Jurisdictions & District	\$7,085.28	30 days	Fri 12/11/98	Thu 1/21/99	\$7,085.28																							
19	2.2.8 Submit Sketches and Narrative Report	\$5,502.64	28 days	Mon 3/15/99	Fri 4/30/99	\$5,502.64																							
20	2.2.8.1 FCDMC Review Period	\$0.00	10 days	Thu 4/1/99	Wed 4/14/99	\$0.00																							
21	2.2.9 Develop at Least 3 Preliminary Alternatives for EMF Reaches 3-6	\$5,857.28	44 days	Mon 12/21/98	Tue 2/16/99	\$5,857.28																							
22	2.2.10 Prepare Landscape/Recreation Design Guidelines	\$7,620.32	16 days	Thu 3/11/99	Wed 3/31/99	\$7,620.32																							
23	2.3 Level II Analysis - Alternative Analysis	\$26,410.00	225 days	Tue 6/1/99	Thu 4/6/00	\$26,410.00																							
24	2.3.1 Provide Costs for Major Construction Items	\$4,523.20	101 days	Mon 11/15/99	Mon 4/3/00	\$4,523.20																							

Project: Project Schedule
 Date: Tue 11/23/99

Task: [Symbol] Progress: [Symbol] Summary: [Symbol] Rolled Up Split: [Symbol] Rolled Up Progress: [Symbol] Project Summary: [Symbol]

Split: [Symbol] Milestone: [Symbol] Rolled Up Task: [Symbol] Milestone: [Symbol] Rolled Up Milestone: [Symbol] External Tasks: [Symbol]

Queen Creek/ Sanokai Wash HMP & Easements **Indio Floodway Capacity Mitigation Study**
 Project Schedule Schedule
 (Revised 11-11-99 Re: Change Orders No. 1 and 2)

ID	Task Name	Cost	Duration	Start	Finish	1999												2												
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun			
49	3.0 GENERAL TASKS	\$316,450.00	432 days	Mon 10/19/98	Thu 6/1/00	[Gantt bar for 3.0 GENERAL TASKS]																								6/1
50	3.1 Field Survey and Mapping	\$70,138.00	404 days	Mon 11/16/98	Tue 5/23/00	[Gantt bar for 3.1 Field Survey and Mapping]																								5/23
51	3.1.1 Conduct Field Surveys and Prepare Mapping	\$28,081.20	11 days	Thu 12/17/98	Thu 12/31/98	[Gantt bar for 3.1.1 Conduct Field Surveys and Prepare Mapping]																								
52	3.1.2 Use Existing Mapping for EMF	\$642.19	34 days	Mon 11/16/98	Thu 12/31/98	[Gantt bar for 3.1.2 Use Existing Mapping for EMF]																								
53	3.1.3 Provide New Photography for Queen Creek and Sanokai Wash	\$642.19	31 days	Mon 1/25/99	Thu 3/4/99	[Gantt bar for 3.1.3 Provide New Photography for Queen Creek and Sanokai Wash]																								
54	3.1.4 Provide New Photography for Queen Creek in Pinal County	\$40,772.42	48 days	Fri 1/1/99	Thu 3/4/99	[Gantt bar for 3.1.4 Provide New Photography for Queen Creek in Pinal County]																								
55	3.1.5 Prepare Mylars	\$0.00	320 days	Tue 3/9/99	Tue 5/23/00	[Gantt bar for 3.1.5 Prepare Mylars]																								5/23
56	3.2 Hydraulic Analysis	\$60,220.00	179 days	Fri 1/1/99	Tue 8/31/99	[Gantt bar for 3.2 Hydraulic Analysis]																								8/31
57	3.2.1 Utilize Existing Models Provided by District	\$31,826.00	34 days	Fri 4/2/99	Tue 5/18/99	[Gantt bar for 3.2.1 Utilize Existing Models Provided by District]																								
58	3.2.2 Update Models for Future Conditions	\$28,394.00	103 days	Fri 1/1/99	Tue 8/31/99	[Gantt bar for 3.2.2 Update Models for Future Conditions]																								8/31
59	3.3 Hydrologic Analysis	\$58,138.00	370 days	Fri 11/13/98	Mon 4/3/00	[Gantt bar for 3.3 Hydrologic Analysis]																								4/3
60	3.3.1 Research Existing Hydrologic Studies and Models	\$0.00	40 days	Fri 11/13/98	Fri 4/16/99	[Gantt bar for 3.3.1 Research Existing Hydrologic Studies and Models]																								
61	3.3.2 Update Models for Future Conditions	\$29,069.00	98 days	Tue 7/20/99	Tue 11/30/99	[Gantt bar for 3.3.2 Update Models for Future Conditions]																								11/30
62	3.3.3 Resolve Modeling Concerns	\$29,069.00	21 days	Tue 11/2/99	Tue 11/30/99	[Gantt bar for 3.3.3 Resolve Modeling Concerns]																								11/30
63	3.3.4 Update Model for Selected Alternatives	\$0.00	91 days	Mon 11/29/99	Mon 4/3/00	[Gantt bar for 3.3.4 Update Model for Selected Alternatives]																								4/3
64	3.4 Land Ownership, Right-of-Way, and Easements	\$5,874.00	419 days	Tue 10/27/98	Tue 5/23/00	[Gantt bar for 3.4 Land Ownership, Right-of-Way, and Easements]																								5/23
65	3.4.1 Identify Parcels to be Affected by Alternatives	\$1,012.00	90 days	Tue 11/30/99	Mon 4/3/00	[Gantt bar for 3.4.1 Identify Parcels to be Affected by Alternatives]																								4/3
66	3.4.2 Identify Rights-of-Way Adjacent to Preferred Alternatives	\$858.00	126 days	Tue 11/30/99	Tue 5/23/00	[Gantt bar for 3.4.2 Identify Rights-of-Way Adjacent to Preferred Alternatives]																								5/23
67	3.4.3 Identify Permanent Rights-of-Way and Easement Requirements	\$1,086.80	292 days	Thu 4/15/99	Tue 5/23/00	[Gantt bar for 3.4.3 Identify Permanent Rights-of-Way and Easement Requirements]																								5/23
68	3.4.4 Prepare Rights-of-Way Drawing	\$2,396.68	258 days	Tue 6/1/99	Tue 5/23/00	[Gantt bar for 3.4.4 Prepare Rights-of-Way Drawing]																								5/23
69	3.4.5 Identify Rights-of-Entry	\$520.52	38 days	Tue 10/27/98	Thu 12/31/98	[Gantt bar for 3.4.5 Identify Rights-of-Entry]																								
70	3.5 Environmental Permits and Approvals	\$2,082.00	345 days	Thu 12/17/98	Mon 4/3/00	[Gantt bar for 3.5 Environmental Permits and Approvals]																								4/3
71	3.5.1 Determine Need for Plan Approvals	\$2,082.00	345 days	Thu 12/17/98	Mon 4/3/00	[Gantt bar for 3.5.1 Determine Need for Plan Approvals]																								4/3
72	3.5.2 Provide Information Assistance to District for 401 & 404 Permitting	\$0.00	119 days	Fri 10/1/99	Tue 3/14/00	[Gantt bar for 3.5.2 Provide Information Assistance to District for 401 & 404 Permitting]																								3/14

Project: Project Schedule Task: [] Progress: [] Summary: [] Rolled Up Split: [] Rolled Up Progress: [] Project Summary: []
 Date: Tue 11/23/99 Split: [] Milestone: [] Rolled Up Task: [] Rolled Up Milestone: [] External Tasks: []

Queen Creek/ Sanokai Wash HMP & East Copa Floodway Capacity Mitigation Study
 Project Schedule
 (Revised 11-11-99 Re: Change Orders No. 1 and 2)

ID	Task Name	Cost	Duration	Start	Finish	1999												2		
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		Oct	Nov
97	3.11.2 Prepare Minutes	\$1,824.35	383 days	Tue 10/27/98	Mon 4/3/00	[Gantt bar from 10/27/98 to 4/3/00]												\$1,824.35		
98	3.11.3 Conduct Progress Meetings	\$35,832.99	426 days	Tue 10/27/98	Thu 6/1/00	[Gantt bar from 10/27/98 to 6/1/00]												\$35,832.99		
99	3.11.4 Attend 1 Queen Creek Town Council Meeting	\$3,460.82	11 days	Tue 1/25/00	Tue 2/8/00	[Gantt bar from 1/25/00 to 2/8/00]												\$3,460.82		
100	3.11.5 Extra Council Meeting (OPTIONAL)	\$1,556.00	81 days	Tue 2/6/00	Tue 5/30/00	[Gantt bar from 2/6/00 to 5/30/00]												\$1,556.00		
101	3.12 Public Involvement	\$6,729.00	256 days	Mon 2/15/99	Mon 1/31/00	[Gantt bar from 2/15/99 to 1/31/00]												\$6,729.00		
102	3.12.1 Plan and Conduct 2 Neighborhood Open House Meetings	\$6,729.00	256 days	Mon 2/15/99	Mon 1/31/00	[Gantt bar from 2/15/99 to 1/31/00]												\$6,729.00		
103	3.12.1 Plan and Conduct 2 Neighborhood Open House Meetings 1	\$3,364.50	0 days	Mon 2/15/99	Mon 2/15/99	[Gantt bar from 2/15/99 to 2/15/99]												\$3,364.50		
104	3.12.1 Plan and Conduct 2 Neighborhood Open House Meetings 2	\$3,364.50	0 days	Mon 1/31/00	Mon 1/31/00	[Gantt bar from 1/31/00 to 1/31/00]												\$3,364.50		
105	3.13 CLOMR Submittal	\$13,934.00	45 days	Mon 11/1/99	Fri 12/31/99	[Gantt bar from 11/1/99 to 12/31/99]												\$13,934.00		
106	4.0 PROJECT ADMINISTRATION	\$76,196.00	447 days	Tue 10/27/98	Fri 6/30/00	[Gantt bar from 10/27/98 to 6/30/00]												\$76,196.00		
107	4.1 Schedule	\$2,299.00	30 days	Tue 10/27/98	Fri 12/4/98	[Gantt bar from 10/27/98 to 12/4/98]												\$2,299.00		
108	4.1.1 Submit and Update Schedule	\$2,299.00	30 days	Tue 10/27/98	Fri 12/4/98	[Gantt bar from 10/27/98 to 12/4/98]												\$2,299.00		
109	4.2 Invoices	\$125.00	427 days	Tue 10/27/98	Sat 6/3/00	[Gantt bar from 10/27/98 to 6/3/00]												\$125.00		
110	4.2.1 Submit Revised Estimate of Future Monthly Billings	\$0.00	60 days	Tue 10/27/98	Fri 12/24/99	[Gantt bar from 10/27/98 to 12/24/99]												\$0.00		
111	4.2.2 Submit Monthly Invoices	\$125.00	422 days	Tue 11/3/98	Sat 6/3/00	[Gantt bar from 11/3/98 to 6/3/00]												\$125.00		
132	4.3 Project Management	\$14,970.00	427 days	Tue 10/27/98	Sat 6/3/00	[Gantt bar from 10/27/98 to 6/3/00]												\$14,970.00		
133	4.3.1 Appoint Consultant Project Manager	\$0.00	11 days	Tue 10/27/98	Tue 11/10/98	[Gantt bar from 10/27/98 to 11/10/98]												\$0.00		
134	4.3.2 Submit Monthly Project Status Update	\$9,283.74	422 days	Tue 11/3/98	Sat 6/3/00	[Gantt bar from 11/3/98 to 6/3/00]												\$9,283.74		
155	4.3.3 Develop and Implement a QA/QC Program	\$5,686.26	352 days	Tue 10/27/98	Fri 2/18/00	[Gantt bar from 10/27/98 to 2/18/00]												\$5,686.26		
156	4.4 Subcontractor Management	\$0.00	352 days	Tue 10/27/98	Fri 2/18/00	[Gantt bar from 10/27/98 to 2/18/00]												\$0.00		
157	4.4.1 Review Subconsultant Work	\$0.00	352 days	Tue 10/27/98	Fri 2/18/00	[Gantt bar from 10/27/98 to 2/18/00]												\$0.00		
158	4.5 Reports	\$56,849.00	447 days	Tue 10/27/98	Fri 6/30/00	[Gantt bar from 10/27/98 to 6/30/00]												\$56,849.00		
159	4.5.1 Submit to District in Draft Form	\$0.00	1 day	Tue 10/27/98	Tue 10/27/98	[Gantt bar from 10/27/98 to 10/27/98]												\$0.00		
160	4.5.2 Submit Data Collection Report	\$7,491.67	26 days	Mon 12/14/98	Sun 1/31/99	[Gantt bar from 12/14/98 to 1/31/99]												\$7,491.67		

Project: Project Schedule
 Date: Tue 11/23/99
 Task: [Symbol] Progress [Symbol] Summary [Symbol] Rolled Up Split [Symbol] Rolled Up Progress [Symbol] Project Summary
 Split: [Symbol] Milestone [Symbol] Rolled Up Task [Symbol] Rolled Up Milestone [Symbol] External Tasks

Tim Phillips - FCDX

From: Mark Brewer - FCDX
Sent: Tuesday, November 30, 1999 3:49 PM
To: Tim Phillips - FCDX
Cc: Marta Dent - FCDX
Subject: Queen Creek & Sanokai Wash - 3rd Submittal

Tim,

The GIS files from phase one of the "scanned mapping" is ACCEPTED at this time, unless Cooper Aerial disagrees with comments made in the attached review document. They will need to respond.



queencrk_sanokai2.do

c

If you have any questions or comments, please let me know.

Thanks...

November 30, 1999

The Flood Control District of
Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

HIS, Revision 3.1, database review of the Queen Creek & Sanokai Wash
Hydraulic Master Study Arc/Info deliverables.

Reviewed by: Mark Brewer, GIS Database Administrator

This memo is for the review of the GIS coverages supplied to the Flood
Control District of Maricopa County. The PRJ_RID for this project is 1079.

The following coverages were reviewed as follows:

[] need to be addressed.

[x] passed the review.

[f] were corrected by FCD in order to be accepted.

Please enclose a letter upon the next submittal stating what actions were
taken for each comment, number by number, so that we know that the comment has
been looked at and addressed. DO NOT resubmit approved coverages with the next
submittal.

Some of the check items may fail due to any of the following errors:

1. The table is missing,
2. The item name and/or definition is incorrect or
3. No records in table.

So if a check item has an error and it appears to be fine, then look for any
of the previous errors causing the problem. To avoid this situation, it is
recommended that the District's automated review program be run before making
a submittal. The program will point out these situations. The program is
provided free of charge.

The GIS deliverables are all accepted at this time pending Cooper
Aerial's response to the following comment:

All of the coverages accepted with the previous submittals were delivered
again. Since this adds a significant amount of time to the review process to
check for possible differences between the submittals, it is up to Cooper
Aerial to determine if there are any differences between them. In phone
conversations with Hans at Cooper Aerial, I was informed that they are writing
new programs that have had "errors" in the lines of code. Cooper Aerial needs
to confirm if there are differences in individual coverages after correcting
these errors. Otherwise the coverages will be accepted as noted in the review
comments as Cooper Aerial's reviewed and accepted final deliverable.

Therefore, coverages are accepted as noted below and no review will be
performed on previously accepted coverages. A written response is requested
from Cooper Aerial confirming which coverage is their final submittal based on
this criteria. Please explain in detail the differences between submittals for
coverages that are different from their accepted version.

Delivered: September 15, 1999

Resubmitted: October 28, 1999

Resubmitted: November 23, 1999

AGRCLTR

1. [f] Coverage removed from delivery. Features were moved to coverage CARTO.

BRIDGE

1. [f] File accepted with the September 15, 1999 submittal.

CARTO

1. [f] File accepted with the September 15, 1999 submittal.

ELV

Coverage is accepted at this time based on the following changes made by FCD.

1. [f] There are node dangles that can be eliminated. Their endpoints were not snapped to their adjoining arcs endpoint. This check item needs to be reviewed manually for every arc coverage as pointed out in the review program.

PRJ

1. [f] File accepted with the September 15, 1999 submittal.

RIVER

1. [f] File accepted with the September 15, 1999 submittal.

RR

1. [f] File accepted with the September 15, 1999 submittal.

STRCT

1. [f] File accepted with the September 15, 1999 submittal.

STRDTL

1. [f] File accepted with the September 15, 1999 submittal.

UTLTY

1. [f] File accepted with the September 15, 1999 submittal.

DQ.TBL

1. [f] File accepted with the September 15, 1999 submittal.

PRJDAT.TBL

1. [f] File accepted with the September 15, 1999 submittal.

tsp

//fcdmain/users/mrb/word/queencrk_sanokai2.doc

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 2
Date: November 3, 1999
Time: 10:20 a. m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123
Glenn Shearer (part-time) 952-9123

An agenda was not prepared for this meeting.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting are presented below. Action items are italicized.

Significant Comments/Conclusions/Action Items

1. Tim and Fred discussed Huitt-Zollars' request for change order no. 2 to provide revisions to the EMF hydrology, hydraulics, and concept plans. Fred signed two original copies of the District fee forms and provided them to Tim. A revised schedule will be needed to process change order no. 2, should Huitt-Zollars wish to request an extension of the schedule. *Fred will provide a revised schedule to Tim by November 10 based on the assumption that the District will approve the request for change order no. 1 by November 12. Tim will review the change order no. 2 request and revised schedule and discuss with Emir Motamedi and Dave Degerness. He will get back to Fred if he has any questions or concerns. Otherwise, Tim will process the change order using the forms provided.*
2. *In conjunction with the submittal of the revised schedule, Fred will provide Tim with a spreadsheet denoting milestone events. Fred will coordinate with Charlie Joy and all subconsultant firms in preparing the revised schedule. The last neighborhood open house meeting should be shown on the schedule as occurring at the end of the Level II analysis.*

3. Tim said that the scanned topography originally requested by Huitt-Zollars has been re-submitted by Cooper Aerial to the District. The District's GIS Department is looking over the submittal to determine if there are any major problems, after which the scanned topography file will be submitted to Huitt-Zollars, as a workable product. Fred said that Huitt-Zollars will submit the file directly to Kenney Aerial, who will incorporate the topographic information into the master topography file. If Kenney finds a problem with the topography file, it will notify Huitt-Zollars; and the District will be notified. The second scanned topography requested by Huitt-Zollars (i.e., along Riggs Road) is in the process of being scanned by Cooper. Cooper has not provided a date for submittal of this scanned topography.

4. Glenn Shearer provided Tim with a computer diskette containing the landscape drawings he presented in yesterday's meeting regarding multi-use of the Queen Creek and Sanokai Wash channels. Tim said that he and Dennis Holcomb had discussed after yesterday's meeting the District desire to include information on possible staging areas for multi-use access on the typical plans to be included on the concept drawings. *Glenn will provide this information on the concept plans.*

5. The next project manager meeting will be held on November 17.

The meeting ended at approximately 11:10 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

11/3/99
Date Prepared

c: Attendees
Gary Burroughs
Charlie Joy
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Dennis Richards, WEST
Barbara Macnider, ACS
John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.32)
Subject: Project Manager Meeting No. 1
Date: October 20, 1999
Time: 9:30 a. m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Huitt-Zollars
Fred Duren 952-9123
Glenn Shearer (part-time) 952-9123

An agenda was not prepared for this meeting.

This is the first of continuing series of meetings requested by Tim to coordinate project management issues.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting are presented below. Action items are italicized.

Significant Comments/Conclusions/Action Items

1. Tim and Fred discussed Huitt-Zollars' request for change order no. 1 to prepare a formal EMF report. Fred explained the process that Huitt-Zollars followed in developing the man-hour estimate. Fred signed two original copies of the District fee forms and provided them to Tim. *Tim will review the change order request and get back to Fred if he has any questions or concerns. Otherwise, Tim will process the change order using the forms provided.*

2. Fred explained that the change order for preparing revised hydrology for the EMF will be prepared after resolving issues as to the scope of work. Currently, Dave Degerness and Charlie Joy are working together to determine what will be required to prepare the revised hydrology. One of the questions to be resolved is how to handle diversions in the HEC-1 model. Dave will talk to Amir Motamedi to get input. After the District decides how it wishes to handle the diversion issue and resolves any other uncertainty regarding

the revised hydrology, Huitt-Zollars will prepare a request for change order no. 2 to prepare the requested revised hydrology.

Fred indicated that the man-hour and fee estimates for this work were highly dependent on the District's decision on the diversion issue. However, an initial fee estimate prepared by Huitt-Zollars on the assumption of the less-involved diversion-issue resolution was around \$ 10 to \$ 11 K. Fred also indicated that the work Charlie was undertaking in working with Dave to resolve the hydrology scope of work was considered by Huitt-Zollars to be out-of-scope. *After the District decides on how it wishes to handle the diversion issue and defines the product required, Huitt-Zollars will prepare a change order request for revising the EMF hydrology. Huitt-Zollars will also submit a revised schedule and a revised monthly fee projection as part of the submittal of the request for change order no. 2.*

3. A discussion was held with Glenn Shearer relative to submittal of cross sections showing preliminary recreational facilities that could be incorporated into the improvements for Queen Creek and Sanokai Wash. *Glenn will prepare these cross sections for submittal to Tim within three weeks. The cross sections will differentiate between recreational elements that might be included within the developed portion of the Town of Queen Creek and within the agricultural areas. They will also represent two levels of recreational opportunities: lower level and higher level. After Glenn completes the preliminary cross sections, Tim will hold a meeting with Dick Schaner, himself, Glenn, and Dennis Holcomb to discuss the recreational options prepared by Glenn and to move toward, and possibly achieve, consensus on the recreational opportunities that will be included in the recommended improvement alternatives for Queen Creek and Sanokai Wash.*

4. *Fred will recommend to Tim possible meeting dates and times for holding the recreational opportunities meeting described above in item 3, which is tentatively planned within the next three weeks.*

5. *Fred will recommend to Tim possible meeting dates and times to discuss Huitt-Zollars' preliminary detention basin analysis after discussing with Charlie. This meeting is tentatively planned to be held within the next two weeks.*

6. *Tim said the revised scanned topography data from Cooper Aerial should be submitted to Huitt-Zollars by Monday, October 25. The scanning of topo data for the new areas along Riggs Road hasn't been started by Cooper Aerial as yet; thus, there is no indication as to when this scanned data will be submitted to Huitt-Zollars.*

7. *Tim and Fred will hold bi-weekly project management meetings every second Wednesday, at 9:30 a.m., in Huitt-Zollars office. (The second project management meeting is, thus, scheduled for November 3.)*

8. The next major project milestones will be the submittal of the EMF formal report (final draft) and a meeting to discuss Huitt-Zollars baseline hydraulic analyses of Queen Creek and Sanokai Wash.

The meeting ended at approximately 10:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

10/20/99
Date Prepared

c: Attendees

Gary Burroughs

Charlie Joy

Mark Seits

Glenn Shearer

Rick Amalfi, ACT

Enamul Hoque, H&A

Dennis Richards, WEST

Barbara Macnider, ACS

John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Discuss/review final comments on the Study Report/Executive Summary
Date: Sept. 19, 2000
Time: 11:00 a.m. – 12:45 p.m.
Place: FCDMC Conference Room

Attendees: **FCDMC**
Tim Phillips (602) 506-4718
Dave Degerness (602) 506-4730
Huitt-Zollars
Charles Joy (602) 952-9123

This meeting was held to receive, review and discuss the District comments regarding the Final Study Report and Executive Summary.

SUMMARY OF MEETING

Tim asked if HZI was prepared to submit on time. Charlie stated that HZI was able and prepared to submit the final report on Sept. 26th, 2000.

Tim explained he felt there should be greater detail in the hydraulic analysis than what was provided and that he would agree to a time extension in order for HZI to make such a provision. He stated he would accept the report with some revision (as discussed in the following paragraphs) but he actually desired more detail in the hydraulic analysis to include the sedimentation recommendations.

Charlie explained that HZI felt our submission fulfilled the scope of services discussed and revised throughout the project. Charlie informed Tim that what was requested would need to be discussed with Fred Duren and WEST Consultants prior to the making a final submittal. Tim agreed and a meeting has since been set for Monday Sept. 25th at 2pm at the District offices.

Tim explained his primary issue with the Study Report/Executive Summary dealt with the discussion of the sedimentation/lateral migration recommendations. Generally, Tim felt the report, as written, indicated the sedimentation analysis was not useful, and that at a minimum, the report should be revised to focus on the more useful aspects of the report. Also, the report presented the preferred alternative and the sedimentation recommendations separately.

Instead the report should present them together as a comprehensive preferred alternative. The report should emphasize the findings and results of the analysis and include the sedimentation recommendations in discussion of the preferred alternative and show them in the concept plans. Also, rather than focussing on discussing the limitations of the analysis, the report should simply acknowledge that the analysis is broad based and preliminary. These issues led to a discussion of incorporating the sedimentation recommendations into the preferred alternative hydraulic analysis that is summarized later in these minutes.

Other changes to the report requested by Tim include

- reorganizing the sedimentation analysis section and providing a new section for it prior to the presentation of the preferred alternative
- include the sedimentation recommendations into the reach-by-reach presentation of the preferred alternative
- making changes to the sections in the Executive Summary discussing the sedimentation recommendations similar to those changes suggested for the Study Report (focus on results instead of limitations)

Charlie indicated that the report would be reorganized to include a separate section prior to the preferred alternative section for the sedimentation analysis. The report (and executive summary) will be revised to focus on the findings of the analysis and to include the recommendations into the discussion of the preferred alternative and concept plans.

Sedimentation Recommendations/Hydraulic Analyses

Generally, Tim felt the study would be less than complete without having the sedimentation recommendations incorporated into the hydraulic analysis and that this is specified within the scope of work and what was desired by the District. In addition, Tim indicated he felt that a more detailed sediment analysis was also specified for the Level II analysis but was not completed. Tim reemphasized this point when Charlie indicated the size of the sedimentation basins recommended in Level III might make different EMF outfall alternatives more economic.

Tim indicated that if more time was required to make the necessary changes to the models to incorporate the recommendations that should not be a problem, however, no additional money would be spent by the District on these efforts. In addition, any effort should be "all or nothing" meaning simply making changes to the hydraulic models would not suffice. Cost estimates, concept plans and other results would have to be revised as well or else nothing should be done (with regards to the hydraulic modeling).

Charlie said the he had felt this particular issue had been resolved previously and that HZI and WEST considered that the work that would have been required for such an effort was out of the project scope. As discussion regarding the scope of work and the requirements for the sedimentation analysis arose, Charlie indicated that this issue and other scope related issues should be discussed further with HZI and WEST project managers and that these issues would make a final submittal the following week unlikely.

Tim indicated that the District desired a comprehensive hydraulic analysis and that the purpose of the HMP was to provide a recommended plan that if constructed by developers would provide necessary flood control. Charlie indicated that prior to any construction, a more detailed study would be required and that nothing should be constructed based solely on the hydraulic analysis or the recommended plan presented in this study.

Concept Plans

- Tim initially requesting specifically identifying drop structure locations on the concept plans, however, reviewing how the grade control is shown in the plans, Tim indicated that how it was shown was acceptable.
- Dave pointed out some discrepancies with the reach grade control limits shown on the concept plans that reflect the sedimentation analysis recommendations. The limits of the grade control features did not appear to correct and in some cases did not agree with the reach tables on the plans. Charlie will review the reaches and correct as necessary.
- Dave pointed out a discrepancy between a flow rate in the table of the plans and the hydrologic analysis (CO508). Charlie will review and correct as necessary.

Other Items

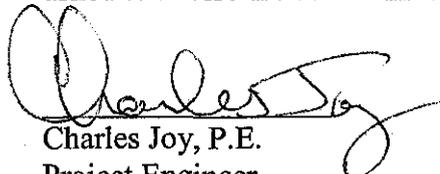
Charlie delivered a copy of a change order request for the Study Report to Tim. Tim indicated that the report hours seemed acceptable but he had some problems with the project management hours and to review them and get back to him.

Tim suggested that the Scope of Work be gone through in detail to determine completion of the work items.

Action Items

- Charlie will revise the Executive Summary and Study Report as discussed in the minutes
- A meeting has been arranged between the District, WEST and HZI concerning the project study and scope issues. The submitted change order request will be addressed at the meeting.
- Charlie will correct the Concept Plans per Dave's comments
- Dave will provide HZI comments concerning the Study Report as soon as available.

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy, P.E.
Project Engineer

Sept 20, 2002
Date Prepared

cc Attendees
Dennis Richards
Gary Burroughs
Fred Duren

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.68)
Subject: Resolving District Comments and Sedimentation Recommendation. Issues
Date: August 21, 2000
Time: 1:30 p. m. – 2:45 p.m.
Place: Huitt-Zollars Conference Room

Attendees: **WEST Consultants**
Dennis Richards (480) 345-2155
Anand Raman (via phone) (425) 646-8806
Hans Hadley (via phone) (425) 646-8806
Huitt-Zollars
Charles Joy (602) 952-9123

This meeting was called to address District comments regarding sedimentation/lateral migration findings and recommendations presented in the sedimentation technical report and the study report

SUMMARY OF MEETING

Prior to teleconferencing with Anand and Hans, Dennis and Charlie discussed the District's comments and how they might be addressed in the report including how the recommendations and conclusions resulting from the sedimentation analysis could be interpreted and implemented.

After some initial discussion Anand and Hans were consulted and the recommendations and District comments discussed. The following are the most significant conclusions resulting from the discussions:

- WEST agreed that incorporating drop structures and other features recommended in the sedimentation analysis exceeded the scope of work and exceeded the level of detail for which the sedimentation analysis was performed. It was felt that WEST's analysis and recommendations were useful in identifying trends along the washes but more detailed study is required to isolate the actual needs along the washes.
- WEST had no problems or comments regarding HZI's responses to District comments relative to including sedimentation recommendations into the hydraulic analyses (the response indicating that it was outside of scope and outside the conceptual level of detail).

- The benefits from drop structures/grade control features recommended in the analysis could also be realized by relocating the drop structure elsewhere within the same reach and/or through multiple smaller drop structures.
- Anand was to send a write-up for responses to the District's comments later that day by email (have since received).
- Sedimentation Basin capacities are based on the actual capacity of the basin to hold sediment. HZI's method of roughly approximating basin areas and conceptually locating sedimentation basins seemed reasonable to WEST given the conceptual nature of the study.
- Dennis would review and consider whether they could provide general guidelines to aid future studies in considering new channel improvements. Dennis is to get back with HZI concerning this issue.
- Recommendations for channel lining along the Main Branch of Sanokai Wash, south of Riggs Rd. arises from steep grades, high channel velocities, constrained channel widths (in some areas) and no information regarding upstream sediment loads. The result was a recommendation based on conservative assumptions. Wider, more shallow channels (where possible) and/or channels with higher n-values may be able to reduce flow velocities sufficiently to eliminate the need for channel lining. In addition, an analysis that would include information regarding upstream sediment loads may also help reduce or eliminate the need for channel lining along the reach. These issues will be discussed in the study report.
- WEST will provide a Final Technical Report addressing the District's comments to include in the QC/SW HMP Technical Report.
- HZI is to write up a brief section for the study discussing the sedimentation recommendations and provide the section along with the portions of the study report pertinent to the sedimentation analysis to WEST for review prior to the final submittal for review and comments.
- WEST and HZI will work on revising the study report section per previous comments (concerning the Study Report) and recent comments (concerning the Technical Report) by the District.
- WEST was informed that the final submittal date was Sept 26 but that the District would like a "99%" submittal for a final quick review prior to actual printing of all the necessary copies. Charlie indicated he would like to get that to the District within the next two weeks (three weeks max.).

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting.

Charles Joy, P.E.
Project Engineer

Date Prepared

cc Attendees
Tim Phillips
Dave Degerness
Gary Burroughs
Fred Duren

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (13.10)
Subject: Draft Submittal Review
Date: August 1, 2000
Time: 10 a.m. to 11:30 a.m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 602 506-4718
David Degerness 602 506-4730
Huitt-Zollars
Fred Duren 602 952-9123
Charlie Joy* 602 952-9123

This meeting was held to present a draft version of the Concept Plans, to receive and review District comments concerning the working draft submittal of the Project Study Report (submitted previously), and to clarify some of the details regarding the final submittals.

Draft copies of the updated version of the Project Study Report were also provided at the meeting. Attached is a list of questions prepared by Huitt-Zollars that served as the agenda. The essential decisions reached in the meeting are summarized below.

SUMMARY OF MEETING

Sediment Analysis

Tim requested that the write-up in the Project Study Report include a section discussing how the recommendations from the sediment analysis performed by WEST can be incorporated into the preferred alternative and the multi-use concepts.

Huitt-Zollars is to meet with WEST to discuss the recommendations proposed and see how the recommendations can be modified, changed and/or implemented to be consistent with the multi-use aspects of the project.

Dave noted that based upon the sedimentation report, there would appear to be a need to recommend a ~3 ft. drop structure on the East Branch of Sanokai Wash, however, a drop structure is not called out in the sedimentation analysis report. This is to be discussed with WEST and clarified whether there is a need for a drop structure.

Tim indicated that the reach designations need to be consistent between the Project Study Report and the Concept Plans. It was agreed that Tables on page 25 of the draft Project Study Report should be removed and instead of reach numbers the reaches be identified by the road crossings. The reaches for the sediment analysis should be designated by the road crossings that form the upstream and downstream ends of the reaches.

Fred indicated that West did not determine the final locations of drop structures since only a sediment budget analysis was performed. Drop structure locations were identified in the sediment budget analysis for a particular reach. A HEC-6 analysis will be required to locate precise drop structure locations. Tim asked that the reaches recommended for drop structures be identified on the Concept Plans. He also asked that the implementation plan in the Project Study Report be modified to indicate that an HEC-6 analysis will be required as part of final design of channel improvements in order to define the final locations of drop structures.

Charlie asked the District to review the revised sediment analysis write-up in the draft Project Study Report that was distributed at this meeting and to respond with comments to him as soon as feasible. Also the District was asked to provide some figures to include in the report and identify any photos/figures which could be removed from the report.

HEC-1 Models

Dave requested that Huitt-Zollars provide the final HEC-1 runs for Queen Creek and Sanokai Wash since Collins-Pina needs them to finish its study of the EMF.

Concept Drawings

Tim and Dave quickly reviewed the draft Concept Drawings. It was agreed that the Concept Drawings to be included at the back of the Project Study Report in 11 x 17-inch format should show the cross sections but not the topography. The drawings for the Project Technical Report will show the topography along with the all the other information shown on the drawings in the Project Study Report.

The line weights for the channel boundaries on the 11 x 17-inch drawings need to be increased so as to be more discernable.

Huitt-Zollars is to include Concept Plan drawings for the reaches of Queen Creek that are not recommended for improvements. A note should be placed on these drawings that no improvements are called for in these reaches. The criteria tables for these plans should provide averages for the variable items (e.g., top width, depth).

Concept Plans will not be provided for the existing confluences of Queen Creek and Sanokai Wash.

Hydrology Sheets and Land-Use Map

Hydrology sheets showing sub-basin boundaries and routing parameters should be included in the back of the Project Study Report in 11 x 17-inch format. Tim requested that enough sheets be provided so that the information on these sheets can be read.

Dave requested that a full-size set of hydrology sheets be provided with the final submittals.

A land-use map will also be provided at the back of the Project Study Report.

Evaluation Matrix Table

Table 5 in the draft Project Study Report, Example of Evaluation Matrix Table, should be condensed to just show the average weights for the various evaluation criteria. The sample rating values should be eliminated.

Cost Estimates

Tim requested that the cost tables for the preferred alternatives be broken down into several components, including excavation, land, design, CMS, and contingencies. He also requested that this breakdown of costs be provided on the Concept Plans for each reach.

Charlie indicated that land was not included in the costs for normal channel improvements since this land is assumed to be donated by developers. However, Charlie indicated that land costs were included where the channel had to be re-aligned to avoid existing structures and where detention basins were located. This was agreeable. Tim requested that the itemized reach costs provided on the Concept Plans indicate this distinction in handling land costs.

It was agreed that the cost for trails needs to be included in the cost estimate.

Tim indicated that his experience in reviewing prior cost estimates submitted to the District included a design cost of seven percent of construction cost, a CMS of eight percent, and contingencies of 20 percent. He suggested that Huitt-Zollars use whatever percentages it felt appropriate for the project.

Change Order No. 4

Fred provided Tim with the copy of Huitt-Zollars request for Change Order No. 4 previously sent by e-mail. Tim was concerned that the request wasn't made along with the schedule extension of Change Order No. 3. However, Fred indicated that he recalled that Tim wanted to proceed with the schedule extension as soon as possible and didn't want to wait for the fee estimate to be prepared to cover any additional costs that Huitt-Zollars considered associated with modifying the format of the final report.

Final Submittals

It was agreed that the following would constitute all of the final submittals for the project:

- Concept Plans
 - In back of Project Study Report in 11 x 17-inch format without topography
 - In Project Technical Report in 11 x 17-inch format with topography
 - Full-size mylars
 - Digital versions on diskette or CD

- Project Study Report
 - Study Report text
 - Concept Plans (see above)
 - Land-Use Map
 - HEC-1 and HEC-RAS models for preferred alternatives on diskette or CD
 - Diskette or CD of Word file(s)

- Executive Summary (separate from Project Study Report)
 - 11 x 17-inch format
 - Include project introductions, existing conditions, and preferred alternatives
 - Add maps of preferred alternatives
 - About 5 pages in length
 - Diskette or CD of Word file(s)

- Project Technical Report
 - Hard copies of model runs of preferred alternatives
 - Technical data

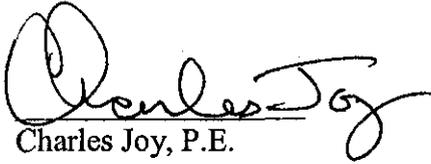
- Administrative Report
 - Essential correspondence

The number of final copies to be submitted are:

- Concept Plans - one set of full-size mylars
- Project Study Report – nine copies
- Executive Summary – nine copies
- Project Technical Report – four copies
- Administrative Report – one copy

Tim requested that 99-percent final submittals of the above documents be made to the District for final review. At that time the District may submit versions to outside agencies for comment.

The preceding minutes were prepared by Fred Duren and Charles Joy, Huitt-Zollars, Inc., and are based upon discussions and conversations heard during the course of the meeting. Meeting attendees are asked to advise the authors in writing or verbally of any discrepancies and/or omissions.



Charles Joy, P.E.
Project Engineer

8/3/00
Date Prepared

Attachments

c: Attendees

Gary Burroughs
Glenn Shearer
Rick Amalfi, ACT
Enamul Hoque, H&A
Barbara Macnider, ACS
John Cahoon, Kenney
Dennis Richards, West

Questions for District Meeting 8-1-00

Concept Plans

- What needs to be submitted for Queen Creek upstream of channel improvements?
 - Should these sheets be included in the Concept Plans (seems like it would work better but since no channel improvements, may be confusing) or submitted separately?
 - Plan view?
 - Plan/Profile view (Ron has already cut the profile)?
 - Is there any need to submit additional sheets for the existing alignment? In particular, the area west of Higley Road.
- Hydrology sheets are not in the concept plans. Should they be included as part of the concept plans or be provided separately as an appendix or figure in the Study Report and/or Technical Report?
- Plan/Profile sheets look better without topo. Would the District prefer the Concept Plans without topo? Without cross sections?

Study Report

- What additional figures does the District desire in the Study Report?
 - There are some figure the District had in the draft report which we cannot adequately modify (study area limits) or reproduce (aerial photos of entire watershed). Can the District help provide those figures?
- Are there figures/photos the District may want to discard/combine?

Technical Report

- How to provide cross section location information?
 - As part of the Concept Plans? (if to include QC upstream of in concept plan)
- Technical Report that includes correspondence, meeting minutes etc.... will be very large and probably need to be divided into separate volumes.
- Anticipate providing ring binders since technical report is so large.

Change Order Request

- Review of Change Order Request No. 4.
- Response to questions.

Final Submittal Review

- Define ALL final products to be submitted.
- Discuss schedule for completion
 - Draft submittals
 - District review
 - Final submittals

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.2)
Subject: Level II Alternatives Evaluation Meeting
Date: March 24, 2000
Time: 9 p.m. to 11 p.m.
Place: Huitt-Zollars - Phoenix Office

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 602 506-4718
David Degerness 602 506-4730
Theresa Hoff 602 506-8127
Huitt-Zollars
Fred Duren 602 952-9123
Glenn Shearer 602 952-9123
Charlie Joy 602 952-9123

This meeting was called to evaluate the Level II alternatives and select the preferred alternatives for further study in Level III. The meeting was called off at 9 a.m. after being notified that key individuals were unable to attend. Those who had not arrived at the meeting were notified but those already in attendance remained for some general discussion on the project.

SUMMARY OF MEETING

Upon cancellation of the meeting, the attendees present remained to discuss the project alternatives, the project reports and how to proceed with the evaluation of alternatives.

Project Alternatives

Theresa asked why a No Action alternative and an alternative recommending the structural reinforcement of the existing levees (to meet FEMA standards) were not included among the project alternatives. Theresa indicated that these alternatives may represent the most environmentally sound alternatives since they might have the least impact on existing habitats and ecosystems.

The No Action alternative was not considered primarily because it did not meet the main objective of the study, which is to assure that future development maintains the 100-year, 24-hr conveyance capacity in Queen Creek and Sanokai Wash. Therefore, this alternative would be out of the current Scope of this project.

An alternative to reinforce the levees or replace them with structurally sound levees was not considered because the requirement for incised channels is one of the initial design criteria.

Tim indicated that while these alternatives were not considered, they could probably be addressed in the report with the information currently available.

Project Reports

Tim stated that the Alternative Analysis Report (AAR) concentrated too much on the technical analyses of the alternatives and documenting technical process. While Tim felt the report met the requirements of the Scope of Work, he would prefer to that the Preferred Alternative Report (PAR) be of a different format. The PAR should concentrate more on the discussion of the various elements of the project (multi-use aspects, environmental impacts, etc..) and the technical portion (primarily the hydrology and hydraulics) should be scaled back. Essentially the PAR should be more readable to the layperson.

Tim said he could provide an outline or format that he felt would be more suitable for the PAR.

Dave had comments on the AAR but that he would prefer to provide HZI with a list of the comments rather than go through them during the meeting.

Dave had previously provided HZI with comments on the EMF Final Report over the phone but HZI is waiting to make any final changes to the report until Afshin's comments are known. Tim and Dave indicated that Afshin had been out of the office for the past week or so and should be back next week.

Evaluation Matrix

Because of the difficulties in gathering people together to evaluate the alternatives, it was suggested that each group evaluate the alternatives and then the results reviewed to make the final selection of the preferred alternatives.

In addition, Tim would like to use a variation of the current evaluation matrix that would allow each individual evaluator to establish the "weighting" of each different criterion. Fred indicated that there was no problem using a different method to evaluate the alternatives.

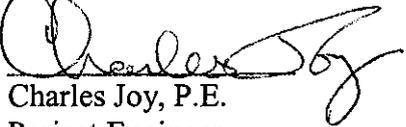
Miscellaneous Items

Theresa discussed the need to include environmental surveys on the project alternatives to determine the impact of any vegetation removal on endangered and protected species including the pygmy owl, yellow-billed cuckoo and the southwest flycatcher

Action Items

- Tim to provide new evaluation matrix format
- HZI to send out matrix forms to all parties to evaluate the project alternatives
- Tim and Fred to discuss the format of the Preferred Alternative Report

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are based upon discussions and conversations heard during the course of the meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy, P.E.
Project Engineer

24 March 2000
Date Prepared

Attachment

c: Attendees
Lonnie Frost
Dick Schaner
Gary Burroughs
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Barbara Macnider, ACS
John Cahoon, Kenney
Dennis Richards, West

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.51)
Subject: Neighborhood Open House Meeting No. 2 – Level II Analysis
Date: February 3, 2000
Time: 6 p.m. to 8 p.m.
Place: Queen Creek Town Hall

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 602 506-4718
David Degerness 602 506-4730
Town of Queen Creek
Dick Schaner 480 987-3890
Huitt-Zollars
Glenn Shearer 602 952-9123
Charlie Joy 602 952-9123

This was the second Neighborhood Open House meeting held in Queen Creek. This meeting was held to inform the public as to the progress of the study and to solicit comments from the public regarding the proposed Level II alternatives for Queen Creek and Sanokai Wash.

SUMMARY OF MEETING

On display for the meeting were the proposed project alternatives for both Queen Creek and Sanokai Wash, cross sections and detention basins showing conceptual multi-use facilities, and aerials showing the channel widths and basins for the alternatives. In addition, information was available concerning preliminary alternative costs and comment cards were provided to solicit written comments from the public.

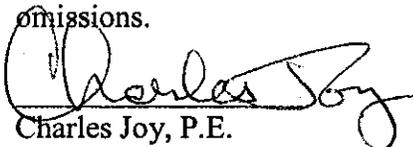
Fourteen people signed-in at the meeting (attached). Generally, most people were supportive of the alternatives without indicating a particular preference. Many of the attendees were from the Ranchos Jardins area along Sanokai Wash and were interested in improvements through the area. Of particular interest to several individuals was the possible development of lots northwest of Chandler Heights and Sossaman Roads, just south of Sanokai Wash. A property owner in the area has been responsible for the excavation/fill of material in and adjacent to Sanokai Wash in order to make pads for the lots. Several individuals indicated that the historic flow path of Sanokai Wash actually passed through the proposed lots. The defined alignment of Sanokai Wash now passes farther north.

Several individuals also indicated that a local irrigation or water company was planning on construction a small building in the approximate impact area of Sanokai Wash just west of Sossaman Road.

All seemed supportive of equestrian trails and other multi-use amenities. One individual expressed concern that trails might be used by motorized vehicles and requested better and more signage along the existing and any proposed future trails. Another individual indicated that they felt the equestrian trails were too small and should be widened from 12' to 16'. The individual was informed that the 12' was for the access trail and that the entire wash bottom would be open to equestrians. The sole written comment card expressed a preference for equestrian horse trails and multi-use detention basins.

One individual had concerns of land subsidence, illegal land splits, ground water contamination and localized drainage issues not directly related to the project. These concerns would seem to be best addressed in future studies of local drainage and/or with County/State officials with appropriate jurisdiction.

The preceding minutes were prepared by Charles Joy, Huitt-Zollars, Inc., and are based upon discussions and conversations heard during the course of the meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy, P.E.
Project Engineer

4 Feb 00
Date Prepared

Attachment

c: Attendees

Gary Burroughs
Fred Duren
Mark Seits
Rick Amalfi, ACT
Enamul Hoque, H&A
Barbara Macnider, ACS
John Cahoon, Kenney
Dennis Richards, West

**Queen Creek/Sanokai Wash Hydraulic Master Plan
and East Maricopa Floodway Capacity Mitigation Study
Sign-In Sheet (Open House February 3, 2000)**

Please Print Name	Please Print Address	Would you like to be placed on the project mailing list?
1 Terry Weckessey	23255 S Via Del Arroyo	Yes
2 Sue Williams	23255 S. Via Del Arroyo	yes
3 Lonnie Frost	1025 S. Gilbert Rd, Gilbert 85296 TOWN OF GILBERT	
4 Marjorie Bunnell	P.O. Box 1672	YES
5 SEAN WALTERS	6720 N. SCOTTSDALE ROAD STE 160 SCOTTSDALE, AZ 85253	YES
6 Silvia Cantor	26226 S. Waves Rd QC	yes
7 Lisa Coletto-Cohen	20201 E. Ocotillo Rd, QC	yes
8 Tim Kelly	4450 N 12 th St. Moon	YES
9 Bill Heath	18458 Via De Palmas QC	yes
10 JERRY SIDLAR	19785 E. VIA DEL RANCHO	YES
11 Jennifer Robinson	19147 ViadelVerde QC 85242	yes
12 BRAD KELLEY	20002 E. SUPERSTITION DR. QC 85242	YES
13 RON WILCOCK	23245 S. VIA DEL ARROYO QC 85242	yes
14 WAYNE SMITH	21665 E. NIGHTINGALE	YES
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.51)
Subject: Pre-Neighborhood Open House Meeting -- Level II Analysis
Date: January 28, 2000
Time: 1:30 p.m. to 3 p.m.
Place: Huitt-Zollars

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 602 506-4718
David Degerness 602 506-4730
Town of Queen Creek
Dick Schaner 480 987-3890
Huitt-Zollars
Fred Duren 602 952-9123
Glenn Shearer 602 952-9123
Charlie Joy 602 952-9123

This meeting was called to review presentation materials prepared by Huitt-Zollars for the second Neighborhood Open House meeting to be held in Queen Creek on February 3. An agenda (attached) was distributed to meeting attendees on January 27, and additional copies were provided at the meeting. Action items are identified by italics within the meeting minutes.

SUMMARY OF MEETING

1. Meeting Objective

Fred discussed the meeting objective, as described above.

2. Level II Status Update

Fred described that prior meetings had led to the selection of three Level II alternatives for further study for both Queen Creek and Sanokai Wash. These alternatives were mutually developed by the District, the Town of Queen Creek, and Huitt-Zollars in prior meetings addressing the Level II analysis. They are to analyzed and evaluated to determine one preferred alternative for Queen Creek and for Sanokai Wash, which will be carried forward for analytical refinement in the Level III analysis.

At the prior request of Tim, Huitt-Zollars recently performed a sensitivity analysis to compare the costs of detention basin construction vs. that for channel construction. Tim requested this analysis to use as a basis for selecting appropriate volumes for detention basins in Alternatives 2 and 3 for both Queen Creek and Sanokai Wash. (Detention basins are not included in Alternative 1 for either Queen Creek or Sanokai Wash.) As a result of this analysis, Huitt-Zollars found that, except for the potential Signal Butte detention basin on Sanokai Wash, it was more economical to construct enlarged channels than to construct detention basins with resultant smaller channels. This analysis also showed that, except for the Signal Butte basin, the larger the detention basin, the less economical the alternative became. Consequently, Huitt-Zollars made adjustments in the prior Sanokai Wash alternatives to be consistent with this finding. Huitt-Zollars also used this finding to select minimum-sized basins for Alternatives 2 and 3 for both Queen Creek and Sanokai Wash.

Fred described that the purpose of the second Neighborhood Open House was to present preliminary findings to the public to allow for input before proceeding too far with the Level II analysis. Tim questioned whether the final Alternatives Analysis report should be prepared prior to this open house. Fred responded that it would be more beneficial to get public input at this point than when the final report was prepared because this report would contain the recommended alternatives for both Queen Creek and Sanokai Wash. Additionally, Fred said that the public input would be preferable in advance of the upcoming presentation to the Queen Creek Town Council, since he thought the Town Council would like to have the benefit of public input for its deliberations of the alternatives. Tim suggested that it may be necessary to hold a third public open house after the final alternatives for Queen Creek and Sanokai Wash have been selected.

Fred said that after this meeting and receipt of public input from the open house, Huitt-Zollars would proceed with completing the Level II analysis of alternatives, taking into consideration any necessary revisions to the alternatives.

3. Detention Basin Analysis

Charlie presented the results of the sensitivity analysis to compare the costs of detention basin construction vs. that for channel construction. Land costs for channel improvements were considered in the initial sensitivity analysis, as were land costs for detention basins. Charlie later performed a cost analysis in which land costs for channel improvements were not included, since it could be assumed that the land necessary for these improvements will be provided by developers. This second analysis was consistent with the first in that channel improvements were shown to be more economical than detention basins with reduced channel sizes.

The results of this analysis, as shown on two attached figures (i.e., Queen Creek Individual Detention Basin Cost Benefits and Sanokai Wash Individual Detention Basin Cost Benefits), indicate that only the potential Signal Butte basin on Sanokai Wash exhibits a cost benefit compared channel construction. All potential detention basins on

Queen Creek and all other potential detention basins on Sanokai Wash were found to be a negative cost benefit for any size of basin.

As a result of this sensitivity analysis, Alternatives 2 and 3 for Sanokai Wash were modified to include only the Signal Butte and San Tan detention basins in Alternative 2 and to include the Signal Butte, Confluence, and Chandler Heights detention basins in Alternative 3. For sizing the Queen Creek potential detention basins included in Alternatives 2 and 3, the smallest reasonable volumes, based somewhat on land availability, were used in the analysis of these two alternatives.

4. Queen Creek Level II Analysis

Charlie described the results of the Queen Creek Level II analysis, as presented on graphics pinned to the walls. These graphics depicted the approximate channel widths for reaches along Queen Creek for the future conditions 100-year, 24-hour flooding event. (The future conditions event was previously selected by the District as the basis for the Level II analysis.)

As shown on the graphics, there are little to no differences between the channel widths for Queen Creek for the three alternatives. This is primarily due selecting minimum-sized detention basins in Alternatives 2 and 3. Charlie indicated that Alternatives 2 and 3 meet the criteria defined earlier by the District to contain the design flows within the channel (without freeboard) through the Power Ranch development.

It was requested that design flows be added to the alternatives graphics for the open house. *Huitt-Zollars will add the design flows to the drawings.*

Charlie described that in developing volumes and land areas for the detention basins, Huitt-Zollars assumed that a passive multi-use detention basin would have an effective volume of 90 percent, while an active multi-use basin would have an effective volume of 50 percent. It was requested by Tim and Dick that the value for the active multi-use basin be changed to 70 percent. *Huitt-Zollars will make this change in assumptions for percent-use of an active multi-use basin.*

Tim questioned whether detention basins should be eliminated in the alternatives; and Fred responded that, if cost were the only criterion to be used in selecting between the alternatives, this would be the case. However, he indicated that the evaluation matrix, which was developed to identify the preferred alternative, contains numerous non-cost criteria (e.g., multi-use opportunities). Hence, to be consistent with the evaluation matrix method for selection of the preferred alternative, it would be inconsistent to rule out Alternatives 2 and 3 because they could have higher ratings for some of the non-cost matrix evaluation criteria, which could offset the lower cost advantage of Alternative 1.

Tim also thought that the results of the Level II analysis have essentially only developed one alternative for Queen Creek and Sanokai Wash due to the fact that the channel widths are nearly the same for all three alternatives. As indicated below in these minutes, Tim

requested that Huitt-Zollars add another alternative that would include larger detention basins so that a "significant" reduction in channel widths would result. Thus, this new alternative would provide a more discernable difference in channel widths such that it could be distinguished as an alternative different from Alternatives 1, 2, and 3.

Glenn presented the graphics he has prepared for depicting multi-use elements along channels and within passive and active multi-use detention basins. After discussion, it was agreed that *Huitt-Zollars will: (1) develop a new cross section for the 12:1 side slope channel without a middle island; (2) eliminate the bench on the side slope for the horse trail, which will be shown in the bottom of the channel; (3) make the bench for access and trails 12 feet wide; and (4) prepare another cross section showing a 4:1 side slope through developed areas.*

5. Sanokai Wash Level II Analysis

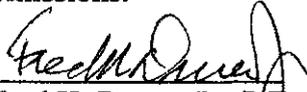
Charlie made the same presentation for Sanokai Wash as for Queen Creek. As with the Queen Creek analysis, there is little change in channel widths between the alternatives because the detention basins were selected at minimum sizes.

Several questions were raised regarding the flows that were used in the analysis. Dick questioned the flow that was shown to pass through the Ranchos Jardins area along Sanokai Wash, where the channel width was believed to be about 150 feet. Charlie said that the 100-year flow in this area was shown to be contained within the channel limits (i.e., as indicated by bank stations) depicted in the District-supplied HEC-RAS model. In this area, although the property limits showed only about a 150-foot separation across Sanokai Wash, the channel width shown in the model was generally more than 200 feet. He surmised that this indicated that the property limits in this area actually extended into the channel. Dick's recollection in this area was that there was only about a 150-foot distance between the fence lines on either side of the wash. *Charlie will visit the Ranchos Jardins site over the weekend to check on this distance.*

6. Meeting Summary

Per Tim's request, *Huitt-Zollars will: (1) prepare a welcome sign to set on an easel outside the open house meeting room; (2) bring arrow signs to direct public to the open house; (3) bring the aerial map used in the meeting to the open house after adding lines to show channel widths for the various alternatives; (4) include another alternative to show increased sizes for detention basins (criterion for sizing not stated) so that a "significant" reduction in channel width would be achieved; and (5) bring cost information on the alternatives to the open house meeting.*

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are based upon discussions and conversations heard during the course of the meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.



Fred K. Duren, Jr., P.E., P.G.
Project Manager

2/7/00

Date Prepared

Attachments

c: Attendees

Gary Burroughs

Mark Seits

Rick Amalfi, ACT

Enamul Hoque, H&A

Barbara Macnider, ACS

John Cahoon, Kenney

Dennis Richards, WEST

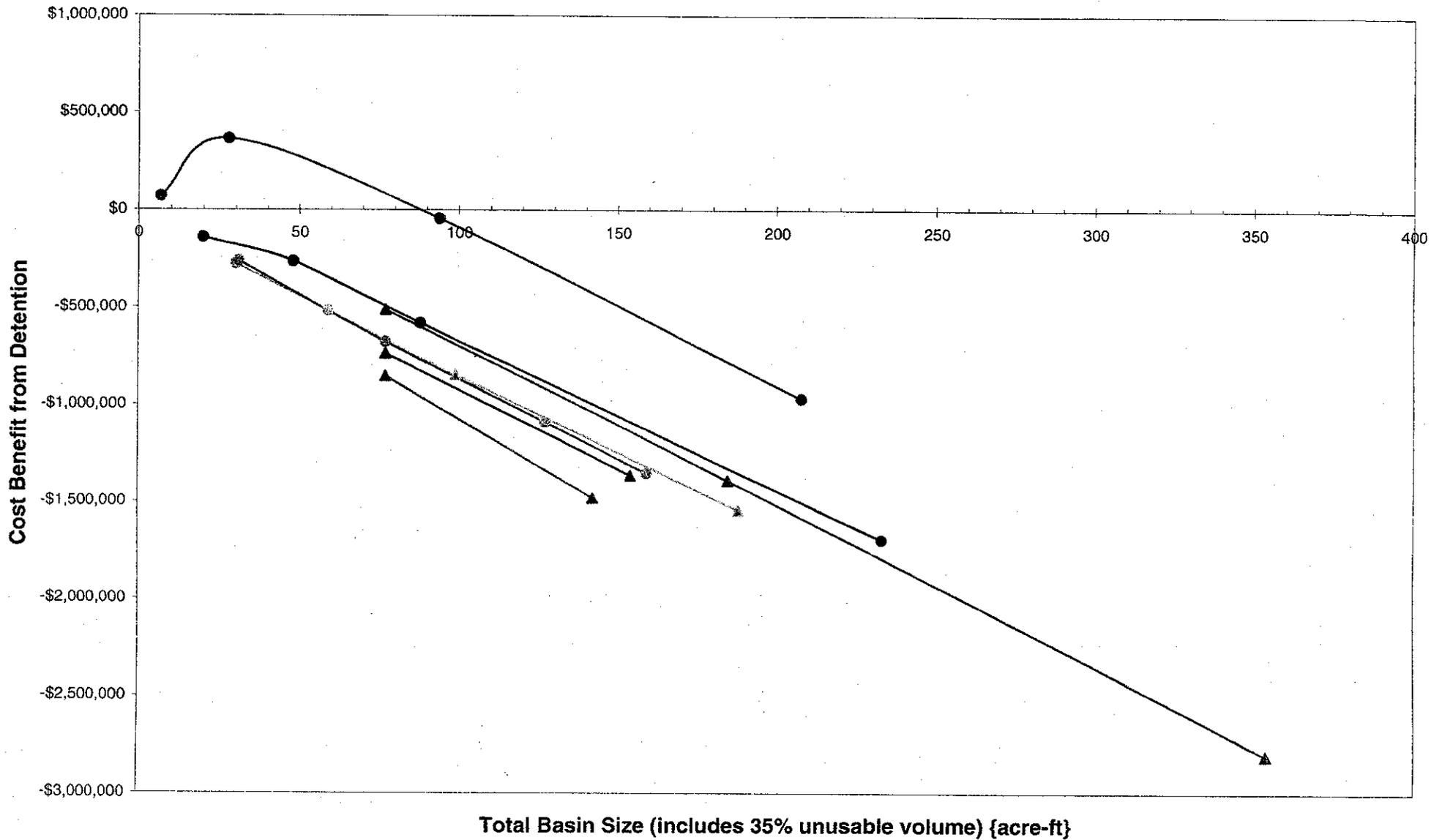
AGENDA

PRE-NEIGHBORHOOD OPEN HOUSE MEETING PROGRESS MEETING NO. 15 JANUARY 28, 2000

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

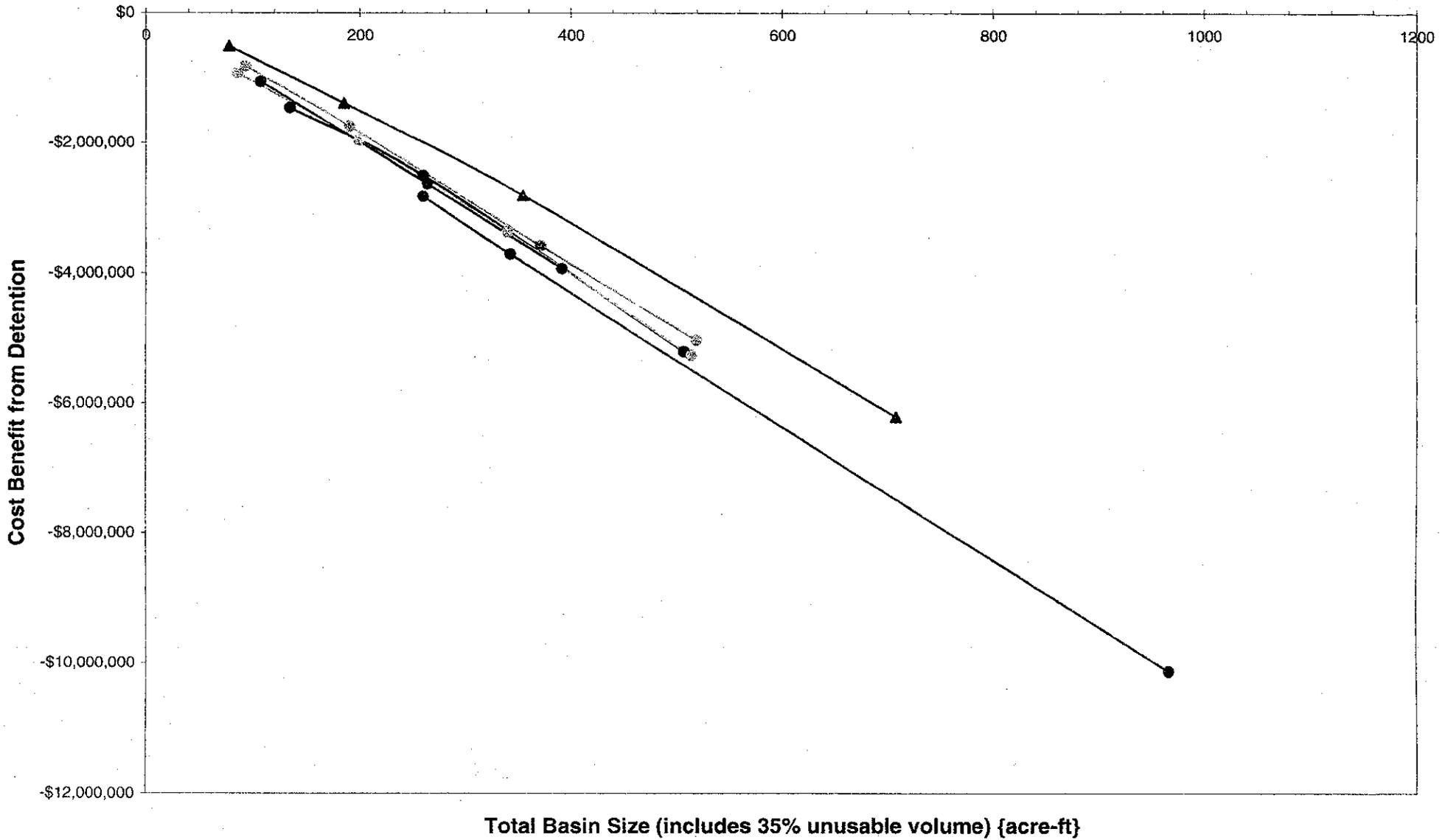
1. Meeting Objective: Present Graphics Proposed for the Upcoming February 3 Neighborhood Open House
2. Level II Status Update
 - a. Alternatives Development
 - b. Modification of Prior Alternatives
 - c. Objective of Second Neighborhood Open-House
 - d. Future Level II Work
3. Detention Basin Analysis
 - a. Comparative Costs of Detention Basins vs. Channel Improvement
 - b. Modified Alternatives
 - Queen Creek
 - Sanokai Wash
4. Queen Creek Level II Analysis
 - a. Alternative 1
 - b. Alternative 2
 - c. Alternative 3
 - d. Multi-Use Presentation
 - Detention Basins
 - Channels
 - e. Summary Discussion
5. Sanokai Wash
 - a. Alternative 1
 - b. Alternative 2
 - c. Alternative 3

Sanokai Wash Individual Detention Basin Cost Benefits



● Signal Butte-Offline	▲ Signal Butte-Inline	● Confluence-Offline	▲ Confluence-Inline
● San-Tan-Offline	▲ San Tan-Inline	● Chandler Hts-Offline	▲ Chandler Hts-Inline

Queen Creek Individual Detention Basin Cost Benefits



● Rittenhouse Rd Channel-Offline
 ▲ Rittenhouse Rd. Channel-Inline
 ● SPRR-Offline
● Crismon-Offline
 ● Ellsworth-Offline
 ● Hawes-Offline

- d. Multi-Use Presentation
 - Detention Basins
 - Channels
- e. Summary Discussion

6. Meeting Summary

- a. Graphics
- b. Pre-Meeting Arrangements
 - Time
 - Location
 - Easels
 - Refreshments

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.60)
Subject: QC/SW Mapping
Date: January 19, 2000
Time: 10:00 a. m.
Place: Flood Control District of Maricopa County Complex - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (602) 506-4718
David Degerness (602) 506-4730
Mark Brewer (602) 506-4070
Kenney Aerial Mapping
Gary Finnie (602) 987-3890
Huitt-Zollars
Charles Joy (602) 952-9123

SUMMARY OF MEETING

The meeting was called to resolve outstanding mapping issues related to consolidating mapping from various sources.

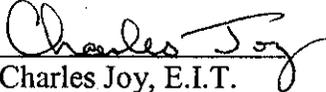
Gary identified locations where there were elevation differences between the different mapping sources and the issue on how to resolve the discrepancies was discussed. The problem areas identified were generally located in the EMF-Queen Creek/Sanokai Wash confluence area, along Queen Creek between the SPRR and the County Line, and in the East Branch-Main Branch of Sanokai confluence area.

It was agreed that Kenney should utilize the most current mapping (some provided by the District from previous studies and some flown/developed by Kenney) and supplement it with the scanned mapping done by Cooper Aerial. The Cooper mapping should be tied in as best possible and the locations where significant differences (greater than 1 ft.) occur should be documented in the QC/SW HMP Report.

It was felt that this was acceptable given the preliminary/conceptual nature of this study and that upon development of construction plans for any drainage facilities, the developer or agency would necessarily do a more detailed survey and mapping of the impacted area.

In addition, it was agreed that Kenney need not provide mylars of the EMF or QC/SW mapping except for in Pinal County where Kenney developed mapping. The District should already have mylars from previous studies of the mapping provided to Kenney along the EMF and QC/SW.

Charles Joy, Huitt-Zollars, Inc. prepared these meeting minutes, and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy, E.I.T.
Project Engineer

1/19/00
Date Prepared

c: Attendees

Mark Seits, HZI
Rick Amalfi, ACT
Enamul Hoque, H&A
Barbara Macnider, ACS
John Cahoon, Kenney
Dennis Richards, West

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (12.40)
Subject: Possible Queen Creek/Sanokai Wash Detention Basins
Date: Oct. 27, 1999
Time: 10:00 a.m.
Place: Queen Creek Townhall

Attendees: Dick Schaner – Town Engineer, Town of Queen Creek (480) 987-9887
Tim Phillips - Project Manager, FCDMC (602) 506-4718
Dave Degerness – Hydrologist, FCDMC (602) 506-4730
Charlie Joy, EIT, Huitt-Zollars, Inc. (602) 952-9123

The meeting was held to discuss the merits of potential detention basins sites for the Queen Creek/Sanokai Wash HMP and to try and identify locations which should be included in the development of subsequent project alternatives. What follows is a brief summary of the major issues discussed during the meeting. For brevity, basin locations are identified by number according to the attached Detention Basin Exhibit.

SUMMARY OF MEETING

Charlie opened the meeting by giving some background information on the detention basin locations and by discussing the approach and basis of the detention basin analyses. The analyses were performed using outdated hydrology however, it was felt that the results of the analyses were useful in discussing the merits of the detention basins. The analyses were performed on basins individually and in selected combinations (depending upon the results of the individual analyses). The basins were evaluated both quantitatively and qualitatively in terms of hydrologic impact, efficiency, potential for recreation or multi-use purposes and the need for downstream channel improvements despite any flow attenuation by detention basins.

Queen Creek Basins

The advantages/disadvantages of the detention basins along Queen Creek were discussed. Basin 2 was considered preferable to other basin locations. Basin 1 was considered the least favorable due to the inefficiency in reducing flows west of the County Line. Basins 3, 4, and 5 may be considered if sufficient flow attenuation could not be obtained at Basin 2 alone. It was concluded that the approach for project alternatives for Queen Creek should consist of:

1. Determining the existing capacity of Queen Creek (it is assumed that this is to include proposed cross sections for the new/proposed developments of Meadowbrook Village at Power Ranch, Sossaman Estates, and Emperor Estates {if available})
2. Based upon this evaluation, if it appears that reasonable improvements to the channel cannot be made to contain flows, then detention should be considered. The location of the detention basin would depend upon the locations of channel inadequacies. It is believed that Basin 2 should be considered first due to basin efficiency and location.

3. If additional detention is still required then downstream basins 3, 4, and 5 should be considered. When evaluating detention at Basins 3, 4 and 5, consideration should be given to the potential for development at Basin 4 and 5 and the possibility of incorporating any necessary detention into a possible park at Basin 3.
4. Basin 1, located in Pinal County, should not be considered in any alternative development unless there appears to be no other alternative which can provide sufficient flow attenuation in Queen Creek.

Sanokai Wash Basins

The advantages and disadvantages of the detention basins along Sanokai Wash were discussed. It was determined that either Basin 9 or 10 is preferred due to the ability to reduce flows in the East Branch of Sanokai Wash and thereby reducing the extent of channelization and structural improvements at road crossings.

Separately as they exist, Basin 6 has no hydrologic benefit and Basin 11 is much less preferred to Basins 9 or 10. However, if the alignment of the East Branch of Sanokai Wash is to run along the south side of Riggs Rd., a basin in the general location of Basin 6 might be considered if determined to be effective.

Basin 7 is located in rapidly developing area and therefore not favorable. Basin 8 is located in an area considered favorable for "non-developmental" use, however, it is also located as such that the downstream benefit of detention is reduced. Basin 8 should be evaluated to determine if the basin can provide sufficient benefits.

It was concluded that the approach for project alternatives for Sanokai Wash should consist of:

1. For subsequent evaluations of the impact of detention basins, the base hydrology should be modified to routing of flows along the East Branch of Sanokai Wash (and possibly the Main Branch from Riggs to Santan Blvd.) through a simplified channel so that the impact of the basins are more accurately determined.
2. As with Queen Creek, an evaluation of the existing channel capacities should provide a basis for the need for detention. In the case of the East Branch, where no existing channel exists, it may be possible to preliminarily evaluate the benefits of detention versus channel improvements within the hydrologic model and to evaluate the need for Basins 9 or 10.
3. If the East Branch of Sanokai Wash is to be routed along the south side of Riggs Rd., a basin should be evaluated at the new confluence of the East Branch and the Main Branch roughly in the vicinity of Basin 6.
4. Basin 7 should not be considered due to rapid development in the area.
5. Basin 8 should be evaluated to determine the benefits of a basin at this location

Other Comments

A 1' freeboard requirement for Sanokai Wash and Queen Creek is acceptable to the Town of Queen Creek for the study washes. The District is to reevaluate the freeboard criteria for the study washes and notify HZI upon a decision.

Basin 2 is most likely located within the designated floodplain making a detention basin difficult. Also, any improvements upstream of Basin 2 to insure flow drains to the basin may be outside of the jurisdiction of Maricopa County or the Town of Queen Creek.

Generally, new developments along both Queen Creek and Sanokai Wash are utilizing a flow rate of ~3000 cfs for any channel improvements. The Town is also specifying that 1' of freeboard also be provided.

Sossaman Estates is to include portions of Sanokai Wash between Sossaman Rd. and ~ midway between Power Rd. and Recker Rd. (180th St?).

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation and understanding of the issues discussed in this meeting. Attendees are asked to advise the author of any discrepancies or omissions. Thank you.

Charlie Joy, E.I.T

Date Prepared

c: Attendees
Fred Duren
Mark Seits
Glenn Shearer
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Dennis Richards

**AGENDA
HYDROLOGY AND HYDRAULICS MEETING
OCTOBER 27, 1999**

**QUEEN CREEK/SANOKAI WASH HMP
AND
EAST MARICOPA FLOODWAY
CAPACITY MITIGATION STUDY**

1. Purpose of Meeting
 - a. Discuss the merits of detention basins at various locations within the Queen Creek/Sanokai Wash watersheds.
 - b. Identify detention basin locations to be considered in subsequent development of project alternatives
2. Overview of Basin Analyses
 - a. Basis
 - Basin analyses were conducted several weeks back based upon hydrology which has recently been revised.
 - While analyses are based upon outdated hydrology they can still provide sufficient insight into the potential of basin locations.
 - b. Approach
 - Basin locations identified in previous meetings along with basins located in hydrologically significant locations were included in the analyses.
 - Basins were typically first evaluated individually (in-line vs. off-line and at various sizes) and then in combination with other basins (typically limited to basins and basin configurations that showed more potential in individual analyses).
 - c. Evaluation
 - The evaluation of a basin(s) configuration(s) at a particular location considered size, benefits, efficiency, potential for recreation and to some extent, the need for downstream channel improvements.
3. Present Results
 - a. Individual Basins
 - b. Combinations of Basins
 - c. Recommendations
4. Discussion of Basins
5. Identify Basins for Subsequent Evaluation in Project Alternatives
6. Conclude Meeting

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.22)
Subject: Coordination Meeting – WEST
Date: November 24, 1999
Time: 9:00 a. m.
Place: Huitt-Zollars - Phoenix

Attendees:

Huitt-Zollars

Fred Duren 952-9123

Charlie Joy 952-9123

WEST

Dennis Richards 480 345-2155

An agenda was not prepared for this meeting. The meeting was called to coordinate the sedimentation/scour/lateral migration work by WEST with the hydraulics work being done by Huitt-Zollars in the Level II analysis. Action items are shown at the end of the minutes.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting is presented below.

Dennis: It is possible for WEST to do some initial sedimentation analyses that could help differentiate the Level II alternatives

Charlie: H-Z has some HEC-RAS models prepared for the Main Branch of Sanokai Wash; however, they are based on out-of-date hydrology. H-Z can provide these models to Dennis.

Fred: H-Z is first doing "baseline" hydraulic models based on trapezoidal cross sections with side slopes of 4:1 and 12:1. H-Z is not accounting for drop structures or detention basins in this development of baseline models. H-Z will consider adding detention basins after reviewing the baseline hydraulics results in areas where adverse channel hydraulics is found to occur.

Dennis: WEST may not need the HEC-RAS models to develop initial sedimentation/scour/lateral migration information for the Level II analyses, but instead may be able to work from selected hydraulics parameters (e.g., flow velocity, slope).

Fred: It would be beneficial for Charlie and Dennis to set up a regular meeting schedule so that the hydraulics and sedimentation work is properly coordinated.

Dennis: Dennis will meet internally with WEST staff to determine which engineers will be assigned to the project and to determine the information it will need from H-Z to perform its Level II sedimentation analysis. He will then get back to H-Z to coordinate WEST's initial sedimentation analyses.

The meeting ended at approximately 10:00 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr., P.E., P.G.
Project Manager

Date Prepared

attachment

c: Attendees
Mark Seits

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Coordination Meeting
Date: September 29, 1999
Time: 1:00 p. m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Amir Motamedi 506-4871
Bobbie Ohler 506-2943
Huitt-Zollars
Fred Duren 952-9123

An agenda was not prepared for this meeting.

This meeting was requested by Fred to discuss coordination issues.

SUMMARY OF MEETING

A summary of the significant discussions held and decisions reached during the meeting are presented below. Action items are italicized.

Significant Comments/Conclusions/Action Items

1. Fred explained that Huitt-Zollars intended to exclude the developed and soon-to-be-developed portions of the Queen Creek watercourse (e.g., Power Ranch, Sossaman Estates, and _____) in the Queen Creek hydraulic model. This approach was deemed appropriate by Huitt-Zollars because modification of the improvements undertaken (or to be undertaken) by developers within the Queen Creek watercourse would not be feasible. However, the District would like Huitt-Zollars to produce a complete hydraulic model along Queen Creek. *The new and proposed developments would be included in the model, with Huitt-Zollars developing estimated information where necessary.* It was recognized that Huitt-Zollars needs to proceed with the hydraulic model development without waiting for all developers to finalize their plans for potential modification of the Queen Creek watercourse.
2. Amir would like to see freeboard included in the Queen Creek hydraulic analysis. Fred indicated the channel profile may not allow this. Fred also mentioned that the

District's drainage manual indicates that it may not be necessary to provide freeboard for non-rigid channels. He also indicated that since the Queen Creek channel would be incised freeboard would seem to be unnecessary. Amir recalled an instance where tributary flow into a major channel was impeded by a bankfull flow in the major channel. He thought that this could occur with tributaries Queen Creek and, thus, thought that freeboard may be needed. Amir mentioned that one possibility for adding freeboard could be by adding an access road along the channel banks. Detention basins could also be a means to achieve freeboard.

3. Huitt-Zollars needs the scanned topography for Queen Creek and Sanokai Wash in order to complete the baseline hydraulics analysis for these two watercourses. Tim and Amir thought this had already been provided. Fred said that a CD containing topography scanned by Cooper Aerial had been delivered and that Dave Degerness had called shortly thereafter and said to ignore the topography because there was a bust. *Tim will check with Dave on this item.*

4. *Fred will update the schedule and identify critical milestones. A revised monthly fee projection will be provided based on the updated schedule.* Fred said that it is Huitt-Zollars intent to meet the February 19, 2000, completion date. Meeting this date will require close coordination and cooperation between the District and Huitt-Zollars for the remainder of the project.

5. *Fred will suggest to Tim a time and day to hold bi-weekly project management meetings for the duration of the project.* The purpose of these meetings will be to more closely coordinate the work between Tim and Fred.

6. Fred said that the narrative submitted with the EMF concept drawings was not intended to be a report and that the scope of work did not call for a report on the EMF study until in the Preferred Analysis report, which will be submitted in Level III. Huitt-Zollars, however, provided the EMF narrative because it felt that some background information would be needed to support the EMF concept drawings. The District indicated that it thought the EMF narrative was meant to represent a formal report.

7. The District wishes to obtain a formal report on the EMF before the Preferred Analysis report is submitted later in Level III. One important issue the District had regarding Huitt-Zollars' EMF narrative is that it believed that the result of the study was not properly emphasized. *Fred will provide a copy of a report he has prepared in the past where the first section of the report provides Findings, Conclusions, and Recommendations to show an example that could be followed in preparing a formal EMF report.*

8. *The District and Huitt-Zollars will meet after the District reviews the sample report provided by Fred to decide upon the contents for the formal EMF report. Huitt-Zollars will then submit a request for a change order to cover the additional costs involved in preparing a separate, formal EMF report.*

9. The District believes that the scope of work calls for Huitt-Zollars to update that portion of the EMF HEC-1 model that covers EMF reaches 1 and 2. Tim said that the EMF HEC-1 model provided by Huitt-Zollars did not contain updates for those subbasins tributary to reaches 1 and 2. Fred explained that updating of the HEC-1 model was not needed by Huitt-Zollars' to perform its work on the EMF since Huitt-Zollars was not contracted to study reaches 1 and 2. *Fred will review the scope of work and respond to the District's request to update the HEC-1 model for subbasins tributary to reaches 1 and 2.*

10. The District believes that the contract scope of work required Huitt-Zollars to revise the HEC-1 EMF models. Fred was not in agreement, per his interpretation of the scope. However, Amir said that this issue was discussed and agreed to by Mark Seits during the negotiations session. Huitt-Zollars did, however, make improvements in the HEC-1 model package by replacing the existing models with the updated Queen Creek and Sanokai Wash HEC-1 models. Revisions were also made in the HEC-1 EMF models to correct one error, to revise the loss methodology to Green and Ampt in certain subbasins, and to modify the boundaries of some Queen Creek subbasins to agree with the subbasin boundaries developed in the Sanokai Wash floodplain study.

11. Fred explained the process that Huitt-Zollars was pursuing in the hydraulic analyses of Queen Creek and Sanokai Wash. Baseline hydraulics have been performed for the Main Branch of Sanokai Wash covering trapezoidal channels with 4:1 and 12:1 side slopes. The same baseline analysis will be performed for Queen Creek upon receipt of the scanned topography from the District. At that time Huitt-Zollars will review the results to see if either of the two channel sections reveal problems (e.g., related to land availability). Huitt-Zollars will then incorporate detention basins into the hydrologic model where it believes such basins will solve potential problems and where it believes such detention basins will provide a significant benefit regarding channel modification. *A meeting will then be held with the District to finalize the location of detention basins and to decide if one other channel cross section (e.g., an 8:1 side slope trapezoidal channel) should be considered.*

12. Fred said that Huitt-Zollars proposes to incorporate one level of recreational development for each baseline channel section. For example, minimal recreational development could be included with the 4:1 side slope channel section and a maximum recreational development could be included for the 12:1 side-slope channel section. Mannings' "n" values would be estimated to include the impact of a particular level of recreational development for the selected channel section. For example, if maximum recreational development was included with the 12:1 side-slope channel section, an appropriate "n" value representing this level of recreational development would be used in the hydraulic analysis. The hydraulic analyses performed with this approach would be adequate to rate the various channel sections by a matrix analysis to arrive at the preferred alternative. The Level III analysis would then incorporate the desired channel section with the desired level of recreational development.

13. Per direction from WEST Consultants, Huitt-Zollars will develop the alternative channel cross sections excluding sedimentation, scour, and lateral migration. *These models will then be provided to WEST, which will include the needed sedimentation, scour, and lateral migration considerations.*

The meeting ended at approximately 2:30 p.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr., P.E., P.G.
Project Manager

Date Prepared

attachment

c: Attendees

Gary Burroughs

Mark Seits

Glenn Shearer

Rick Amalfi, ACT

Enamul Hoque, H&A

Dennis Richards, WEST

Barbara Macnider, ACS

John Cahoon, Kenney

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.68)
Subject: Coe & Van Loo/Queen Creek Developers Meeting
Date: May 19, 1999
Time: 9:00 a. m.
Place: Queen Creek Town Hall

Attendees: **Flood Control District of Maricopa County**
Tim Phillips 506-4718
Dave Degerness 506-4730
Town of Queen Creek
Dick Schaner 987-9887
Queen Creek Developers and Engineers
(See attached sign-in sheet)
Coe & Van Loo Consultants
Greg Rodzenko 264-6831
Huitt-Zollars
Fred Duren 952-9123

This was the third of three meetings called to have Coe & Van Loo (CVL) discuss a study it is proposing to perform for local developers to investigate alternatives for Queen Creek channel improvements between Hawes and Sossaman Roads. The work CVL is proposing is very similar to that which Huitt-Zollars will be performing. Developers are apparently interested in getting a channel improvement recommendation for this reach of Queen Creek before Huitt-Zollars completes its study.

Attached are a sign-in sheet, a schedule prepared by CVL to depict the construction of floodplain improvements between Hawes and Sossaman Roads, and MCDOT's Transportation Investment Potential Matrix.

The meeting was chaired by Johan de Keizer, with input from Greg Rodzenko, Dick Schaner, and other attendees.

SUMMARY OF MEETING

A summary of the significant comments made during the meeting is presented below, along with the commentors name shown in *italics* where known.

Mike Smith or Chris Hassert (MCDOT): MCDOT evaluated the Sossaman Bridge using the MCDOT matrix to determine its priority (see attached matrix description). It was found that the construction of this bridge has a low priority. However, the priority could be improved if others (e.g., developers, Town of Queen Creek, or Flood Control District) participated in financing its construction. The MCDOT representative indicated that the daily traffic count used in the matrix was determined from MAG population projections. *Dick Schaner* said that the MAG projections are too low.

Johan de Keizer (EEDI): Johan discussed the cost of the improvements for the two-mile study area (A point of confusion exists here in that the reach between Hawes and Sossaman Roads is only one mile, whereas the discussion was focused on a two-mile study area. Clarification is needed.) At the end of the discussion, it was roughly estimated the costs would be: \$ 1 M per mile for excavation; \$ 1 M per mile for landscaping; and \$ 1 M for a bridge over Queen Creek at Sossaman Road. This would translate into a total cost of \$ 5 M for the two-mile study area. Johan asked about participation by others in financing the project.

Tim Phillips (FCDMC): The Flood Control District has money budgeted in the Capital Improvement Program (CIP) for improvements to Queen Creek and Sanokai Wash. The District may be able to contribute fifty percent of the excavation costs (i.e., a total of \$ 1 M). Land contributed by the developers along the wash could be considered a credit by the District in determining relative contributions by the parties.

Mike Smith or Chris Hassert (MCDOT): MCDOT's contribution couldn't be determined at present. The participation by others in the financing would need to be determined first.

Unknown Developer/Engineer: The value of undeveloped land along Queen Creek is roughly estimated to be \$ 30,000 per acre.

Dick S.: The Town Council will want to see a "picture" (e.g., cross sections with landscaping) of the planned development along Queen Creek before approving it. If the planned development along Queen Creek is approved by the Council, the cost borne by developers in implementing the plan would be considered in determining an offset in the appropriate impact fees.

Greg Rodzenko: (The schedule was discussed. It was agreed that the 404 permit process should be initiated at the beginning of the project.) The CVL fee for getting the 404 process initiated would be \$ 5 K.

Johan de K.: The archaeological study has already been done for the study area.

Tim P.: The Flood Control District cannot pay for the 404 permitting process.

Johan de K.: (After a discussion with other developers, it was agreed that CVL is authorized to start work on the project after submitting an acceptable contract.)

The meeting ended at approximately 10:30 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting.



Fred K. Duren, Jr., P.E., P.G.
Project Manager

5/24/99

Date Prepared

c: Mark Seits
Glenn Shearer
Charlie Joy
Deborah Pickens

Queen Creek Wash Improvements
May 19, 1999

NAME	AGENCY	PHONE	FAX
CHRIS HASSERT	MCDOT	506-6167	506-5969
Sohan de Heizer	EEDI	924-8495	924-2505
R. E. Lawler	owner	834 1914	396 9778
Fred Duren	H. H. Zollars	952-9123	952-9124
Dale J Owens	Kaufman + Broad	306-1000	220-4897
MICHAEL LANATA	RYLAND	736 4516	736 2442
Greg Rodzenko	CVL	264-6831	264-0928
STEVEN TOMITA	COMMUNITY Sciences	955-7097	955-7169
James Condit	" "	"	"
MIKE SMITH	MCDOT	506-8622	506-4882
TIM PHILLIPS	FCD	506-4718	
DAVE DEGERNESS	FCD	506-1501	
Bryan Morganstern	Emperer	929-0444	921-2599
Sherrie Madden-Iles	Petersen Properties	831-2000	
John Poulsen	Providence Homes	649-0543	649-0339
Dick Schauer	Turn	987-3890	987-0109

Transportation System Plan Investment Potential Matrix

Land Development Area	SYSTEM		
	Primary	Secondary	Local
Urban Service Area	H	M	L
Rural Development Area	H	L	L
Established Areas/Existing DMP	H	L	L
General Plan Development Area	M	L	L
Incorporated Area	L	N/A	N/A
New Development Master Plan	M	DR	DR

"(H)igh" priority projects for planning, design, and construction.

"(M)edium" priority projects for planning, design, and construction but partners will be required.

"(L)ow" priority projects for planning and design only, and partners will be required.

"(DR) developer responsibility" assume primary responsibility for road projects within development master plans.

**PROJECT SCHEDULE
Queen Creek
Sossaman - Hawes**

Task	Duration	Start	Finish	Jun '99		Jul '99				Aug '99				Sep '99				Oct '99				Nov '99				Dec '99				Jan '00				Feb '00				Mar '00			
				6/7	6/14	6/21	6/28	7/5	7/12	7/19	7/26	8/2	8/9	8/16	8/23	8/30	9/6	9/13	9/20	9/27	10/4	10/11	10/18	10/25	11/1	11/8	11/15	11/22	11/29	12/6	12/13	12/20	12/27	1/3	1/10	1/17	1/24	1/31	2/7	2/14	2/21
Feasibility	33d	6/16/99	7/30/99	6/16 - 7/30																																					
Design - Channel	23d	9/15/99	10/15/99	9/15 - 10/15																																					
Design - Bridge	44d	9/15/99	11/15/99	9/15 - 11/15																																					
Review	35d	10/16/99	11/1/00	10/16 - 11/1																																					
FEMA	56d	12/2/99	4/1/00	12/2 - 4/1																																					
404	232d	9/15/99	8/1/00	9/15 - 8/1																																					
Construction	133d	6/1/00	9/1/01	6/1 - 9/1																																					

CVI offers this schedule as an approximation only, and while making every effort to achieve the schedule, CVI cannot and does not make any guarantee or warranties that the schedule is actually attainable or will be achieved.

Phase  Progress  Milestone  Summary 

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.68)
Subject: Coe & Van Loo/Queen Creek Developers Meeting
Date: April 28, 1999
Time: 9:00 a. m.
Place: Queen Creek Town Hall

Attendees:	Flood Control District of Maricopa County	
	Tim Phillips	506-4718
	Town of Queen Creek	
	Dick Schaner	987-9887
	Queen Creek Developers and Engineers	
	(See attached sign-in sheet)	
	Coe & Van Loo Consultants	
	Greg Rodzenko	264-6831
	Doug Both	264-6831
	Huitt-Zollars	
	Fred Duren	952-9123

This was the second of two meetings called to have Coe & Van Loo (CVL) discuss a study it is proposing to perform for local developers to investigate alternatives for Queen Creek channel improvements between Hawes and Sossaman Roads. The work CVL is proposing is very similar to that which Huitt-Zollars will be performing. Developers are apparently interested in getting a channel improvement recommendation for this reach of Queen Creek before Huitt-Zollars completes its study.

Attached are a sign-in sheet, a proposed draft scope of work prepared by CVL, and a draft agreement prepared by Steven Tomita (Community Sciences Corporation) to bind the landowners to certain financial and other commitments in regards to development of this reach of Queen Creek.

The meeting was chaired by Greg Rodzenko, with Dick Schaner serving as moderator on occasion. At the beginning of the meeting, each attendee introduced himself and his affiliation.

SUMMARY OF MEETING

A summary of the significant comments made during the meeting is presented below, along with the commentors name shown in italics where known.

Chris Plumb (MCDOT): MCDOT is having design prepared for a major road expansion along the Queen Creek Road alignment between Hawes and Power Roads. The design is about 70-percent complete. A new bridge is being designed for Power Road.

Greg Rodzenko (CVL): If a fully lined channel were constructed, the channel width would be about 150 feet wide.

Tim Phillips (FCDMC): The on-going Queen Creek/Sanokai Wash Hydraulic Master Plan is not going to consider fully lined channels as a viable option.

Dick Schaner (Town of Queen Creek): The Town will not agree to a fully lined channel.

Greg R.: CVL is looking for an agreement between the developers to do the proposed study. The estimate fee is \$ 34,000.

Tim P.: The Flood Control District has money available to help finance the (study or improvements ?).

Chris P.: (In response to several developer comments that a bridge should be constructed at Sossaman Road.) There is no transportation reason for building a bridge at Sossaman Road. The MCDOT model does not show adequate traffic volumes and the accident reports do not show significant number of accidents to justify replacing the existing culvert pipe crossing.

Several developers questioned Chris about helping MCDOT finance a bridge at Sossaman. Chris responded it was possible but would take a substantial contribution by the developers and would likely still take at least 3 to 4 years to construct a bridge.

Tim P.: Tim passed around a District-prepared map showing the various landowners along the Hawes to Sossaman reach and the limits of the floodplain and floodway.

Dick S.: (In response to a question by a developer that box culverts at Sossaman Road would be cheaper than a bridge and solve the drainage problem at the same time.) The Town has developed a parks and trails plan which would preclude a box culvert at Sossaman. The Town Council has appropriated funds to help finance a bridge at Sossaman Road.

Tim P.: The District has appropriated some funds in the CIP to pay for 1 mile of channel improvements along both Queen Creek and Sanokai Wash.

Dick S.: The Queen Creek channel is adequate for the 100-year flood to Hawes Road.

Dick S.: The Town has implemented impact fees for trails and open space and for transportation. Other impact fees are being discussed by the Town Council.

Steven Tomita (Community Sciences Corporation): Steven distributed and discussed the draft improvement agreement (see attached).

Dick S.: The Town can influence where Flood Control District funds are spent. It is possible for developers to get credit for impact fees where developers make contributions toward improvements. Town regulations allow impact fee credits to be granted. The Town would want to see proposed channel cross sections showing trails, etc., before determining the amount of impact fee credits to be granted.

Johan de Keizer (developer): There are 5,000 potential homes in the floodplain between Hawes and Sossaman.

Chris P.: MCDOT has unit costs for all types of road improvements.

The next meeting of the entire group is scheduled for May 19 at 9:00 a.m. at the Town Hall.

The meeting ended at approximately 10:30 a.m.

After the meeting, a brief discussion was held with Greg Rodzenko. Greg said that CVL is going to be preparing design of channel improvements along Queen Creek between Power and Sossaman Roads for Ryland Homes.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting.


Fred K. Duren, Jr., P.E., P.G.
Project Manager

4/2/99
Date Prepared

c: Mark Seits
Glenn Shearer
Charlie Joy
Deborah Pickens

4/28/99

Sign-in Sheet

NAME	AGENCY	TELE	FAX
CHRIS HASSETT	MCDOT	506-6167	506-5969
TIM PHILLIPS	FCD	506-4718	
Steven Tomita	Community Sciences	955-7097	955-7169
DAVID HAY	QCUG	947-4154	947-7641
Cliff Johnson	QCUG 201-405 P.A.	987-1604	987-1959
Chris Plumb	MCDOT	506-4176	506-4882
BIZAD DIXON	CMX GROUP	279-8436	265-1191
RON HILGART	" "	"	"
L.J. Dewitt	Cliff Johnson	834-1042	964-3994
Fred Duren	Huitt-Zollars	952-9123	952-9124
Robert Lanther	Lankower	834-1914	396-9778
Bryan Morganstem	Hogan's Associates	929-0444	921-2598
Bill OLSEN	HOGAN	892-1235	892-0753
MICHAEL LANATA	RYLAND	736-4516	736-2442
Doug Both	CVL	264-6831	264-0928
Greg Rodzenko	"	"	"
Schan de Heizer	Emp. Est.	924-8405	924-2505
KEVIN PETERSEN	PETERSEN/HANKIN	540-8151	831-1330
SCOTT LIEM	ADOSE LAND	922-1188	922-7477

Queen Creek channel - Hawes Road to Sossaman Road.
Feasibility level hydraulic analysis

4/28/99

- 1 mile stretch
- at Queen Creek Town Hall

This is a **DRAFT** scope of work. If the collective landowners are in agreement as to the objectives of a feasibility analysis (to answer the "what-if" question) of Queen Creek for one mile, Coe and Van Loo Consultants Inc. will provide a formal fee proposal and contract. *

#34 LC

Research/Site analysis

CVL will:

- visit the site to examine the physical constraints of the site, relative to channel design
- collect hydrology/hydraulic models from County Flood Control
- collect relevant topographic data and As-built drawings from MCDOT for Ocotillo, Hawes and Sossaman Rds.

Hydrology - on & offsite

CVL will:

- assume County Flood Control's hydrology with no modifications

Hydraulics

CVL will:

- use the "new" County flood control flood delineation model as a starting point - the existing floodplain is wide but shallow - the channel will be enlarged only enough to safely convey the one hundred-year flow with 1' of freeboard, and to meet the channel inverts upstream at the Hawes road bridge and downstream in the Sossaman estates channel and not cause negative effects to either one.
- size four different cross sections for Queen Creek with different channel linings per site plan and architectural themes for the Q-100 while also constraining the floodplain to the channel
- Proposed channel styles: - 4 options
 - fully lined w/3:1 SS to establish a minimum footprint for the floodplain
 - earthen section with no amenities
 - earthen w/bench and vegetation & recreational amenities - low flow sized for Q-10
 - undulating and meandering dirt w/bench and vegetation some stabilization at key points

Sossaman Road Crossing

The floodplain will shrink only if both the channel and the road crossing are sized consistently.

The four options for the road that will be analyzed:

- remove the existing pipes and size a dip crossing
- increase the number of pipes, raise the road approaches together with an improved channel upstream and downstream - determine if there is any meaningful increase in hydraulic performance "on a budget."
- box culverts consistent with the width of the selected channel, i.e., so that the boxes don't "choke" the flow of the 100-year flow
- bridge

These structures will be sized to minimize backwater and so the flood plain area.

Report & Deliverables

CVL will provide:

- A map illustrating the various options along with the property boundaries so that each landowner can assess the effect of channelization on their respective property.
- A report discussing the assumptions of the modeling, the procedures used and the results
- HEC-RAS runs for each of the channel options.
- HEC-RAS runs for each of the Sossaman road options.

The HEC-RAS software is being used because if the design is ultimately submitted to FEMA to change the floodplain map, this is the software that will be required.

NOTE:

This work will not include design level analysis nor the production of construction drawings.

- file: 05-0949-01
(448
7.60)

(DRAFT) AGREEMENT
FOR QUEEN CREEK WASH
AND
SOSSAMAN ROAD CROSSING

(provided by
← attorney at
Queen Creek developers
mtg. of 5/28/99)

- agreement is to be
between landowners

Steven
Tomita

- I. General Statement of Purpose, Scope
- II. Definitions, Acronyms Abbreviations and Exhibits
 - A. Parties to this Agreement (Affected Owners)
 - 1. Within Reach of Floodplain - Exhibit A
 - 2. Downstream - Exhibit B

- B. Parties to this Agreement (Public Agencies)
- C. Existing Conditions
- D. Proposed Work and Consultants - Exhibit C
- E. Proposed Cost Sharing, Fees and Responsibilities - Exhibit D
- F. Timeliness - Exhibit E

III Exhibits

IV Specific Recitals and Objectives

- A. The District
- B. The Town
- C. The Affected Owners
- D. The Downstream Owners
- E. MCDOT

V Governmental Authorities (subject of City Council, Policies and permitted obligations).

VI Cost Sharing

VII. Agreement

- A. Obligation and Authorities
 - 1. Affected Owners
 - 2. Downstream Owners
 - 3. Public Agencies
- B. Payments, Guarantees and Disbursement

VIII. Insurance, As-Builts, Hold Harmless

IX. General Provisions, Severability

(DRAFT) AGREEMENT
FOR QUEEN CREEK WASH
AND
SOSSAMAN ROAD CROSSING

(Discussion Draft:

Subject to legal review, modification by affected parties and owner's concurrence)

This Agreement is entered into by the parties hereto as of the date last below written. It is recognized and understood that should some certain parties named hereto ("Affected Owners") fail to execute this Agreement, this Agreement will continue to bind the other parties hereto, subject only to recalculation and reassignment of cost sharing and construction responsibilities.

ARTICLE I – STATEMENT OF PURPOSE, BENEFITS AND SCOPE

It is the desire and wishes for certain Affected Owners who own properties that drain to, and are encumbered by the Queen Creek Wash ("Wash"), between Hawes Road and Sossaman Road, inclusive, (the "Reach") to co-operatively participate in cost sharing and construction of certain physical improvements.

The construction of these improvements is desired by certain governmental and administrative (Jurisdictional) agencies ("Agencies") including the Town of Queen Creek, Arizona ("Town"), the Maricopa County Flood Control District ("District") and others for the benefit of the public. These benefits extend to drainage control, flood plain designations (subject to the Federal Emergency Management Agency or "FEMA") and the implementation of adopted local plans and policies (such as the Town's Open Space and Trail Plan) for transportation, aesthetics and safety.

The proposed Construction, if agreed-to, funded and built in a timely fashion, is a benefit to the Affected Owners and to certain parties downstream from the Reach of the Wash ("Downstream Owners"). These benefits include, but are not limited to:

- A. Coordinated engineering services, design and development applications to review agencies, including FEMA.
- B. Designation or re-designation of FEMA Special Flood Hazard Zones as now mapped or considered to be mapped.
- C. Coordination of local improvement plans intended for administration by the Town and other Agencies to expedite approvals for local drainage, grading, open space, trails and parklands and transportation.
- D. Cost sharing by committed funds or other binding obligations whereby total construction costs can be minimized and equitably proportioned.
- E. Cost sharing by any public Agency by committed funds, discretionary funds, staff and resource participation and by offsetting fees or portions thereof imposed by local Ordinance(s) as part of zoning, subdivision, building permit, impact fees or other development-related costs associated with future commercial and residential developments. The above benefits are construed to apply only to those Affected Owners and Downstream Owners who are parties to this Agreement including their successors and assigns.
- F. Timeliness and Certainties of Obligations as a second, primary benefit as the essence for this Agreement. Recognizing that public safety and drainage control (including flood plain and stormwater management) is paramount; the parties hereto desire, to the extent possible, expedited and time-certain Construction together with cost-specific amounts to be expended in current and future development obligations for the stated purposes within this Agreement.

ARTICLE II – DEFINITIONS, ACRONYMS, ABBREVIATIONS AND EXHIBITS

The above captioned abbreviations and references to certain words, parties and definitions (e.g. (the "Town")) are used to facilitate the construction of this Agreement as if fully set forth. Also, commonly used and recognized abbreviations and acronyms (e.g. FEMA) are employed as a convenience. Other specific references include:

Affected Owners – Those property owners, both legal and equitable, as shown on Exhibit A and who are parties to this Agreement.

Downstream Owners – Those property owners, both legal and equitable, as shown on Exhibit B and who are parties to this Agreement.

Absentee Owners – Property owners affected by Construction and drainage control, within the Reach, who are not party to this Agreement, at this time.

Town – The municipal Corporation of Queen Creek, Arizona.

County – The political subdivision of Maricopa County, including all Agencies thereof.

District – The Maricopa County Flood Control District

MCDOT – The Maricopa County Department of Transportation

Corps – The United States Corps of Engineers

FEMA – The United States Federal Emergency Management Agency

FIRM – The adopted and official FEMA, Flood Insurance Rate Map.

Floodplain – The official mapped Special Flood Hazard area appearing on the FIRM, coinciding with the areas of projected inundation by flooding in a 1% event. (100 year. storm).

Proposed Floodplain – That area under study by the District whereby the FIRM may be petitioned for modification with the concurrence by the Floodplain Administrator for the County.

CLOMR – Conditional Letter of Map Revision, an engineering and management request to FEMA for FIRM revision.

LOMR – Letter of Map Revision, an engineering and management final determination effecting a revision to a floodplain and the FIRM.

LOMR-F – A LOMR based on earth fill.

Levee – A specific FEMA criteria for floodplain containment.

402 and 404 Permit – A permit issued by the Corps for construction within a tributary to a navigable stream, as declared by the U.S. Government for dredge and fill approval.

Constructed Elements or Construction – The contemplated physical improvements, together with Agency approval and processing, for the improvements to the Queen Creek Wash, Trails, Sossaman Road / Wash crossing structure as set forth in Exhibit C.

NPDES – A permit issued for the discharge of water under the authority of the U.S. Clean Water Act.

BMP – Best Management Practice, a provision for water discharge as engineered and proposed in conjunction with an NPDES permit.

Development – The proposals, designs, approvals and construction of commercial and residential projects by the Affected and Downstream Owners. For the purpose of determining impact on the Floodplain and for this Agreement, properties unzoned for development will be considered as residential, single family, 3 DU per Gross Acre.

FPA – The Flood Plain Administrator for Maricopa County who is responsible for the local approvals and administration of FEMA policy through member agencies and units of local government.

CVL – Coe and Van Loo Engineers, Inc., the engineering consultant for certain Downstream Owners who are engaged to seek approvals for development.

CSC – Community Sciences Corporation, the land planning and engineering consultant for certain Affected Owners who are engaged to seek approvals for development.

Cost Sharing – That portion of this Agreement whereby Affected Owners, Downstream Owners, Agencies and the Town agree to advance monies, commit funds and participated in equitable proportions for the burden of securing approvals and construction of the Construction contemplated herein. The formulae and general conditions for allocation and repayment of this burden is specifically set forth in Exhibit D.

Wash – The Queen Creek Wash between Hawes Road and Sossaman Road, inclusive, including any adjacent floodplain and local drainage tributaries

Schedule of Construction or Schedule – The anticipated relationship between work necessary to design, engineer, secure approvals for, construct, inspect and complete the Construction, including modifications to the flood plain, floodway and FIRM. The proposed schedule, for the purpose of this Agreement is set forth in Exhibit E.

ARTICLE III EXHIBITS.

Exhibits which are attached hereto and made a part hereof, include;

- EXHIBIT A: Schedule of Affected Owners impacted by the Reach of the Queen Creek Wash between Hawes Road and Sossaman Road.
- EXHIBIT B: Schedule of Downstream Owners impacted by the Queen Creek Wash downstream of Sossaman Road, inclusive of any roadway crossing.
- EXHIBIT C: Schedule of proposed construction (elements of approvals and Construction, including Floodplain and FIRM approvals for modification) which are included in this Agreement.
- EXHIBIT D: Schedule of formulae and conditions for cost sharing under this Agreement.
- EXHIBIT E: Schedule of time of performance under this Agreement.

The above recited and attached Exhibits are part of this Agreement. However, it is recognized that Exhibits C, D, and E may be modified and or replaced as Construction, Cost Sharing and Scheduling are refined. With the concurrence of the parties hereto (by signature, initials or correspondence) a replacement or revision to all or portions of the above will ratify and replace the provisions therein.

Exhibit A and B hereof may be amended by the addition of benefited parties or by replacement of equity interests, guarantors or sureties representing the assignment of the responsibilities contained herein. The Town and District shall approve any amendments as provided for in the above.

ARTICLE IV SPECIFIC RECITALS AND OBJECTIVES

- A. The District desires a coordinated design approach and assured funding for improvements to the Wash.
 - 1. To consider revised hydrology and hydraulics that are under study by them and their consultants.
 - 2. To modify the Floodway, Floodplain and FIRM in accordance with that study or any revisions thereto (based on this Agreement).
 - 3. To have a definite plan and objectives as they relate to adjacent and contributory drainage control and future improvements, to allow for efficient review of private and public construction.
 - 4. To administer construction activities including other Agency requirements.
- B. The Town desires improvements to the Wash in a coordinated and consistent manner:
 - 1. For local drainage and conformance with Floodway, Floodplain and District criteria.
 - a. Compliance as participating agency in the Federal Emergency Management Act (flood insurance program).
 - b. Local drainage ordinance, subdivision regulations and Town adopted plans and policies.
 - 2. For transportation and utility crossings.
 - 3. For Parks, Trails (pedestrian, equestrian and bicycle mobility) and aesthetics, including open space:
 - a. Town's General Plan
 - b. Town's Parks and Trails Plan.
- C. The Affected Owners desire consistent and equitable requirements by all Agencies to achieve:
 - 1. Modifications to, Reduction of, or elimination of portions of the existing Floodplain and including proposed modifications under study by the District.
 - 2. Expedited and coordinated plans and schedules proposed for Construction;
 - a. The Reach of the Wash directly impacting properties proposed for Development;
 - b. Sossaman Road Crossing to relieve backwater, hydraulic gradient and discharge constraints which affect the Floodplain;
 - c. Discharge locations and criteria for local (on-site) ponding, diversions and detained floodwater discharge;
 - d. Joint-use policy and consistent appearance and functions of all Construction to allow for Parkland, Trails and Open-Space development and transportation credits.
- D. The Downstream Owners desire a coordinated, efficient, cost-effective and expedited Construction to:

1. Provide for a Sossaman Road crossing structure, diversions and grade control to minimize their expenditures and provide for a transition to any improvements desired for their properties. Such downstream improvements, westerly from improvements considered for Sossaman Road, are their sole responsibility and are not part of this Agreement.
 2. Coordinate the design and construction for improvements within the Reach of the Wash upstream from Sossaman Road to minimize their costs for the transition through and downstream of Sossaman Road.
 - a. Determination of final Floodway and Floodplain extents and elevations;
 - b. Trails and pedestrian facilities connections, including Sossaman Road crossings;
 - c. Procurement of easements, rights-of-way and land policies to allow timely Construction for their project(s).
- E. MCDOT desires a replacement for the existing Sossaman Road crossing and for consistent plans and policies to enhance their investment and purpose for major transportation improvements which may be impacted.
1. Sossaman Road.
 2. Queen Creek Road.
 3. Hawes Road.

ARTICLE V GOVERNMENTAL AUTHORITIES

(List Ordinances and effective dates of Town).

(List FEMA, Corps 402, 404 and NPDES authorities).

(List County and District applicable regulations).

ARTICLE VI COST SHARING

In accordance with Exhibits C, D and E, attached hereto (and subject to modifications as provided for herein) the parties hereto shall contribute personnel, effort, deposited monies, bona-fide guarantees (such as letters of credit and construction loan commitments), development fee and impact fee proceeds (including credits for future collections) as follows:

A. For the District:

1. Continue the in-process study for watershed hydrology and Floodway/Floodplain determination;
2. Integrate the approved plans for design and Construction, contemplated by this Agreement;
3. Share all data, reports, calculations and provide advice and recommendations;
4. Prepare and deliver any required maintenance and inspection programs which may be required for CLOMR, LOMR, 402, 404 and NPDES applications for Federal review.
5. Prepare and process, through FEMA and other Agencies, the CLOMR, and LOMR and Corps reviews.

6. Direct any such discretionary or allocated funds that they deem desirable to implement this Agreement and proposed construction.

B. For the Town:

1. Act as coordinator for the desires of the Town, Affected Owners and Downstream Owners.
2. Provide timely reviews and grant necessary approvals for the contemplated Construction and adjacent or affected subdivision development.
3. Allocate any discretionary funds or monies attributable to development this Agreement and proposed Construction.
4. Administer the funding, collections, fee impact offsets credits or other costs and program for the proposed Construction as specified in Exhibit C hereof.
5. Provide future development fee credits, cost offsets, rebates and monetary participation as specified in Exhibit D, hereof.
6. Provide any interim approvals for adjacent or affected Development based upon the participation and obligations contained in this Agreement.
7. Diligently pursue funding through MCDOT, ADOT and the Council of Governments for Federal/State funding participation through the Federal Transportation Efficiency Act, 21st Century (TEA 21). Said funds are particularly desirable showing matching participation (this Agreement) for non-vehicular trail provisions.

C. For the Affected Owners:

1. Provide timely plans, calculations and defined impacts (including local Development drainage detention, retention and discharge) for the determination of the District's study and revisions thereto;
2. Provide timely recommendations for the Town for Parks, Trails, access, landscaping and improvements to the Reach of the Wash;
3. Post monies, bonds, letters of credit and fund in their proportional share of the proposed Construction.
4. Retain CSC and/or a landscape architect to facilitate the design of improvements within and adjacent to the Wash, including grading and earth fills on adjacent lands.
5. Grant easements and rights-of-way at nominal cost, as necessary for construction and future improvements which benefit all Adjacent and Downstream Owners.
6. Prepare NPDES discharge permits for local water management, if required, for discharge of runoff waters to the Wash.
7. Administer any development fee rebates, credits or offsets to the development process through their successors, assigns, home builders, landscape maintenance associations and any covenants or contracts affected by the above.
8. Provide trail connections and development designs, including grading, drainage and flood control which would facilitate the joint-use nature of the proposed Construction (in order to justify community based impact fee credits for parks and trails.

D. For the Downstream Owners:

1. Provide timely plans, calculations and defined impacts for the determination of the District's study and any revisions thereto.
2. Provide timely recommendations to the Town for parks, trails, access and improvements to Sossaman Road.
3. Post monies, bonds, letters of credit and fund their proportional share of the proposed Construction.
4. Retain CVL to supplement the District's efforts to revise the CLOMR, LOMR and to prepare Corps (402 and 404) permits.
5. Grant easements and rights-of-way at nominal cost, as necessary for Construction and future improvements to Sossaman Road and the Wash crossing.
6. Administer any rebates for monies, fee impacts, offsets or other participation that the Town and Downstream Owners may negotiate. It is recognized that the provisions for specific development fee or public fund contributions recited in this Agreement are for Affected Owner's only and any credit or consideration to Downstream Owners is an independent matter for which the Affected Owners are not parties thereto.
7. Undertake design and construction responsibilities for trails and crossings of Sossaman Road, west of the proposed Construction as their own and separate expense.

E. For MCDOT:

1. Provide partial funding for the Sossaman Road / Queen Creek Wash structure as identified.
2. Coordinate and facilitate other transportation improvements currently programmed and funded, such as for Queen Creek Road.
3. Assist the Town for application for, and distribution of any discretionary monies or programs available to aid in the Construction, such as TEA-21 participation in trails.

EXHIBIT A

AFFECTED OWNERS

The following comprise the Affected Owners whose responsibilities extend to the attached Agreement:

Name / Property	Representative	Gross Acreage	Acreage in Floodplain ¹	Dwelling Units (or equivalent) ²
Emperor Estates Development	Johan de Keizer	450.0	14.80	1200
Healy Investments Ltd. Partners		78.3	3.64	195
Lawther Family Ltd Partners		36.4	5.84	90
Queen Creek 46 Partnership	David Hay	46.0	3.64	142
Hankin / Peterson	Stewart Title	323	1.28	800

Notes:

1. Represents the approximate acreage within the proposed, re-mapped floodplain used for purposes of demonstrating equitable participation in construction costs.
2. Represents the dwelling units proposed by existing submittals (or the equivalent at 3 DU/AC) used for determining the program of shared costs (Exhibit D) and for determining developed properties for which any development fee credit or rebate will be spread.

EXHIBIT B

DOWNSTREAM OWNERS

The following comprise the Downstream Owners whose responsibilities extend to the attached Agreement:

NAME / PROPERTY	REPRESENTATIVE	GROSS AVERAGE	DWELLING UNITS OR EQUIVALENT
-----------------	----------------	---------------	------------------------------

EXHIBIT C

PROPOSED WORK

(Within Reach of Wash, approximately 1.2 miles)

WORK ITEM	WORK UNIT	APPROX COST	RESPONSIBILITY
A. CHANNEL IMPROVEMENTS FOR ENHANCED CAPACITY			
A.1. Excavation within reach for design capacity as represented.	2700,00 CY	\$675,000	Shared Cost
A.1.1. Spread and compact or stockpile acceptable material for use on adjacent development.	150,000 CY	N/A	Individual Owner
A.1.2. Construct Outlets / Protection from individual pond overflows or discharges	EA. PROJECT	N/A	Individual Owners
A.2. Revetments, levees or dykes to protect existing Sun Valley Farms developed lots. (depends on final design)	unknown	unknown	Shared Cost
A.3. Flood capacity derived from adjacent project grading (house pads and elevation, rear yards in flood capacity).	unknown	unknown	Offset (credit) to Individual Owner Cost
B. SOSSAMAN ROAD CROSSING STRUCTURE AND ROADWAY			
B.1. Crossing Structure (precast bridge) including wingwalls	UNIT	\$1,000,000	Shared Cost with MCDOT
B.2. Roadway reconstruction for approaches, enlargement, signage and pavement.	UNIT	\$200,000	Shared Cost with MCDOT
B.3. Acquisition of easement or R/W from existing County lot	UNIT	unknown	MCDOT
B.4. Construction of grading and control elevations for downstream protection (floodplain transition) not included in B2, above.	UNIT	unknown	Downstream Owners
C. PARK / TRAIL / OPEN SPACE IMPROVEMENTS			
C.1. Landscaping and vegetation associated with reconfigured cross section.	380,000 SF	\$300,000	Shared Cost
C.2. Irrigation in select areas	50,000 SF	\$40,000	Shared Cost
C.3. Trails and access			
C.3.1. Trail for pedestrian / bicycle.	8,500 SY	\$25,000	Shared Cost
C.3.2. Trail for equestrian use.	USE WASH	N/A	N/A
C.3.3. Equestrian Crossing Sossaman (at Grade).	UNIT	unknown	Shared Cost with MCDOT

C.4. Park furniture, ADA access and rest areas	UNIT	unknown	Town
D. PERMITS, APPROVALS AND SOFT COSTS			
D.1. Design hydrology and hydraulics with report for CLOMR / LOMR submittal	CVL	\$26,000	Shared Cost
D.1.1. Incorporate with in-process study	N/A	N/A	District
D.1.2. Application fees to FEMA	UNIT	\$3,000	Shared Cost
D.1.3. Secure Floodplain Administrator approval	N/A	N/A	District
D.2. Corps 402 and 404 Permitting	CVL	\$48,000	Shared Cost
D.3. NPDES Discharge Permits			
D.3.1. For Wash / Bridge work	CVL	unknown	Shared Cost
D.3.2. For Adjacent Developments (BPM)	UNIT	unknown	Individual Owners
D.4. Landscape Architectural Services for Wash / Trails/ Landscaping	UNIT	\$30,000	Shared Cost
D.5. Design Integration of Adjacent Development (on-site local drainage, accep, fill placement)	CSC	\$30,000	Affected Owners

EXHIBIT D

COST SHARING AND REIMBURSEMENT

The following comprise the formulae to be applied as cost contribution, including reimbursement for portions of allocated costs:

SCHEDULE 1 COSTS PROPORTIONED TO AFFECTED OWNERS AND DOWNSTREAM OWNERS EXCLUDING MCDOT (FLOODPLAIN PURPOSE).

- A. Downstream owners contribute cost of CVL services (or others) for design engineering of basic hydrology/hydraulics

Cost share: all to Downstream Owners

- B. Affected Owners contribute cost of CSC services (or others) for integrated adjacent development, where possible, for cost savings by fill placement, local drainage design, access of discharge proposals as aesthetics.

Cost share: all to Affected Owners

- C. Downstream Owners, Affected Owners and district share in cost of CLOMR/LOMR application, 404 permitting and NDPES for specific work and road construction.

Cost share: 50% or less to Affected Owners (by acreage in proposed floodplain or by anticipated dwelling units served)

50% or less to Downstream Owners

District for any difference based on staff and consultant resources

- D. Affected Owners share in cost of Construction work improvements for flood plain purposes. Allow letters of credit/bonds or other guarantees as well as escrowed contributions

Cost sharing: 100% based on percentage of acreage within proposed floodplain impacts (or by anticipated dwelling units served) proportioned against Affected Owners, east of Sossaman Road.

Note: Existing, developed property in Sun Valley Farms excluded from cost contributions.

- E. Affected Owner's credited, individually by ownership, for any adjacent development plans (fill grades or stockpile areas) which would minimize earth hauling. If designed in a timely manner, compacted fill could lessen costs of construction and affect project hydraulics.

Cost sharing: None. Individual owners benefit by fill placement if desired.

SCHEDULE 2 COSTS PROPORTIONED TO AFFECTED OWNERS AND DOWNSTREAM OWNERS INCLUDING MCDOT (TRANSPORTATION PURPOSES)

- A. Cost of Bridge design, headwalls and immediate surface transportation improvements benefiting the Sossaman Road crossing.

Cost Sharing: 33.3% to Affected Owners
33.3% to Downstream Owners
33.3% to MCDOT

- B. Cost of other Sossaman Road construction benefiting floodplain transitioning to downstream channel.

Cost Sharing: All to Downstream Owners

- C. Cost of Trail crossings for pedestrian, bicycle and pedestrian use or for enhanced roadway sections other than drainage crossing structure.

Cost Sharing: MCDOT/Town

SCHEDULE 3 – REBATES OR CREDITS FROM DEVELOPMENT IMPACT FEES TO BE ALLOCATED TO AFFECTED OWNER'S PROPERTY DEVELOPMENT.

- A. Town Credit to Affected Owners based on Park, Open Space and Trail Development Fees (Impact fees payable by name builders).

Cost Sharing: A minimum of 25% of the proposed \$2500.00 per DU fee to be considered prepaid (or an offset to) the uniform impact fee adopted by Ordinance. [\$625.00/DU estimated]

- B. Town Credit to Affected Owners based on Transportation Fees (future fees considered by Town) when and if adopted by Ordinance.

Cost Sharing: A minimum rebatable cost considered as prepayment of Impact Fee (or an offset to) the uniform Impact Fee to the extent of Affected Owners Schedule 2 costs, allocated to each DU proposed. [\$200.00/DU estimated]

SCHEDULE 4 – REBATES OR CREDITS FROM DEVELOPMENT IMPACT FEES TO BE ALLOCATED TO DOWNSTREAM OWNER'S PROPERTY DEVELOPMENT.

(pending)

SCHEDULE 5 – (FOLLOWING)

Spreadsheet/tally of projected costs with credited offsets.

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Hydrology and Hydraulics Meeting
Date: Jan. 27, 1999
Time: 9:00 a.m.
Place: Flood Control District

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (Project Manager) 506-4718
David Degerness (Hydrology/Hydraulics) 506-1501

Huitt-Zollars
Mark Seits, P.E. (Hydrology/Hydraulics) (214) 871-3311
Charlie Joy, EIT (Hydrology/Hydraulics) 952-9123
Fred Duren, P.E., P.G. (Project Manager) 952-9123

The attached agenda presents the order of discussion during the meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Agenda Item 1 – Overview of Discussion

Fred said that the goal of the meeting is to establish all the criteria necessary for Huitt-Zollars to proceed with the hydrologic and hydraulic modeling work, with a focus on the EMF, which is to be done in the Level I Analysis.

Agenda Item 2 – Modeling Condition

Discussions were held on the modeling conditions (i.e., existing, future without CIP, and future with CIP) that could be used in the HEC-1 analyses for the EMF, Queen Creek, and Sanokai Wash. Use of the existing condition for HEC-1 modeling is expected to produce flows that are larger than those that would be produced from future conditions due to the impact of retention by new developments. The potential for using a conservative flow based on existing conditions and then selecting an intermediately sized structure to account for reduced future flows was considered. Mark suggested that detention structures could be sized based on existing flows and then reduced in size as development occurs.

After considerable discussion on the advantages and disadvantages of each modeling condition, Tim decided that the EMF HEC-1 modeling would be based on future conditions with selected CIP improvements. Tim marked up a map from the East Mesa ADMP to designate those CIP improvements recommended in that project that should be included in the HEC-1 model for future conditions.

Tim suggested that Huitt-Zollars review the Queen Creek ADMP to determine which CIP alternatives are reasonable for consideration as alternatives in the EMF HEC-1 model within that watershed. He also indicated the locations of possible future detention basins in the East Mesa area that could be considered in the alternatives evaluation of the EMF.

Tim thought that existing conditions should be used for the Queen Creek and Sanokai Wash HEC-1 models; however, he'll discuss this issue with Dick Shaner before making a final decision.

Agenda Item 3 – EMF Modeling

a. Hydrology

Charlie said that Huitt-Zollars has received the HEC-1 model from the District for existing conditions. Huitt-Zollars is yet to receive the EMF HEC-1 models for future and future-with-CIP conditions. Dave will provide Huitt-Zollars with the models for future and future-with-CIP conditions. Charlie thought that Huitt-Zollars might need some additional files for this model. He and Mark had run the existing conditions model and could not find the appropriate files. Charlie and Dave will discuss this issue outside of the meeting.

To update the HEC-1 model for alternatives evaluation, Huitt-Zollars will use the future with CIP improvements condition, updated to include only those CIP improvements designated by Tim.

b. Hydraulics

Charlie said that Huitt-Zollars has received the HEC-RAS hydraulic model for the EMF. The only remaining significant information that is needed from the District for the EMF hydraulics analysis are the EMF drawings (hard-copy) for the HEC-2 analysis (showing cross section locations), which are expected February 1, and the computer files for these drawings, which are expected at a later time.

c. Coordination with Queen Creek Confluence Point and Sedimentation Basin Analysis

A discussion was held regarding coordinating the Queen Creek confluence and sedimentation basin alternatives analysis with the EMF analysis, which is scheduled to precede the Queen Creek analysis. Mark indicated that Huitt-Zollars could perform the EMF analysis in advance of the Queen Creek analysis by utilizing the existing Queen Creek confluence with the EMF as the most

conservative approach. Later adjustments could be made in the EMF preferred alternative, if necessary, based on the findings in the Queen Creek analysis.

Tim asked for Huitt-Zollars to evaluate the impact of moving the EMF analysis back in the project, so that it occurs after the Queen Creek analysis. If this could be accomplished with no extension of the schedule, it might be advisable to do so. However, he said that Huitt-Zollars should decide how best to approach this issue. Fred said that Huitt-Zollars will review this option but that his initial conclusion was that moving the EMF back in the project would significantly back-load the project, likely requiring a schedule extension. Huitt-Zollars will review this option and get back to Tim with its recommendation.

d. Criterion for Mitigation of Capacity Deficit

The alternatives evaluation for the EMF will be based on a freeboard allowance within that waterway. Tim will check with other District staff to define the freeboard allowance that should be used by Huitt-Zollars in evaluating EMF alternatives.

Agenda Item 4 – Queen Creek Modeling

a. Hydrology

Huitt-Zollars has the necessary models for performing the hydrologic analyses of Queen Creek and Sanokai Wash. Charlie presented to Dave the changes made in the Queen Creek subbasins to make them consistent with those developed by Entellus for its Sanokai Wash HEC-1 analysis. After the meeting Charlie and Dave took the Queen Creek subbasin map to the District's GIS department and explained the changes requested in the Queen Creek subbasins to Kevin Lavallee. The GIS department will prepare computer files of the Queen Creek and Sanokai Wash subbasins, incorporating the changes in the Queen Creek subbasins prepared by Charlie.

A discussion was held regarding methodology for updating the HEC-1 models for Queen Creek and Sanokai Wash for future conditions, in accordance with the scope of work. Mark suggested that the assumption of 80 percent efficiency for the retention volume provided by new development might be liberal and that 50 percent may be a more reasonable number to account for poor maintenance and lack of regulation of detention/retention facilities. Dave will review the methodology for including retention relative to future development and get back to Huitt-Zollars with his finding.

To determine the future development in Pinal County to be included in the HEC-1 models for Queen Creek and Sanokai, Tim said that Huitt-Zollars should use the information obtained in its meetings with Pinal County. It was agreed that an assumption of no new development would be used in updating the Queen Creek model for the tributary area between the CAP Aqueduct and the Pinal-Maricopa County line.

b. Hydraulics

The District will be preparing a combined existing conditions hydraulic model for Queen Creek Wash; however, the combined model will only cover the reach from about Rittenhouse Road on the east to Hawes Road on the west. There may be some missing coverage east of Rittenhouse Road to the county line and west of Hawes Road to Queen Creek's confluence with the EMF. Huitt-Zollars will use existing District topography to fill in gaps in the model coverage within Maricopa County. It was unsure what type of model the District will provide. Originally it was believed that the model would be HEC-RAS, however, Dave thought Pedro might be providing a HEC-2 model instead.

Dave said that he is getting the HEC-2 model from Wood-Patel for the Coronado Ranches development. Fred asked if the District would be incorporating the new hydraulic information for the Power Ranch and Coronado Ranches in its combined HEC-2 model. Tim said he would check with Pedro Calza to ask about these questions.

Agenda Item 5 -- Sanokai Wash Modeling

a. Hydrology

As indicated above Huitt-Zollars has received from the District the HEC-1 model prepared by Entellus. The model that will be used in alternatives evaluation is the one that does not include breakouts. An updated HEC-1 model, including breakouts, is being prepared by Entellus. The District will provide this model to Huitt-Zollars after it has been accepted by the District.

b. Hydraulics

Since the alternatives evaluation for Sanokai Wash is expected to involve modifications to the entire reach of the wash to enable containment of the 100-year, 24-hour flooding event, an independent hydraulic model will need to be prepared by Huitt-Zollars. However, the District will provide Huitt-Zollars the HEC-RAS model being prepared for Sanokai Wash after it has been approved by the District.

Agenda Item 6 -- Data/Decisions Needed from District

a. Models

The combined hydraulic model for Queen Creek is expected to be available from the District by mid-April (either in HEC-RAS or HEC-2). The Sanokai Wash HEC-RAS model is expected to be available in May.

b. Future Development Conditions

The District will be providing any needed future development conditions in Maricopa County on computer files. Charlie has discussed this issue with Jim Smith, District GIS contact.

c. Hydrologic Modeling Conditions

As indicated in the above portions of the minutes, the EMF alternatives analysis will be based on future conditions with selected CIP improvements, while the Queen Creek and Sanokai Wash alternatives analysis will be based on existing conditions provided this is acceptable to Dick Shaner.

d. Define Delivery/Decision Dates

Any delivery and decision dates have been addressed above in these minutes.

Agenda Item 7 -- Open

The Data Collection Report review meeting was scheduled for 2 p.m. on February 3 at Huitt-Zollars' office.

Tim asked about the status of rights-of-entry request for the soil-sampling program. Charlie said that WEST is evaluating the potential to move some of the sites, per the District's request, to more readily accessible locations.

Tim indicated that he is thinking of preparing a newsletter to provide status information on the project to District staff and local communities.

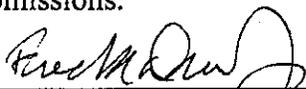
Action Items

1. Dave will provide Huitt-Zollars with the EMF HEC-1 models for future and future-with-CIP conditions.
2. Charlie and Dave will discuss the issue of missing files for the EMF HEC-1 model outside of the meeting.
3. To update the HEC-1 model for the EMF alternatives evaluation, Huitt-Zollars will use the future-with-CIP-improvements condition, updating this model to include only those CIP improvements designated as feasible by Tim.
4. Tim will check with other District staff to define the freeboard allowance that should be used by Huitt-Zollars in evaluating EMF alternatives.
5. Huitt-Zollars will review the option of moving the EMF analysis back in the project schedule and inform Tim of its recommendation on this issue.

6. Tim to confirm that Huitt-Zollars is to use existing conditions for the Queen Creek and Sanokai Wash HEC-1 models for alternative evaluation.
7. The District's GIS department will prepare computer files of the Queen Creek and Sanokai Wash subbasins, incorporating the changes in the Queen Creek subbasins prepared by Huitt-Zollars.
8. Dave will review the methodology for including retention effects relative to future development and get back to Huitt-Zollars with his finding.
9. Huitt-Zollars will use existing District topography to fill in gaps in the HEC-2 or HEC-RAS coverage within Maricopa County.
10. Tim will check with Pedro Calza to ask if the District will be incorporating the new hydraulic information for the Power Ranch and Coronado Ranches in its combined hydraulic model. Tim or Dave will also determine what type of hydraulic model the District will be providing Huitt-Zollars (either HEC-2 or HEC-RAS).
11. The District will provide the Sanokai Wash HEC-1 model containing breakouts to Huitt-Zollars when it has been accepted by the District.

The meeting ended at approximately 11:00 a.m.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Fred K. Duren, Jr., P.E., P.G.

1/29/99
Date Prepared

Attachment

c: Attendees
Gary Burroughs
Jon Girand
Glenn Shearer
Steve Long
Ray Steele
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

DUH
THIS COPY IS
ORIGINAL

AGENDA

HYDROLOGY AND HYDRAULICS MEETING JANUARY 27, 1999

QUEEN CREEK/SANOKAI WASH HMP AND EAST MARICOPA FLOODWAY CAPACITY MITIGATION STUDY

1. Overview of Discussion

- a. Meeting goal = establish all H&H criteria necessary for study

2. Modeling Condition

- a. Existing
- b. Future
- c. Future with CIP

3. EMF Modeling

- a. Hydrology (HEC-1) Model
 - models obtained
 - model to be used in study
 - models/files/subbasin maps needed
 - updating requirements
 - alternatives evaluation (Level I)
- b. Hydraulics (HEC-RAS) Model
 - models obtained
 - models to be used in study
 - models/files needed
 - updating requirements
 - alternatives evaluation (Level I)
- c. Coordination with Queen Creek Confluence Point and Sedimentation Basin Analysis
- d. Criterion for mitigation of capacity deficit

4. Queen Creek Modeling

- a. Hydrology (HEC-1) Model
 - models obtained
 - model to be used in study

- models/files/subbasin maps needed
- updating requirements and methodology for handling future retention
- alternatives evaluation (Level II)
- b. Hydraulics (HEC-RAS) Model
 - models obtained
 - model to be used in study
 - models/files needed
 - updating requirements
 - alternatives evaluation (Level II)

5. Sanokai Wash Modeling

- a. Hydrology (HEC-1) Model
 - models obtained
 - model to be used in study
 - models/files/subbasin maps needed
 - updating requirements and methodology for handling future retention
 - alternatives evaluation (Level II)
- b. Hydraulics (HEC-RAS) Model
 - models obtained
 - available ?
 - appropriate ?
 - model to be used in study
 - models/files needed
 - updating requirements
 - alternatives evaluation (Level II)

6. Data/Decisions Needed From District

- a. Models
 - Combined HEC-RAS for Queen Creek (mid-April)
 - Sanokai Wash hydraulic
- b. Future Development Conditions (Ultimate Watershed Build-out; 3.3.2)
- c. Hydrologic Modeling Condition
- d. Define Delivery/Decision Dates

7. Open

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 {7.32, 8.50}
Subject: Data Collection – Available Digital Info from Maricopa County
Date: January 22, 1999
Time: 2:00 p.m.
Place: Conference Room- Flood Control District of Maricopa County

ATTENDEES:

Maricopa County

Jim Smith 503-6840

Huitt-Zollars

Ray Steele 952-9123

Charlie Joy 952-9123

The meeting was set up to discuss the type of digital information available to Huitt-Zollars, Inc. (HZI) from the Maricopa County GIS Dept. for use on this project. Following is a summary of some of the issues discussed during the meeting. Action items are shown at the end of the minutes.

Summary:

Available Digital Information. Charlie briefly described the project and the type of digital information that would be useful for the study. Generally, a list Charlie had Emailed Jim was reviewed and discussed to clarify what was requested and what is possibly available. Among the types of digital information requested included:

- Infrastructure type info (roads, facilities, canals, airports etc..)
- Major utility information
- Property ownership, easements and right of way information
- Land-use (current and ultimate use)
- Floodplain/floodways
- Soil maps
- Delineated sub-basins from area watersheds
- Aerial photos

Jim will have to review the GIS database to make sure what information is actually available, but generally the following should/should not be available:

- Infrastructure information is available for the project area and will be made available. However, the accuracy is probably limited for use in general exhibits as opposed to use for engineering purposes.
- Utility, easements, right of way and similar information is not available
- Property ownership is available in the form of a Metroscan. This is a scanned version of the County Tax Assessor's maps therefore the digital information is poor and fragmented. Information covering the study area would require excessive work on behalf of the County. It was decided that that information would be requested as needed for particular areas.
- Whatever land use information available in the study area will be made available. However, it may not be complete or entirely current. Information that might be available from the County Planning Dept. is not known.
- Floodplain/floodway information will be made available.
- What soil information the County has will be made available
- Delineated sub-basins may not be available especially for watersheds currently under study. The availability of this information will be reviewed.
- Aerial photos for the entire area are available; however, it was felt that due to the sizes of those types of files it would be best to request that information as needed for selected areas.

Of the requested information, Charlie indicated that redelining the Queen Creek Wash sub-basins (discussed below) and the soil information would be a highest priority, then infrastructure & land-use and then other information. Jim indicated most of the information would probably be available in about a week given no other distractions. Charlie said that would be great; however, if it was available within the next couple of weeks that would be fine too.

Information Format. Jim, Ray and Charlie discussed the digital formats in which the information is available. HZI is planning on utilizing microstation and would prefer DGN files as opposed to DXF files the County has previously provided. Jim indicated that DXF files are the translated file format for ARCInfo. Unfortunately, converting from DXF to DGN results in the loss of layer/level information. Jim offered to provide DXF files for separate items, however, it was felt that that process might be too burdensome to the County. Charlie suggested that Mike Mester (HZI) might contact Jim since this issue might be best discussed by people more familiar with this type of work. HZI can work with the existing DXF format; however, it was desired to have as much layer/level information remain intact as possible.

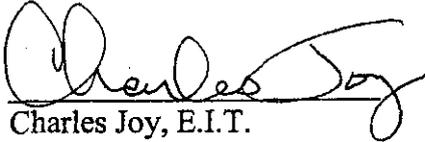
Sub-Basin Delineation. The digital redelineation of the Queen Creek Wash watershed sub-basins required because of the changes in the Sanokai Wash hydrology resulting from a on-going study by Entellus had been requested in the previously mentioned Email

to Jim. Jim said this should be discussed with Mark Brewer, the Database Administrator (506-2953).

Action Items

1. Charlie is to contact Mark Brewer concerning Queen Creek Wash sub-basin delineations.
2. Charlie is to discuss with Mike Mester ARCInfo and may have him contact Jim Smith if it appears there might be a way to retain more layer/level information.
3. Charlie to provide Jim with a map showing the overall project area for which we would be interested in obtaining information.
4. Jim to work on providing the requested information, hopefully, by within the next week or so.

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charles Joy, E.I.T.

26 Jan 99
Date Prepared

Attachments

c: Attendees
Tim Phillips
Dave Degerness
Fred Duren
Mark Seits
Glenn Shearer
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 7.61
Subject: Data Collection – Town of Gilbert
Date: January 21, 1999
Time: 8:30 a.m.
Place: Huitt-Zollars

Town of Gilbert

Guy Carpenter (Water Resources Mgr.) 503-6840

Huitt-Zollars

Charlie Joy 952-9123

Fred Duren 952-9123

Guy had an appointment in the Phoenix area and dropped by the Huitt-Zollars office to transmit some background information and to discuss Gilbert's existing and planned facilities related to the Queen Creek HMP. Following is a summary of some of the primary issues discussed during the meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary:

Wastewater Facilities and Planning

Guy provided three maps showing wastewater facilities planned or under construction in the east Gilbert area (attached). AGRA Infrastructure is performing a wastewater planning study in this area, and the information contained on the AGRA map results from that study. Two maps prepared by CDM/Carollo/HYA (attached) show updated sewer collection and proposed water reuse pipelines. Where information on the AGRA and CDM/Carollo/HYA maps show different pipeline/sewer sizes, the Town is considering both options and a final decision on pipe sizing has not been made.

Of particular interest to the Queen Creek HMP study are several utility crossings of the East Maricopa Floodway (EMF), including large diameter sewers, a reuse water line, and a 30-inch waterline currently under construction; the South Water Reclamation Plant (SWRP); and the proposed reclaimed water recharge facility to be located along the east side of Higley Road between Queen Creek and Germann Roads.

a. Large-Diameter Sewers and Reuse Water Lines (Crossing the EMF)

Large-diameter sewers are planned or under construction at crossings of the EMF at Pecos Road (21-inch), Germann Road (21-inch), and Queen Creek Road (30-inch). A 16-inch reuse water line is also proposed to cross the EMF along Germann Road. Guy will provide as-builts, design drawings, or plans of these sewer and reuse water line crossings, depending upon their implementation status. Guy said that the invert of the SWRP is 22 feet below grade; and, thus, the sewer crossings of the EMF may be below the level that might need to be impacted by changes to the EMF.

The Queen Creek Road 30-inch sewer is under construction by Highland Engineering. CMX Engineers is the design engineer for the Germann Road 21-inch sewer crossing of the EMF. Sandy Phillips of CMX is the project manager.

b. South Water Reclamation Plant

This site, which is located on Greenfield Road 0.5 miles south of Germann Road, will contain a lift station until tributary sewage flows reach a level adequate for operating a plant at the site. Initially, the SWRP lift station will pump sewage through a force main to the City of Mesa's South Plant. When flows reach an adequate level, a tertiary wastewater plant with sludge handling, meeting Arizona Department of Environmental Quality (ADEQ) criteria for irrigation reuse of effluent, will be constructed on the site.

The joint SWRP site is within the Town of Gilbert, but the plant will be operated by the City of Mesa. Bill Haney is the contact for Mesa on this project.

Power Ranch, which is currently using ground water from an irrigation well for its golf course construction and can also use this well for the course's future operation, plans to accept a portion of the discharge from the SWRP when it becomes operational.

c. Reclaimed Water Recharge Facility

The recharge facility will be located on 620 acres of land within section 11, T2S, R6E, which is east of Higley Road between Queen Creek and Ocotillo Roads. Only a triangular portion of land within the extreme northwest portion of the section is excluded from the project. The project site is located within the Town of Gilbert; but the land is owned by the City of Mesa, as will be the recharge facility. Bill Haney is also the contact for this project.

Plans have not been finalized for this facility. It is expected to involve recharge wells and recharge basins and/or wetlands. Lonnie Frost, Gilbert Public Works Director, is interested in including a wetlands and water features at this facility. Scott Anderson, Gilbert Planning Director, is interested in making this recharge area a "Riparian Institute."

Design engineers for this facility are Brown and Caldwell (engineering; Richard Randall = project manager) and Jones and Stokes (environmental). Guy suggested that Brown and Caldwell and Jones and Stokes be included in the Queen Creek HMP brainstorming session to be held on February 16.

Water System Information

Guy provided a map, titled the Gilbert Water System, which shows major water mains in the City (attached). A 30-inch water line is currently under construction under the EMF along Higley Road, just north of Queen Creek Road. Guy will provide design drawings for this EMF crossing.

Miscellaneous Information

Gilbert currently is developing a recharge facility at Greenfield and Guadalupe Roads. This is a multi-use facility, including recharge of reclaimed and Central Arizona Project (CAP) waters, recreation, and other amenities. Guy will provide a description and site plan for the Water Ranch to demonstrate the types of water-based features that Gilbert is trying, as a basis for developing water-based facility alternatives for the Queen Creek HMP project.

Gilbert has an existing ground water recharge facility at Cooper and Elliot Roads.

Gilbert is very interested in potential recreational use of the EMF. An equestrian trail along the EMF would be a high priority for Gilbert.

Gilbert is also very interested in seeing a recreational use of the 230 acres of land owned by the District at the confluence of Queen Creek and the EMF.

Guy suggested that the proposed recharge facility could become an element in a water-based facility along Queen Creek or Sanokai Wash in that it would provide a potential water supply for such facilities. He suggested that the City might be receptive to pumping of water from the recharge facility upstream on either Queen Creek or Sanokai Wash, letting the water flow down the creek or wash, and returning to the recharge facility.

Gilbert is working with the Roosevelt Water Conservation District (RWCD) to get a new CAP connection to Gilbert's water treatment plant (WTP). A 42-inch line would be constructed from the RWCD canal on the west side of the EMF along Elliot Road to the WTP. (This water line would not cross the EMF.)

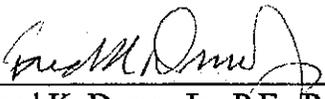
Guy said that San Tan Plan was recently presented to the Town Council. This plan addresses recreation in the Gilbert area and included public participation. Guy will provide a copy of this report to Huitt-Zollars.

The meeting ended at approximately 9:30 a.m.

Action Items

1. Guy will provide as-builts, design drawings, or plans of Gilbert sewer crossings of the EMF, depending upon their implementation status.
2. Guy will provide a description and site plan for Gilbert's Water Ranch to demonstrate the types of water-based features that Gilbert is trying, as a basis for developing water-based facility alternatives for the Queen Creek HMP project.
3. Guy will provide design drawings for 30-inch water line currently being constructed under the EMF along Higley Road.
4. Guy will provide a copy of the San Tan report to Huitt-Zollars.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

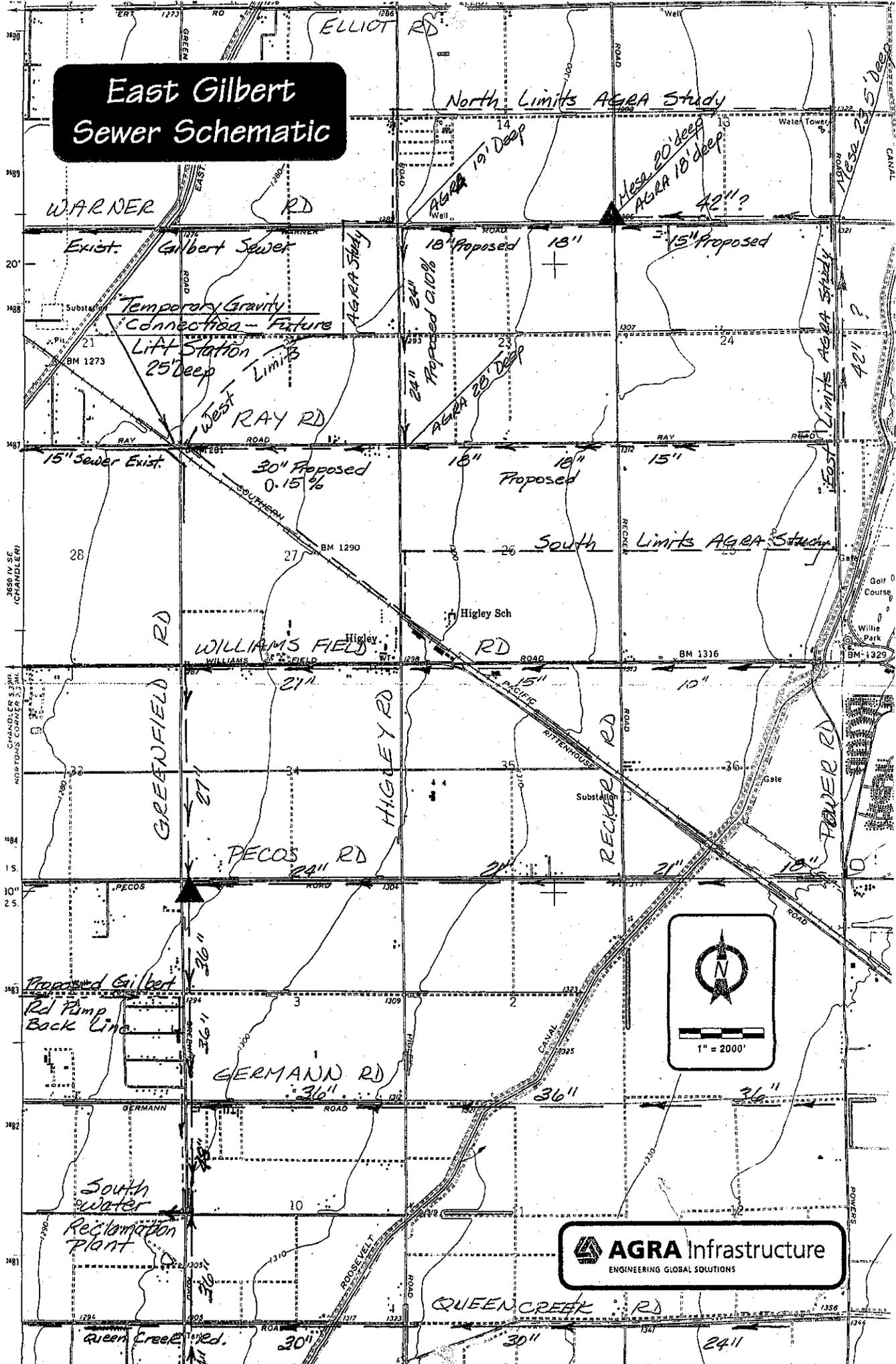

Fred K. Duren, Jr., P.E. P.G.

1/22/99
Date Prepared

Attachments

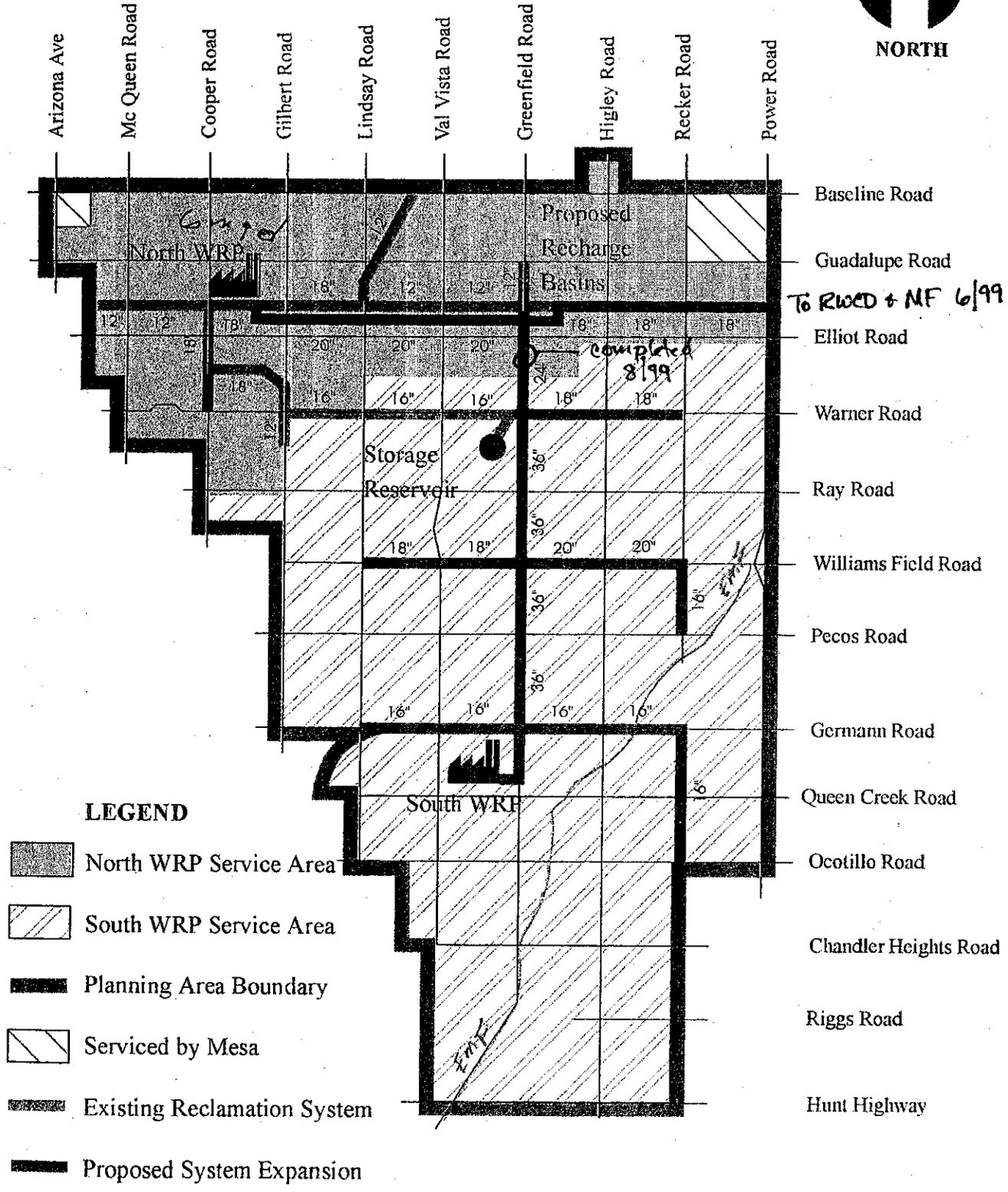
c: Attendees
Tim Phillips
Mark Seits
Glenn Shearer
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

East Gilbert Sewer Schematic



Town of Gilbert Water Resources Master Plan Update

November 1996 *Modified 1/14/99*



LEGEND

-  North WRP Service Area
-  South WRP Service Area
-  Planning Area Boundary
-  Served by Mesa
-  Existing Reclamation System
-  Proposed System Expansion

Figure ES.2
Proposed Reuse System

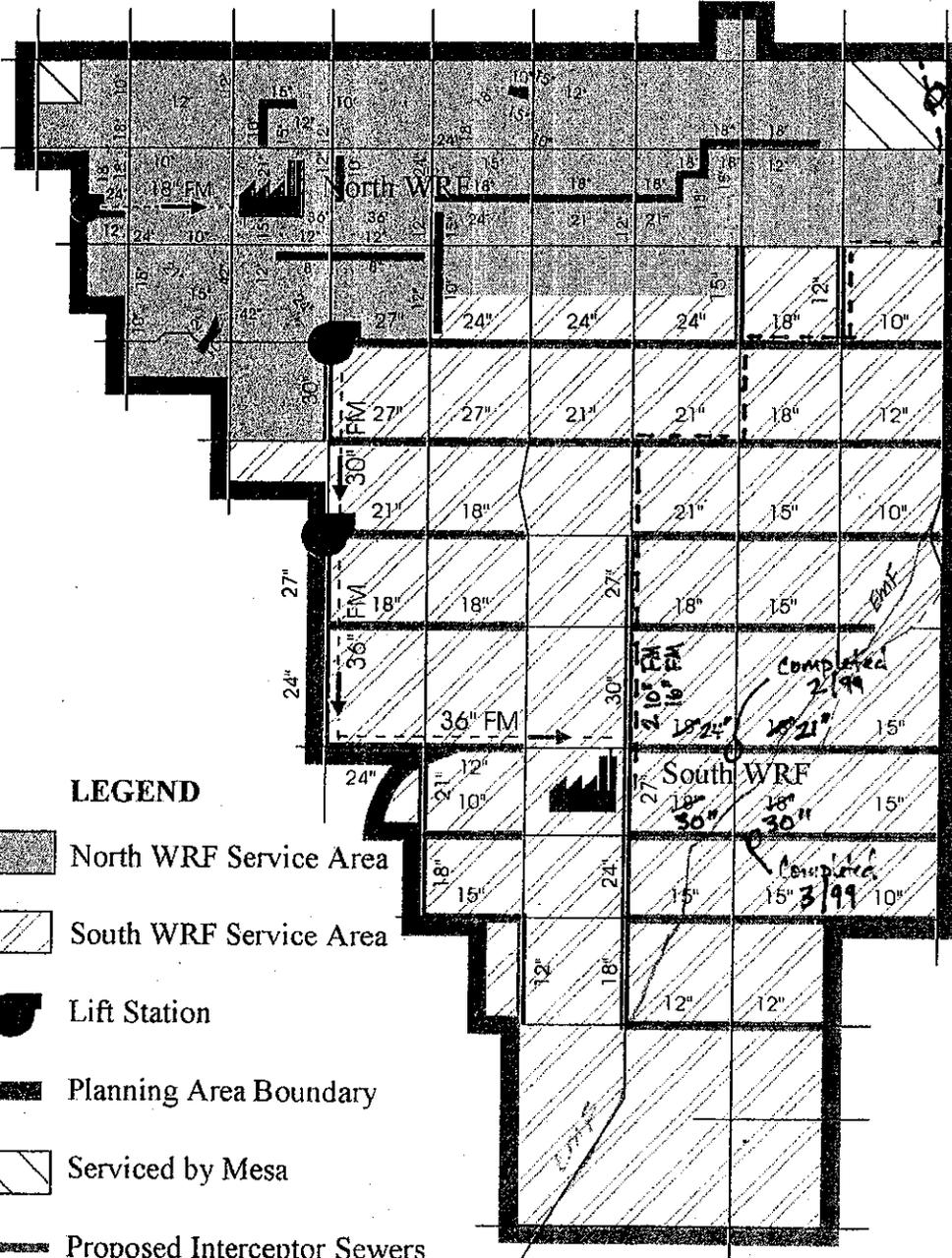
For Sure

Town of Gilbert Water Resources Master Plan Update

November 1996 Modified 1/14/99



Arizona Ave
Mc Queen Road
Cooper Road
Gilbert Road
Lindsay Road
Val Vista Road
Greenfield Road
Higley Road
Recker Road
Power Road



Baseline Road
Completed 1/99
Guadalupe Road
Elliot Road
Warner Road
Ray Road
Williams Field Road
Pecos Road
*City of Mesa
designing for WRA*
Germann Road
Queen Creek Road
Ocotillo Road
Chandler Heights Road
Riggs Road
Hunt Highway

LEGEND

-  North WRF Service Area
-  South WRF Service Area
-  Lift Station
-  Planning Area Boundary
-  Serviced by Mesa
-  Proposed Interceptor Sewers
-  Existing Interceptor Sewers
-  Force Main

Figure ES.3
2040 - Collection System



LEGEND

- Planning Area Boundary
- Water Treatment Plant
- Well Site
- Well, Reservoir, Pump Station Site
- PRV Station

Existing Water Mains

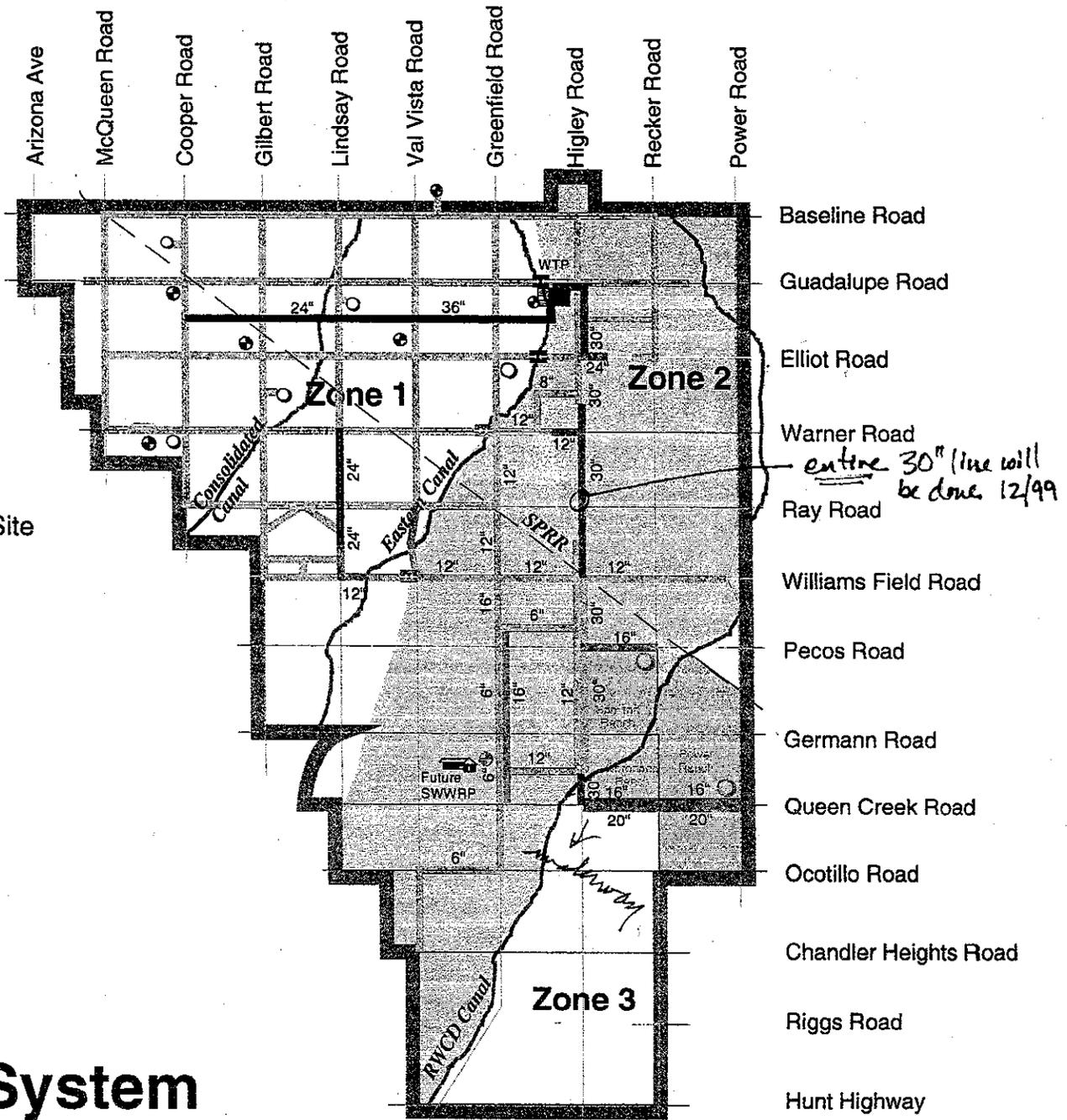
- Transmission Pipelines
- Distribution Pipelines

New Water Mains

- Developer Improvements
- Proposed Improvements
- 1999
- 2000
- 2001

Gilbert Water System

Modified 11/14/99



HUITT-ZOLLARS, INC.
MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Data Collection
Date: Jan 7, 1999
Place: Pinal County Complex in Florence.

Attendees:

Pinal County

Dennis Rittenback – Planning & Development Services (520) 868-6452
Ron Brazill – Dept of Public Works (520) 868-6420
Roger Baumann – Dept of Public Works (520) 868-6345
1-800-208-6897

Huitt-Zollars

Charlie Joy (602) 952-9123

This is a brief summary of conversations held with individuals at the Pinal County Municipal Complex in an effort to collect information pertinent to the Queen Creek/Sanokai Wash and EMF Capacity Mitigation Study.

Dennis Rittenback and Ron Brazill were present for the initial meeting.

A subsequent conversation was held with Roger Baumann primarily concerning a proposed culvert planned for Queen Creek Wash as it crosses Vineyard/Ironwood Road.

Summary:

The project was briefly described and then development in the northern Pinal county area was discussed.

According to Dennis, outside of three planned developments, the area within the watersheds is primarily "Rural Community" with a planned density of 3 dwelling units per acre. There is an industrial area planned adjacent to the Southern Pacific Railroad lines. Dennis provided a copy of the Pinal County Comprehensive Land Use Plan that defines these areas.

The three developments currently planned within the watershed are:

- Johnson Ranch (6600 D.U., 2014 acres)
- Magic Ranch (5800 D.U., 1600 acres)
- Box Canyon (5301 D.U., 2122 acres)

Dennis referred me to Brian Thompsett of the WLB Group [(602) 279-1016] for information on the developments. Dennis indicated that a Hydrology/Hydraulic study was performed for the Johnson Ranch Development but he had no copy of the study.

Ron indicated that Roger Baumann was doing some hydrology in the Pinal County area between the County Line and the CAP canal. Ron arranged for me to meet with Roger shortly after our meeting.

Roger has been trying to extrapolate, refine and develop "more reasonable" hydrology from information in the Pinal Flood Insurance Study and other sources concerning outflow from the Whitlow Dam (located west of the CAP canal) along with information from the Queen Creek ADMS. Roger is using this information for the design and construction of a multi-barrel concrete box culvert for Queen Creek Wash as it crosses Vineyard/Ironwood Road. He explained his approach and provided some worksheets showing his results. His approach involved using regression on historic Whitlow Dam outflow data, combining it with info from the Queen Creek ADMS and interpolating to develop flow rates for various storm frequencies. Roger referred me to Sam Arrowood (602) 640-2003 X245 if we required info concerning Whitlow Dam outflows.

Roger is anticipating using a 25-yr flow rate of 1513 cfs for the design of the culvert. The culvert is to be designed to pass the 25-yr flow with an overtopping depth of < 8" on the road. The preliminary design is expected to be a three barrel 8'x5'x60' RCBC with a dip crossing. Roger does not have much detailed information on the culvert, however, he does expect a culvert to be constructed at this location within the next couple of years.

Roger indicated that there is an existing culvert along the Queen Creek Wash as it crosses Kenworth Rd. (he believes). Roger said that the County does not have As-Builts for the structure but suggested I contact ADOT. Since ADOT regularly inventories and checks out the structural integrity of bridges around the state, they may have As-Builts or other useful information.

Action Items

1. HZI to contact Brian Thompsett for information on the Johnson Ranch, Magic Ranch and Box Canyon Developments.
2. HZI to contact ADOT about bridge inventories as a source of bridge/culvert information in the future.

This summary was prepared by Charlie Joy, Huitt-Zollars, Inc.

Charlie Joy, E.I.T

Date Prepared

c: Tim Phillips
Fred Duren
Mark Seits
Ginger Hammock

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Data Collection
Date: Dec. 21, 1998

Meetings with the City of Mesa

City of Mesa - Development

Frank Mizner 644-2181
& another individual whose name is not recalled

City of Mesa - Engineering

Anna Leyva 503-6864

City of Mesa - Engineering

Bill Haney 644-2480
& another individual whose name is not recalled

Huitt-Zollars

Charlie Joy 952-9123

Summary:

In separate brief and informal meetings with the City of Mesa Dept of Development, Dept. of Engineering, and Utility Operations, the purpose of the project was briefly described and pertinent information requested. Readily available information was obtained and other information not readily available is to be provided in the future as requested.

Action Items

1. Anna Leyva to provide available water, sewer, storm drain, and gas line general/master plans and other more detailed information as available and as necessary per requests by HZI in the future. Bill Haney (Utility Operations 644-2480) at the City of Mesa to obtain more information on the multi-use recharge facility to be located in the study area.

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting.

Charlie Joy, E.I.T

Date Prepared

c: Tim Phillips, Fred Duren, Ginger Hammock, Mark Seits & Glenn Shearer

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Data Collection
Date: Dec. 4, 1998
Time: 8:30 a.m.
Place: Queen Creek Town Hall

(7.01, 8.10, 8.20)

Attendees: **Queen Creek**
Dick Shaner (Town Engineer) 987-9887
Huitt-Zollars
Glenn Shearer 952-9123
Charlie Joy 952-9123

The meeting was called to collect information and data necessary to proceed with the study. John Cross, Town Planner for Queen Creek was briefly introduced at the meeting and will also serve as another contact for land use information, in the future. What follows is a brief summary of some of the primary issues discussed during the meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary:

Dick provided the following copies:

- Town of Queen Creek Subdivision Ordinance
- Town of Queen Creek Open Space and Trails Plan
- Town of Queen Creek General Plan

Development in the Queen Creek area was discussed. Necessary materials to be provided by the Town of Queen Creek area to be listed by HZI so that Dick may provide the available material.

Dick expects future development to occur as indicated by the Town of Queen Creek's General Land Use Plan. The Town is primarily zoned R1-43. The General Land Use Plans breaks up the area into Very Low, Low, and Medium Residential Densities. Development defined as Employment Areas (industrial and business parks) are to be developed primarily along the Southern Pacific Railroad lines or north of the lines. Significant commercial developments and higher density housing is to be primarily limited to the Town Center area.

The Town has developed an Open Space and Trails Plan primarily to guide development along Queen Creek Wash, however, it may also be useful for Sanokai Wash. The Plan has typical sections for the wash areas which provide equestrian, pedestrian, and bicycle trails and also includes trails which would link Queen Creek and Sanokai Wash.

Though there has been no expressed public opinion, Dick feels that the public would prefer trails in more natural wash conditions over more "improved" wash conditions (in the manner of Indian Bend Wash), particularly along Sanokai Wash and in areas where development around the washes area more established. The areas along Queen Creek Wash might be more accepting of improvements in the manner of Indian Bend Wash. The Town is trying to obtain the wash areas whenever possible, however, most of the wash areas are still under private ownership. The Town hopes to eventually obtain all of the wash areas.

Dick feels that any retention recommended for Sanokai Wash might be best handled within the wash through linear (on-line) retention.

The Town, for the most part, utilizes the county standards for drainage and transportation.

Several new developments were discussed and drainage reports and other related information will be made available.

Most of the floodplain along Queen Creek Wash has been delineated at one time, - however, the area located northeast of the Sossaman/Ocotillo intersection is a problem area. The Town is only accepting conceptual plans for development in this area until such time as a restudy of the area has occurred which more accurately reflects flooding conditions in the area.

Upon closing of the landfill near Sanokai Wash, the Town is hoping to develop the area into an equestrian/park area. There is also a desire to develop ball fields, a BMX race track and other recreation facilities in the same general area. Facilities would be limited by necessary restrictions for development in a landfill area.

Dick did not have information on any major utility corridors or major utilities which might be impacted by any recommended improvements. Generally, any major underground or above ground utilities are located along the major collector streets (streets along section lines).

Dick provided contacts for the CAP Irrigation District (Dean Griffith) which has a lot of irrigation lines in the area and Queen Creek Water Co. (Paul Gardner 987-3420)

In the future, Dick is expecting to have a sewer line running to a treatment facility located in Gilbert. The line might possibly impact the confluence study area near Higley and Queen Creek Road. A recharge facility is also foreseen in the confluence study area. The meeting with the Town of Gilbert elaborated on the recharge facility. The City of

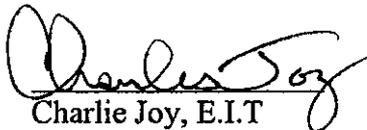
Mesa is the lead on the multi-use recharge facility that is planned for a large area southeast of the Higley Rd./Queen Creek Rd. intersection.

Outside of the necessary permits from the FCDMC and any necessary 404 permits, the Town only requires a Grading Permit for channel improvements.

Action Items

1. HZI to provide Dick with a list of desired materials and meet with John Cross (Town Planner) to follow up on data collection.
2. Dick is to provide the following list of materials.
 - Current Town Limits
 - Locations where Town owns wash area
 - Available Drainage Studys/Reports for developments along Queen Creek & Sanokai Wash including:
 - The Sossaman Development (name?)
 - Power Ranch
 - Coronado Ranch (?)
 - And any other existing or new developments along Queen Creek or Sanokai Wash.
 - Available information on recharge facility and sewer/effluent lines to wastewater treatment facility in Gilbert.

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charlie Joy, E.I.T

12/7/98
Date Prepared

c: Attendees
Tim Phillips
Fred Duren
Mark Seits
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01
Subject: Data Collection
Date: Dec. 4, 1998 (7.62, 8.10, 8.20)
Time: 11:00 a.m. (Gilbert)
Place: Gilbert Parks & Recreation Heritage Annex

8:30 Meeting Attendees

Town of Gilbert

George Pettit	503-6864
Guy Carpenter (Water Resources)	503-6840
Scott Anderson	503-6810
Maury Ahlman, CLP(Dir., Parks & Rec.)	503-6280
Kenny Martin (Super, Parks & Rec.)	503-6282
Rick Allred, PE (Town Engineer)	503-6841

Huitt-Zollars

Glenn Shearer	952-9123
Charlie Joy	952-9123

The meeting was called to inform the town of Gilbert as to the nature of our study and to collect necessary information and data. What follows is a brief summary of some of the primary issues discussed during the meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary:

The project and the purpose for the meeting was briefly described by Charlie and then development in the Gilbert area was discussed.

Attendees provided the following copies:

- Town of Gilbert General Plan
- Town of Gilbert Zoning Map
- Town of Gilbert, 1996-2001 Parks, Open Space and Trail Plans

It was felt that the community would prefer an approach more similar to Indian Bend Wash or the new Power Ranch development for any multi-use drainage facilities along the washes.

A recharge facility is foreseen covering most of Section 14, T2S, R6E. The City of Mesa is the lead on the multi-use recharge facility that is planned for a large area southeast of the Higley Rd./Queen Creek Rd. intersection. A contact of Bill Haney at the City of Mesa was provided to obtain more information on the recharge project. An effluent line from the treatment facility to the recharge facility will be necessary. The line will necessarily cross the EMF and Queen Creek Wash, however, the location is not presently known.

The Town requires 50-yr, 24-hr retention for it's developments. It was said to result in similar retention requirements as the 100-yr, 2-hr requirement typical of County and other surrounding communities.

As with the Town of Queen Creek, major utilities are run along the major collector streets. It was suggested that SRP be contacted regarding corridors for high voltage lines.

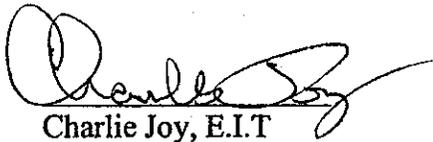
MCDOT will need to be contacted regarding roads and bridges in the area.

Rick Allred and Guy Carpenter will serve as primary contacts for requests for additional information.

Action Items

1. HZI to contact Bill Haney at the City of Mesa to obtain more information on the multi-use recharge facility to be located in the study area.
2. HZI to follow up on SRP contact to obtain major utility corridor information.
3. Rick Allred and/or Guy Carpenter to provide 5-year CIPP and Uniform Land Development Codes for the Town of Gilbert.

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charlie Joy, E.I.T

12/7/98
Date Prepared

c: Attendees
Fred Duren
Mark Seits
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.: 05-0949-01 (7.31.6)
Subject: Data Collection & Changes to Schedule
Date: Nov. 30, 1998
Time: 1:30 p.m.
Place: Huitt-Zollars Office - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (Project Manager) 506-4718

Huitt-Zollars
Gary Burroughs, V.P. (Principal-in-Charge) 952-9123
Charlie Joy, EIT (Hydrology/Hydraulics) 952-9123

The meeting was called to discuss changes to the project schedule, project invoices, and to provide project information and data. What follows is a summary of essential issues discussed during the meeting in the general order of discussion. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Agenda Item 1 – Project Invoices

District Project Managers are required to submit project status updates by the 2nd Wednesday of every month. To assist in the submittal, Tim will provide HZI with Excel spreadsheets with the project update forms. The project status spreadsheets are to be E-mailed to Tim. Original invoices are to be submitted directly to Accounts Payable by the 3rd of the month. Contract options are to be included into the contract schedule and into the total project amount. This is to show possible expenditures and an expected schedule, but is not to be considered as an acceptance of the contract options by the County at this time.

Agenda Item 2 – Project Schedule

Contract options are to be included into the project schedule and the costs incorporated into the monthly cost estimates. In addition, Tim requested several minor changes to the project schedule including:

1. Site visits, public meetings (to be tentative set) and other major meetings (as indicated in the Scope of Work) should be marked as milestones on project schedule.
2. A 2-3 week review time should be shown after submittal dates.
3. Start and end dates along with the estimated task cost are to be noted on the Gantt chart.

Tim provided an example of how he would like to see the project schedule.

Agenda Item 3 – Data Collection & Letters for Rights of Entry

Tim provided copies of tax assessor's maps/plats (8.5x11) and a list of property owners & parcels located within 500' of the study area. A larger map of the region, an electronic copy of the list of property owners & parcels, and electronic copies of aeriels are to be provided by the County at a later date.

In addition, Tim provided copies of the "Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects", "Channel Design Criteria for Major Watercourses", Section 19.0 CADD/Drafting Standards, and a CD of topo information obtained from the County's GIS database. Neither Tim nor HZI have been able to obtain a copy of "Landscaping and Irrigation Design Manual for the Flood Control District of Maricopa County".

The County will do the Rights of Entry letters for the necessary parcels as indicated by HZI. They will also provide a generic letter summarizing the project and noting that members of the project team have a right to conduct work in the area. Any excavation or other significant work to be conducted should notify the county and obtain a more specific letter. The County will provide access to any locked areas but would like at least a day's notice in order to insure personnel is available to unlock gates. Immediate access may be possible, if necessary.

Agenda Item 4 – Miscellaneous

HNTB EMF Study. The status of the ongoing study by HNTB is still unknown. Charlie mentioned that excessive delays in the completion of HNTB's study might affect this study's schedule. Tim is to check into the project and consider options for completing the study.

Alternative Conditions. Which watershed condition (existing, future, future w/CIP) is to be used for project alternatives is still undetermined. There are different views on which condition would be best. Tim feels that comparing future and existing condition models and using the most conservative may be a good approach or possibly even using a

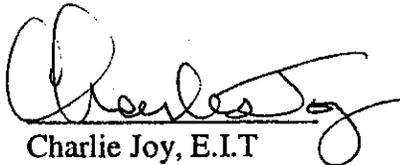
"reasonably known" future condition but he is willing to discuss. Charlie suggested that Fred Duren and/or Mark Seits contact him in an attempt to come to a decision.

Gila Indian Reservation. Tim would like to set up a meeting in the near future with representatives from the Gila Indian Tribe to discuss the project. The meeting is to keep the Tribe informed on the project and discuss any questions or concerns. The Tribe has concerns with development in Santan Mountains and water quality concerns that might result from changes in the EMF.

Action Items

1. Fred and/or Mark to discuss with Tim Phillips which watershed conditions should be used to analyze project alternatives?
2. Tim Phillips to provide electronic copy of project status spreadsheet, large Metroscan map, electronic files of aerial topo (1993 & 1996 events?), generic letters for site visits, and a copy of "Landscaping and Irrigation Design Manual for the Flood Control District of Maricopa County" (if possible).
3. Tim Phillips to set up a meeting with the Gila Indian Tribe.
4. Tim Phillips to determine status of HNTB EMF study.
5. HZI to revise schedule and submit project status to Tim Phillips as soon as possible.

The preceding minutes were prepared by Charlie Joy, Huitt-Zollars, Inc., and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.


Charlie Joy, E.I.T

12/4/98
Date Prepared

c: Attendees
Fred Duren
Mark Seits
Ginger Hammock
Rick Amalfi
Barbara Macnider
Enamul Hoque
John Cahoon
Brian Doeing

**Queen Creek/Sanokai Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule**

ID	Task Name	Cost	1999																		
			Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	QC/SW HMP & EMF CAPACITY MITIGATION STUDY	\$609,311.00	\$609,311.00																		
2	2.0 SPECIFIC TASKS	\$216,665.00	\$216,665.00																		
3	2.1 Data Collection & Existing Conditions Analysis	\$19,836.00	\$19,836.00																		
4	2.1.1 Data Collection	\$10,536.00	\$10,536.00																		
5	2.1.2 List of Development	\$2,505.00	\$2,505.00																		
6	2.1.3 Investigate Master/General Plans	\$629.20	\$629.20																		
7	2.1.4 List of Existing/Planned Recreational Facilities	\$406.12	\$406.12																		
8	2.1.5 Become Familiar with Local Landscaping Concepts	\$291.72	\$291.72																		
9	2.1.6 Prepare Alternatives Matrix	\$2,962.96	\$2,962.96																		
10	2.1.7 Update Data Collection Information (OPTIONAL)	\$2,505.00	\$2,505.00																		
11	2.2 Level I Analysis - Alternatives Formulation/Preliminary Analysis	\$55,211.00	\$55,211.00																		
12	2.2.1 Develop at Least 3 Queen Creek Preliminary Alternatives	\$9,655.36	\$9,655.36																		
13	2.2.2 Develop at Least 3 Sanokai Wash Preliminary Alternative	\$9,655.36	\$9,655.36																		
14	2.2.3 Develop at Least 4 Confluence Alternatives	\$1,795.92	\$1,795.92																		
15	2.2.4 Develop at Least 3 Confluence Sedimentation Basin Alternatives	\$1,801.80	\$1,801.80																		
16	2.2.5 Eliminate Alternatives Based on Minimal Analysis	\$1,813.24	\$1,813.24																		
17	2.2.6 Consider 3 Design Concepts	\$4,423.80	\$4,423.80																		
18	2.2.7 Identify Concepts Suggested by Public, Local Jurisdictions, and District	\$7,085.28	\$7,085.28																		
19	2.2.8 Submit Sketches and Narrative Report	\$5,502.64	\$5,502.64																		
20	2.2.8.1 FCDMC Review Period	\$0.00	\$0.00																		
21	2.2.9 Develop at Least 3 Preliminary Alternatives for EMF Reaches 3, 4, 5, and 6	\$5,857.28	\$5,857.28																		

Project: Project Schedule
Date: Thu 12/3/98

Task		Milestone		Rolled Up Split		External Tasks	
Split		Summary		Rolled Up Milestone		Project Summary	
Progress		Rolled Up Task		Rolled Up Progress			

Queen Creek Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule

ID	Task Name	Cost	1999																			
			Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
64	3.4.1 Identify Parcels to be Affected by Alternatives	\$1,012.00																				
65	3.4.2 Identify Rights-of-Way Adjacent to Preferred Alternatives	\$658.00																				
66	3.4.3 Identify Permanent Rights-of-Way and Easement Requirements	\$1,086.80																				
67	3.4.4 Prepare Rights-of-Way Drawing	\$2,396.68																				
68	3.4.5 Identify Rights-of-Entry	\$520.52																				
69	3.5 Environmental Permits and Approvals	\$2,082.00																				
70	3.5.1 Determine Need for Plan Approvals	\$2,082.00																				
71	3.5.2 Provide Information Assistance to District for 401 and 404 Permitting	\$0.00																				
72	3.6 Biological Survey Analyls	\$7,590.00																				
73	3.6.1 Provide Documentation of Threatened and Endangered Species	\$2,475.00																				
74	3.6.2 Determine Ecologically Significant Vegetation	\$2,475.00																				
75	3.6.3 Wetlands Delineation (OPTIONAL)	\$2,640.00																				
76	3.7 Cultural Resources	\$12,755.00																				
77	3.7.1 Conduct an Archaeological Assessment	\$2,030.42																				
78	3.7.2 Prepare Archival and Literature Search Report	\$3,651.58																				
79	3.7.3 Intensive Survey (OPTIONAL)	\$4,393.00																				
80	3.7.4 Prepare Testing/Data Recovery Plan (OPTIONAL)	\$2,680.00																				
81	3.8 Environmental Regulatory Records Review	\$12,720.00																				
82	3.8.1 Document Regulatory Sites	\$11,730.00																				
83	3.8.2 Locate Regulatory Sites (OPTIONAL)	\$495.00																				
84	3.8.3 Describe Regulatory sites (OPTIONAL)	\$495.00																				

Project: Project Schedule
Date: Thu 12/3/98

Task Milestone Rolled Up Split External Tasks
 Split Summary Rolled Up Milestone Project Summary
 Progress Rolled Up Task Rolled Up Progress

Queen Creek Regional Wash HMP
And
East Maricopa Floodway Capacity Mitigation Study
Project Schedule

ID	Task Name	Cost	1999															
			Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
108	4.2 Invoices	\$125.00	\$125.00															
109	4.2.1 Submit Revised Estimate of Future Monthly Billings	\$0.00	\$0.00															
110	4.2.2 Submit Monthly Invoices	\$125.00	\$125.00															
128	4.3 Project Management	\$14,970.00	\$14,970.00															
129	4.3.1 Appoint Consultant Project Manager	\$0.00	\$0.00															
130	4.3.2 Submit Monthly Project Status Update	\$9,283.74	\$9,283.74															
148	4.3.3 Develop and Implement a QA/QC Program	\$5,686.26	\$5,686.26															
149	4.4 Subcontractor Management	\$0.00	\$0.00															
150	4.4.1 Review Subconsultant Work	\$0.00	\$0.00															
151	4.5 Reports	\$56,849.00	\$56,849.00															
152	4.5.1 Submit to District in Draft Form	\$0.00	\$0.00															
153	4.5.2 Submit Data Collection Report	\$7,491.67	\$7,491.67															
154	4.5.2.1 FCDMC Review Period	\$0.00	\$0.00															
155	4.5.3 Submit Alternative Analysis Report	\$9,367.60	\$9,367.60															
156	4.5.3.1 FCDMC Review Period	\$0.00	\$0.00															
157	4.5.4 Submit Preferred Alternative Report	\$9,479.14	\$9,479.14															
158	4.5.4.1 FCDMC Review Period	\$0.00	\$0.00															
159	4.5.5 Submit Project Final Report	\$20,572.27	\$20,572.27															
160	4.5.5.1 FCDMC Review Period	\$0.00	\$0.00															
161	4.5.6 Submit Project Survey Report	\$2,775.56	\$2,775.56															
162	4.5.6.1 FCDMC Review Period	\$0.00	\$0.00															

Project: Project Schedule
Date: Thu 12/3/98

Task		Milestone		Rolled Up Split		External Tasks	
Split		Summary		Rolled Up Milestone		Project Summary	
Progress		Rolled Up Task		Rolled Up Progress			

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.:
Subject: Kick-Off Meeting

Date: Oct. 27, 1998
Time: 1:30 p. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Flood Control District of Maricopa County**
Tim Phillips (Project Manager) 506-4718

Town of Queen Creek
Dick Shaner, Town Engineer 987-9887

Huitt-Zollars
Gary Burroughs, V.P. (Principal-in-Charge) 952-9123
Jon Girand, V.P. (Alternatives, QA/QC) 952-9123
Mark Seitz, Associate (Hydrology/Hydraulics) 214 871-3311
Glenn Shearer, Associate (Landscaping) 952-9123
Charlie Joy, EIT (Hydrology/Hydraulics) 952-9123
John Massey, EIT (Hydrology/Hydraulics) 952-9123
Ginger Hammock, Administration 952-9123
Fred Duren, V.P. (Project Manager) 952-9123

Aquatic Consulting & Testing
Rick Amalfi, V.P. (Water-Based Facilities) 921-8044

Archaeological Consulting Services
Barbara Macnider, V.P. (Cultural Resources) 894-5477

Hoque, Peters & Associates
Enamul Hoque, Pres. (Environmental) 921-1365

Kenney Aerial Mapping
John Cahoon, Marketing Manager (Mapping) 258-6471

WEST Consultants
Brian Doeing, V.P. (Sedimentation/Scour) 619 487-9378

The attached agenda presents the order of discussion during the meeting.

DISCUSSION:

The Kick-Off meeting is the first progress meeting. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Agenda Item 2 – Overview of Scope of Work

Fred described the project objectives and the various alternatives to be studied. Tim said that the primary work products of the project are conceptual drawings showing Queen Creek and Sanokai Wash channel improvements and conceptual drawings for increasing the capacity of the East Maricopa Floodway (EMF). Tim mentioned that the EMF Area Drainage Master Plan did not include specific recommendations for improvements. Tim provided a map that delineates the eastern branch of Sanokai Wash. Tim also provided a map showing reaches 3 through 6 of the EMF. This map also indicates the capacity limitations along the EMF.

Tim stated that the District owns approximately 230 acres of land at the confluence of Queen Creek and the EMF. The District could make a portion of this land available for a new confluence sedimentation basin or for re-alignment of Queen Creek. However, the District has had inquiries from developers interested in this land, so there will be an opportunity for the District to sell this property should it not be needed for drainage facilities.

Agenda Item 3 – Communication/Coordination

Communication with the District will be through Tim, who will direct callers to appropriate District personnel. Tim may want to participate in meetings held between project team members and District staff. Communication with Huitt-Zollars will be through Fred; however, project team members will also be contacting others directly as needed. Communication with the Town of Queen Creek will be through Dick Shaner (987-9887), while communication with the City of Gilbert will be through Lonnie Frost (503-6842) or Stephen Marbury.

Tim said that the mayors of Queen Creek and Gilbert have been sent letters informing them of this study.

Glenn requested that the District send letters to agencies and other entities that will need to be contacted for data collection. Tim will provide the letters based on a list of agencies and other entities provided by Huitt-Zollars.

Agenda Item 4 – Administrative Items

Tim indicated that the contract period is 480 days, including District review. He gave billing forms (see attached) to Fred and discussed how to provide the monthly status reporting at the bottom of form PCN - 480.02.01. He requested that invoices be sent to the District's accounting office at the address shown in the contract with a copy to him. Fred said that he would submit a sample invoice to Tim prior to submitting the first invoice to get any invoicing problems resolved.

Tim requested that any "bad news" items be brought to his attention as soon as possible, so that a resolution can be achieved in timely fashion. Notification of bad news should include impacts to time, work tasks, and cost. Only work authorized under the contract will be paid for by the District. Any work done on the optional tasks and on other items not previously authorized in writing by the District is at the consultant's risk. Tim also re-iterated that the projected monthly expenses need to be provided by Huitt-Zollars, per the contract scope. Tim said that the District would issue letters to Huitt-Zollars regarding non-conformance issues should problems become apparent.

Agenda Item 5 – Scope of Work Discussion

Fred discussed the specific tasks in the project scope. Data collection needs to be started now. The Level I analysis is essentially a qualitative evaluation to develop the alternatives specified in the scope. However, Level I will also involve a complete analysis of the EMF, including a recommended alternative. Level II is a quantitative analysis of the alternatives based on future (ultimate) development conditions. Level III is a refinement of the quantitative analysis performed in Level II. The HEC-1 model will be modified in Level III to include the recommended improvements.

Several detailed scope aspects were also discussed.

Dick said that it is the Town's goal to have a greenbelt system, including equestrian trails, developed along Queen Creek and Sanokai Wash. The Town also plans to use the landfill for landscaping/recreational purposes. Dick would like to save significant trees located along Queen Creek and Sanokai Wash.

Dick said the Ryland Homes and Steve Sossaman are planning a major new development in the Queen Creek area, between Power and Sossaman Roads south of Queen Creek Road.

Tim said that the District is looking toward "kinder and gentler" solutions to drainage problems. He thinks that strictly structural solutions involving primarily concrete channels, for example, will no longer be acceptable to the District.

Dick mentioned that the pecan groves at Riggs Road and Ellsworth Road are especially sensitive areas, and channel improvements along Sanokai Wash that negatively impacted this area would likely not be acceptable.

Mark indicated the flows developed in the hydrologic modeling for future conditions could be less than current flows. Tim said that there may not be much difference, per District experience for other projects.

It was re-iterated that the 100-year event assuming future conditions is the flow that will be used in evaluation of alternatives and in preparing conceptual plans.

All modeling will be based on this criterion, and no modeling will be performed based on existing conditions.

Fred described the development along upper sections of the EMF and indicated that these sections may not be suitable for modification. Two such sections are along the Williams Gateway area and at the golf course south of the Superstition Freeway. Tim agreed that there are portions of the EMF where channel improvements may not be feasible.

Fred mentioned that the newly constructed bridge on Higley Road over Queen Creek would be useless if Queen Creek was re-aligned to flow westerly along the southern side of Queen Creek Road to an alternative confluence point with the EMF. This potential re-alignment of Queen Creek is one of four alternatives listed in the scope for the confluence of Queen Creek and the EMF.

Fred asked for ideas regarding the alternatives that could be considered for the confluence sedimentation basin. Two potential alternatives were mentioned, including leaving the existing basin in its present condition and modifying it to incorporate landscaping and, possibly, recreational aspects. Tim mentioned that development of the three sedimentation alternatives mentioned in the scope is not firm and that there may only be two alternatives that are determined to be feasible.

Rick said that he will look at water sources and the feasibility of incorporating water features along Queen Creek and Sanokai Wash. He will develop guidelines for incorporation in the Implementation Plan that will address treatment requirements for various types of water (e.g., reclaimed water and ground water). Rick also indicated that the Central Arizona Project is considering using Queen Creek for ground water recharge.

Barbara said that she will perform the cultural resources analysis based on existing cultural surveys. She indicated that there will be gaps in the records such some reaches along Queen Creek and Sanokai Wash will have no cultural resources surveys. Tim said that it was understood that the cultural resources analysis would have gaps. He said that the District wanted to do some preliminary cultural resources work for this project, whereas for prior District project cultural resources analyses have typically not been done as part of the planning study. This has resulted in problems when design and construction has been undertaken and cultural sites were found. Barbara said that she would indicate on her work map which areas along Queen Creek and Sanokai Wash did not have cultural resources surveys so that developers wishing to do work in these areas will know in advance that a cultural resources survey will need to be performed.

Enamul indicated that the environmental analysis work he would perform for the project would be based on available, recorded data.

Brian asked what project life should be used for channel improvements along Queen Creek and Sanokai Wash. Dick suggested using District criteria, which Tim indicated was a 50-year life, unless Brian had data that would indicate otherwise.

Dick said that he would provide potential sites for detention basins. He said that the eastern branch of Sanokai Wash would be ideal for detention basins, whereas the western branch has less potential because it has numerous small tributaries. Dick thought that a linear detention basin might be appropriate for the western branch. Dick also said that the eastern branch of Sanokai Wash splits around the Queen Creek landfill.

Agenda Item 6 – Schedule

Huitt-Zollars is to submit a project schedule within 14 days of Notice-to-Proceed, which is November 10. The project completion date is February 19, 2000.

Agenda Item 7 – Meetings

It was recommended by Tim and Dick that the first neighborhood open house be held early on in the project to allow public input before definitive analyses are undertaken. The second neighborhood open house should be held after completing the quantitative analyses of alternatives in Level II. Fred indicated a concern about obtaining public input after completing the Level II analyses because this could result in changes in the alternatives and the need to re-do work performed earlier. Tim requested that a public involvement plan be submitted by Huitt-Zollars. He will provide the Cave Creek Watercourse Master Plan public involvement plan as a guideline.

Dick thought that the first Queen Creek Town Council meeting should be held at the beginning of the project. He thought the second Town Council meeting should be held after the alternatives have been evaluated in Level II. However, he would like to see the study products before deciding on the most appropriate time for the second Town Council meeting. It may be possible to hold the second Town Council meeting and the second neighborhood open house on the same day at the same location.

Agenda Item 8 – Field Work and Rights-of-Entry

It was agreed that rights-of-entry will only be needed where the project team is going to perform work that involves alterations to property (e.g., setting ground control panel points and obtaining soil/sediment samples). For other site visits involving casual observation of the study area, rights-of-entry will not be required.

Tim requested that Huitt-Zollars provide locations of the needed rights-of-entry needs as soon as possible. He will then determine the appropriate property owners and arrange to obtain permission for the project team to enter the needed properties.

Agenda Item 9 – Data Needed from the District

Tim provided the following items to Huitt-Zollars at the meeting:

Reports:

East Mesa Area Drainage Master Plan (ADMP), Recommended Design Report, FCD # 95-32, July 1998

Queen Creek Area ADMP, Final Report, FCD # 86-23, August 1991

Maps:

Southeast Mesa ADMP, Hydrology Maps (Northern Section and Southern Section with Future Conditions)

East Mesa Area Drainage Master Study, Topographic Subbasin Boundary Maps, (Northern and Southern Area)

Maps from Sanokai Wash Flood Insurance Study (FIS) by Entellus: Plate 1 -- Hydrology Map; Plate 2 -- Land Use Map; Plate 3 -- Flow Diagram.

Williams-Chandler Watershed Protection and Flood Prevention Project: Index and Location Maps Only for Reaches 1 through 6.

EMF Capacity Study Design and Estimated Flows Map

Diskettes:

Sanokai Wash FIS

- 100-yr, 6-hr, Existing Land Use, DDMS File Family (Hydrology) (2 disks)
- 100-yr, 24-hr, Existing Land Use, DDMS File Family (Hydrology) (1 disk)

East Mesa ADMP

- 100-yr, 24-hr, Existing Land Use, DDMS File Family (1 disk)
- 100-yr, 2-hr, Future Land Use, DDMS File Family (1 disk)
- 50-yr and 10-yr, Existing Land Use (1 disk)
- 50-yr and 10-yr, Future Land Use
- 100-yr, North and South with C.I.P.

Queen Creek ADMS Original Models

- Existing and Future Conditions (Selected Alternative) (1 disk)

EMF Hydrology

- Existing (1 disk)
- Future
- Future with C.I.P.

Fred submitted to Tim an initial list of data and information needed from the District (see attached). Some of the requested information was contained in the items provided by Tim. Fred also returned to Tim the draft report on the East Mesa ADMP. Huitt-Zollars is to review the HEC-1 and HEC-2 models provided by Tim and inform him of any additional modeling that may be needed for the study.

Agenda Item 10 – Drawings Format

Tim said that MicroStation should be used in preparing project drawings.

Agenda Item 11 – Official Project Title

The official project title is:

Queen Creek/Sanokai Wash HMP
and the
East Maricopa Floodway Capacity Mitigation Study

Action Items

1. Huitt-Zollars will provide a list of these agencies and other entities that will need to be interviewed for data collection. Tim will provide letters to these agencies and other entities.
2. Invoices are to be sent to the District's accounting office at the address shown in the contract with a copy to Tim.
3. Fred will submit a sample invoice to Tim prior to submitting the first invoice to get any invoicing problems resolved.
4. "Bad news" items are to be brought to Tim's attention by Huitt-Zollars as soon as possible, so that a resolution can be achieved in timely fashion. Notification of bad news should include impacts to time, work tasks, and cost
5. The projected monthly expenses need to be provided by Huitt-Zollars, per the contract scope.
6. Dick will provide potential sites for detention basins in the Queen Creek and Sanokai Wash areas.
7. Huitt-Zollars will submit a project schedule by November 10.

8. The first neighborhood open house will be held early on in the project to allow public input before definitive analyses are undertaken. The second neighborhood open house will be held after completing the quantitative analyses of alternatives in Level II.

9. Dick will review the study products before deciding on the most appropriate time for the second Town Council meeting. It may be possible to hold the second Town Council meeting and the second neighborhood open house on the same day at the same location.

10. Huitt-Zollars will provide locations of the needed rights-of-entry needs as soon as possible. Tim will then determine the appropriate property owners and arrange to obtain permission for the project team to enter the needed properties.

11. Huitt-Zollars will review the HEC-1 and HEC-2 models provided by Tim and inform him of any additional modeling that may be needed for the study.

12. MicroStation will be used in preparing project drawings

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr.

Date Prepared

attachments

c: Attendees

HUITT-ZOLLARS, INC.

MEETING MINUTES

Client: Flood Control District of Maricopa County
Project: Queen Creek/Sanokai Wash HMP and
East Maricopa Floodway Capacity Mitigation Study
Project No.:
Subject: Project Team Meeting

Date: Oct. 27, 1998
Time: 8:30 a. m.
Place: Huitt-Zollars - Phoenix

Attendees: **Huitt-Zollars**

Gary Burroughs, V.P. (Principal-in-Charge)	952-9123
Mark Seits, Associate (Hydrology/Hydraulics)	214 871-3311
Glenn Shearer, Associate (Landscaping)	952-9123
Charlie Joy, EIT (Hydrology/Hydraulics)	952-9123
John Massey, EIT (Hydrology/Hydraulics)	952-9123
Ginger Hammock, Administration	952-9123
Fred Duren, V.P. (Project Manager)	952-9123
Aquatic Consulting & Testing	
Rick Amalfi, V.P. (Water-Based Facilities)	921-8044
Archaeological Consulting Services	
Barbara Macnider, V.P. (Cultural Resources)	894-5477
Hoque, Peters & Associates	
Enamul Hoque, Pres. (Environmental)	921-1365
Kenney Aerial Mapping	
John Cahoon, Marketing Manager (Mapping)	258-6471
WEST Consultants	
Brian Doeing, V.P. (Sedimentation/Scour)	619 487-9378

The attached agenda presents the order of discussion during the meeting.

DISCUSSION:

The objectives of the meeting were to: (1) familiarize the project team members with each other and with the project requirements, (2) identify questions, (3) prepare for the Kick-Off Meeting, and (4) start the project with all team members present. Action items are shown at the end of the minutes with the responsible party identified.

Summary of Essential Issues Discussed:

Agenda Item 4 – Overview of Scope of Work

The location of the Queen Creek, Sanokai Wash (western branch), and the East Maricopa Floodway were identified on the aerial maps provided at the meeting. The approximate location of the eastern branch of Sanokai Wash was also identified; however, the exact location will need to be provided by the District.

Agenda Item 5 – Project Team Responsibilities and Coordination

Each project team member needs to inform Fred of important meetings prior to the meeting, so that he is able to contact Tim Phillips in accordance with the contract scope of work. Fred is to be copied on all important project documentation, and he will distribute this documentation to the appropriate team members.

Agenda Item 6 – Scope of Work – Questions/Comments

Rick needs information on land development and existing/planned recreational facilities in order to perform his work regarding water-based facilities. Glenn will be collecting this information as part of his data collection efforts.

John C. pointed out that the existing topography that will be used in making the drawing mylars will be inaccurate in instances where the topography has been changed since the topography was prepared. The contract calls for using existing topography supplied by the District. It was decided that we will omit the topography from those mylars that cover areas with out-of-date topography. It is possible to take topography from construction drawings; however, a problem would occur in matching datums.

Barbara noted that cultural resources surveys have not been performed for all distances along Queen Creek and Sanokai Wash. Thus, there will be gaps in the available cultural resources information. She will plot the areas of cultural resources surveys on 7.5-minute USGS topographic maps, and this information will be transposed onto the mylar drawings. She stated that she needs the location of the centerlines of the Queen Creek and Sanokai Wash study reaches for conducting the cultural resources literature search. Charlie will provide this information to Barbara and the other project team members.

Barbara also noted that the contract calls for only identifying cultural resources survey information along a one-mile-wide strip centered on Queen Creek and Sanokai Wash. Thus, detention basins outside this limit, which may be recommended in the alternatives, will not have cultural resources information provided.

Agenda Item 7 - Schedule

The project schedule needs to be provided to the District within fourteen days of the Notice-to-Proceed, which was issued the day of the meeting, Oct. 27, 1998. Fred will provide each team member with a framework schedule that shows time lines for each of the major tasks (i.e., Specific Tasks 2.0 through 4.0) and next subordinate tasks (e.g., 2.1, 2.2, etc.) Each team member will then provide time lines for the subtasks that they are

responsible for. Fred will take this information, prepare a preliminary project schedule, and transmit to all team members prior to submitting to the District.

Fred noted that the project schedule had been reduced to 380 calendar days from a 15-month working day schedule submitted with the proposal. He suggested that the team should strive to complete the project early since this would help all firms keep on budget.

Agenda Item 12 – Data Needed from the District

Team members contributed lists of data each would need from the District, which were added to the Huitt-Zollars list. John C. noted that the District need only provide topographic bluelines of mapping along the EMF, Queen Creek, and Sanokai Wash.

Agenda Item 15 – Administrative Items

Fred will provide each team member of e-mail addresses for the project team. (See attached.)

Billings from subconsultant firms need to be submitted by the 25th of the month to be assured of incorporation within Huitt-Zollars billing for that month. E-mail or faxed percent-completes will be adequate for receipt on the 25th, and hard copies of the billings can be sent by mail to arrive by the first of the following month.

Fred will distribute Excel spreadsheets to all subconsultant firms for their use in preparing monthly billings.

Action Items

1. The exact location of the eastern branch of Sanokai Wash will need to be provided by the District.
2. Each project team member needs to inform Fred of important meetings prior to the meeting, so that he is able to contact Tim Phillips in accordance with the contract scope of work.
3. Fred is to be copied on all important project documentation, and he will distribute this documentation to the appropriate team members.
4. Charlie will provide a map to Barbara and the other project team members showing the centerlines of the Queen Creek and Sanokai Wash study reaches.
5. Fred will provide each team member with a framework schedule that shows time lines for each of the major tasks (i.e., Specific Tasks 2.0 through 4.0) and next subordinate tasks (e.g., 2.1, 2.2, etc.) Each team member will then provide time lines for the subtasks that they are responsible for. Fred will take this information, prepare a preliminary project schedule, and transmit to all team members prior to submitting to the District.

6. Fred will provide each team member of e-mail addresses for the project team. (See attached.)

7. Billings from subconsultant firms need to be submitted by the 25th of the month to be assured of incorporation within Huitt-Zollars billing for that month.

8. Fred will distribute Excel spreadsheets to all subconsultant firms for their use in preparing monthly billings.

The preceding minutes were prepared by Fred Duren, Huitt-Zollars, and are his interpretation/understanding of the issues discussed in this meeting. Meeting attendees are asked to advise the author in writing or verbally of any discrepancies and/or omissions.

Fred K. Duren, Jr.

Date Prepared

attachments

c: Attendees
Jon Girand
file