



**Wickenburg Downtown Flooding Hazard
Mitigation Project
(FCD #2006C018)
CLOMR
FEMA Case No. 07-09-0738R**

**Response to
FEMA Review Comments of
April 17, 2007**

July 5, 2007



Federal Emergency Management Agency

Washington, D.C. 20472

OCT 05 2007

FLOOD CONTROL DISTRICT RECEIVED	
OCT 12 '07	
CH & GM	FINANCE
PIO	LEADS
ADMIN	IC&M
REG	P&PV
ENG	PLC
CONTRACTS	
ROUTING	CWR

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 07-09-0738R

The Honorable Fulton Brock
Chairman, Maricopa County
Board of Supervisors
301 West Jefferson, 10th Floor
Phoenix, AZ 85003

Community: Maricopa County, AZ
Community No.: 040037

104

Dear Mr. Brock:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Maricopa County, Arizona and Incorporated Areas, in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated January 30, 2007, Ms. Catherine W. Regester, P.E., CFM, Flood Control District of Maricopa County, requested that FEMA evaluate the effects that revised hydrologic and hydraulic analyses, updated topographic information, and changes associated with the Downtown Wickenburg Flooding Hazard Mitigation project along Sols Wash from the confluence with the Hassayampa River to approximately 4,380 feet upstream of Tegner Street (US89); Hospital Wash from the confluence with Sols Wash to approximately 1,100 feet upstream of Sombrero Road; and Cassandro Wash from the confluence with Sols Wash to just downstream of the Santa Fe Railroad would have on the flood hazard information shown on the effective FIRM and FIS report.

The proposed Downtown Wickenburg Flooding Hazard Mitigation project will involve the construction of a new US93 Bypass bridge near the mouth of Sols Wash, fill placed on the right overbanks of Sols Wash upstream of Tegner Street (US89), channelization of Sols Wash, and levees constructed along Sols Wash from 1,500 feet downstream to 1,600 feet upstream of Tegner Street (US89). The proposed project also includes replacement of the Cavaness Avenue culvert at Hospital Wash.

The affected areas in the unincorporated areas of Maricopa County are on the right overbank of Hospital Wash and the left overbank of Sols Wash from approximately 3,780 feet upstream to approximately 4,380 feet upstream of Tegner Street (US89). The remainder of the revised reach is within the Town of Wickenburg; therefore, a separate Conditional Letter of Map Revision (CLOMR) for that community was issued on the same date as this CLOMR.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Ms. Regester.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer model for Sols Wash, dated July 12, 2002, based on updated topographic information, and the submitted HY-8 and HEC-RAS hydraulic computer models for Hospital Wash, both undated, based on corrected culvert dimensions, updated topographic information, and a revised hydrologic analysis, were used as the base conditions

model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the submitted report entitled "Sols Wash Conditional Letter of Map Revision," prepared by Engineering and Environmental Consultants, Inc., dated December 2006, updated July 2007, and the data listed below are received, a revision to the FIRM would be warranted.

The existing conditions model for Sols Wash was based on updated topographic information. Our comparison of existing conditions to the effective flood hazard information revealed that the Base (1-percent-annual-chance) Flood Elevations (BFEs) for Sols Wash increased. The maximum increase, 4.8 feet, occurred just upstream of Tegner Street. The existing conditions model for Hospital Wash was based on a revised hydrologic analysis, updated topographic information, and corrected culvert dimensions. Our comparison of existing conditions to the effective flood hazard information revealed that the BFEs increased in some areas and decreased in some areas. The maximum increase, 2.6 feet, occurred approximately 200 feet downstream of Sombrero Road. The maximum decrease, 1.2 feet, occurred approximately 1,080 feet upstream of Cavaness Avenue.

As a result of the proposed project, the BFEs along Sols Wash will increase in some areas and decrease in some areas compared to the existing conditions. The maximum increase, 5.4 feet, will occur approximately 1,480 feet downstream of Tegner Street. The maximum decrease, 2.8 feet, will occur approximately 1,800 feet upstream of Tegner Road. The BFEs along Hospital Wash will decrease compared to existing conditions. The maximum decrease, approximately 0.8 feet, will occur just upstream of Cavaness Avenue.

As a result of the revised hydraulic analysis, updated topographic information, and the proposed project, the BFEs along Sols Wash will increase in some areas and decrease in others compared to the effective BFEs. The maximum increase, 5.5 feet, will occur just upstream of Tegner Street. The maximum decrease, 2.4 feet, will occur approximately 1,660 feet upstream of Tegner Street. The width of the Special Flood Hazard Area (SFHA) for Sols Wash will decrease compared to the effective SFHA width. The maximum decrease, approximately 1,450 feet, will occur approximately 1,000 feet upstream of Tegner Street.

As a result of the revised hydraulic analysis, updated topographic information, and the proposed project, the width of the regulatory floodway for Sols Wash will increase in some areas and decrease in some areas, compared to the effective floodway width. The maximum increase in floodway width, approximately 120 feet, will occur approximately 3,780 feet upstream of Tegner Street. The maximum decrease in floodway width, approximately 550 feet, will occur approximately 500 feet upstream of Tegner Street.

As a result of the revised hydrologic and hydraulic analysis, updated topographic information, and the proposed project, the BFEs along Hospital Wash will increase in some areas and decrease in some areas compared to the effective BFEs. The maximum increase, 2.6 feet, will occur approximately 200 feet downstream of Sombrero Road. The maximum decrease, 1.2 feet, will occur approximately 1,080 feet upstream of Cavaness Avenue. The width of the SFHA for Hospital Wash will increase in some areas and decrease in some areas compared to the effective SFHA width. The maximum increase in SFHA width, approximately 70 feet, will occur approximately 240 feet upstream of Sombrero Wash. The maximum decrease in SFHA width, approximately 380 feet, will occur just downstream of Rose Lane.

As a result of the revised hydrologic and hydraulic analysis, updated topographic information, and the proposed project, the width of the regulatory floodway for Hospital Wash will decrease compared to the effective floodway width. The maximum decrease in floodway width, approximately 100 feet, will occur approximately 750 feet downstream of Rose Lane.

As a result the proposed project, BFEs for Cassandro Wash will increase compared to effective BFEs. The maximum increase, 1.0 foot, will occur near the confluence with Sols Wash. The proposed project will also result in a revised SFHA and floodway for Cassandro Wash. The SFHA and floodway widths will be reduced as compared to the effective SFHA and floodway width because they are based solely on the hydraulic analysis for Cassandro Wash.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report.

- With this request, your community has complied with all requirements of Paragraph 65.12(a) of the NFIP regulations. Compliance with Paragraph 65.12(b) also is necessary before FEMA can issue a Letter of Map Revision when a community proposes to permit encroachments into the effective regulatory floodway that will cause increases in BFE in excess of those permitted under Paragraph 60.3(d)(3). Please provide evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect post-project conditions, as stated in Paragraph 65.12(b).
- Detailed application and certification forms, which were used in processing this request, must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)
- The detailed application and certification forms listed below may be required if as-built conditions differ from the preliminary plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology & Hydraulics Form"

Form 3, entitled "Riverine Structures Form"

Hydraulic analyses, for as-built conditions, of the base flood; the 10-percent-, 2-percent-, and 0.2-percent-annual-chance floods; and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundaries, must be submitted with Form 2.

- Effective October 1, 2007, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is \$4,800 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

FEMA National Service Provider
3601 Eisenhower Avenue
Alexandria, VA 22304-6425

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request
- A copy of the public notice distributed by your community stating its intent to revise the regulatory floodway, or a statement by your community that it has notified all affected property owners and affected adjacent jurisdictions
- An officially adopted maintenance and operation plan for the levee system. This plan, which may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation, must describe the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.
- Evidence of notification of all property owners who will be affected by any increases in width and/or shifting of the base floodplain and/or increases in BFE.
- An annotated FIRM, at the scale of the effective FIRM, that shows the revised base floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the base floodplain and floodway boundary delineations shown on the effective FIRM at the downstream and upstream ends of the revised reach
- On July 3, 2007, we completed a CLOMR request (Case No. 07-09-0858R), that proposes to revise a reach of the Hassayampa River that influences the flooding in the revised reach of Sols Wash for this CLOMR. Flood protection described in this CLOMR is incomplete without the proposed changes described in the submittal for Case No. 07-09-0858R. Therefore, the Letter of Map Revision that follows this CLOMR must also incorporate the changes described in Case 07-09-0738R for FEMA to revise the FIRM as described in this CLOMR.

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the BFEs would change as a result of the project, a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

The basis of this CLOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on

the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in Oakland, California, at (510) 627-7175. If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,



Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Directorate

Enclosures

cc: The Honorable Ron Badowski
Mayor, Town of Wickenburg

Mr. Lyle Murdock
Floodplain Administrator
Town of Wickenburg

Mr. Ted Collins, CFM
Principal Floodplain Administrator
Flood Control District of Maricopa County

Mr. Tim S. Phillips, P.E.
Chief Engineer and General Manager
Flood Control District of Maricopa County

Catherine W. Regester, P.E., CFM
Senior Civil Engineer
Flood Control District of Maricopa County

Mr. Brian Cosson, CFM
NFIP Coordinator
Office of Dam Safety and Flood Mitigation
Arizona Department of Water Resources

Lloyd Vick, P.E.
EEC



Federal Emergency Management Agency

Washington, D.C. 20472

OCT 05 2007

FLOOD CONTROL DISTRICT RECEIVED	
OCT 12 '07	
ICM & GM	FINANCE
PIO	ISLANDS
ADMIN	IC & M
REG	IP & PM
ENG	FILE
CONTRACTS	
RESULTS	
CWR	

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 07-09-0738R

The Honorable Ron Badowski
Mayor, Town of Wickenburg
155 North Tegner
Wickenburg, AZ 85390

Community: Town of Wickenburg, AZ
Community No.: 040056

104

Dear Mayor Badowski:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Maricopa County, Arizona and Incorporated Areas, in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated January 30, 2007, Ms. Catherine W. Regester, P.E., CFM, Flood Control District of Maricopa County, requested that FEMA evaluate the effects that revised hydrologic and hydraulic analyses, updated topographic information, and changes associated with the Downtown Wickenburg Flooding Hazard Mitigation project along Sols Wash from the confluence with the Hassayampa River to approximately 4,380 feet upstream of Tegner Street (US89); Hospital Wash from the confluence with Sols Wash to approximately 1,100 feet upstream of Sombrero Road; and Cassandro Wash from the confluence with Sols Wash to just downstream of the Santa Fe Railroad would have on the flood hazard information shown on the effective FIRM and FIS report.

This revision request also affects unincorporated areas of Maricopa County for some areas of the right overbank of Hospital Wash and the left overbank of Sols Wash from approximately 3,780 feet upstream to approximately 4,380 feet upstream of Tegner Street (US89). Therefore, a separate Conditional Letter of Map Revision (CLOMR) for that community was issued on the same date as this CLOMR.

The proposed Downtown Wickenburg Flooding Hazard Mitigation project will involve the construction of a new US93 Bypass bridge near the mouth of Sols Wash, fill placed on the right overbanks of Sols Wash upstream of Tegner Street (US89), channelization of Sols Wash, and levees constructed along Sols Wash from 1,500 feet downstream to 1,600 feet upstream of Tegner Street (US89). The proposed project also includes replacement of the Cavaness Avenue culvert at Hospital Wash.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Ms. Regester.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer model for Sols Wash, dated July 12, 2002, based on updated topographic information, and the submitted HY-8 and HEC-RAS hydraulic computer models for Hospital Wash, both undated, based on corrected culvert dimensions, updated topographic information, and a revised hydrologic analysis, were used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the submitted report entitled "Sols Wash Conditional Letter of

Map Revision” prepared by Engineering and Environmental Consultants, Inc., dated December 2006 and updated July 2007, and the data listed below are received, a revision to the FIRM would be warranted.

The existing conditions model for Sols Wash was based on updated topographic information. Our comparison of existing conditions to the effective flood hazard information revealed that the Base (1-percent-annual-chance) Flood Elevations (BFEs) for Sols Wash increased. The maximum increase, 4.8 feet, occurred just upstream of Tegner Street. The existing conditions model for Hospital Wash was based on a revised hydrologic analysis, updated topographic information, and corrected culvert dimensions. Our comparison of existing conditions to the effective flood hazard information revealed that the BFEs increased in some areas and decreased in some areas. The maximum increase, 2.6 feet, occurred approximately 200 feet downstream of Sombrero Road. The maximum decrease, 1.2 feet, occurred approximately 1,080 feet upstream of Cavaness Avenue.

As a result of the proposed project, the BFEs along Sols Wash will increase in some areas and decrease in some areas compared to the existing conditions. The maximum increase, 5.4 feet, will occur approximately 1,480 feet downstream of Tegner Street. The maximum decrease, 2.8 feet, will occur approximately 1,800 feet upstream of Tegner Road. The BFEs along Hospital Wash will decrease compared to existing conditions. The maximum decrease, approximately 0.8 feet, will occur just upstream of Cavaness Avenue.

As a result of the revised hydraulic analysis, updated topographic information, and the proposed project, the BFEs along Sols Wash will increase in some areas and decrease in others compared to the effective BFEs. The maximum increase, 5.5 feet, will occur just upstream of Tegner Street. The maximum decrease, 2.4 feet, will occur approximately 1,660 feet upstream of Tegner Street. The width of the Special Flood Hazard Area (SFHA) for Sols Wash will decrease compared to the effective SFHA width. The maximum decrease, approximately 1,450 feet, will occur approximately 1,000 feet upstream of Tegner Street.

As a result of the revised hydraulic analysis, updated topographic information, and the proposed project, the width of the regulatory floodway for Sols Wash will increase in some areas and decrease in some areas, compared to the effective floodway width. The maximum increase in floodway width, approximately 120 feet, will occur approximately 3,780 feet upstream of Tegner Street. The maximum decrease in floodway width, approximately 550 feet, will occur approximately 500 feet upstream of Tegner Street.

As a result of the revised hydrologic and hydraulic analysis, updated topographic information, and the proposed project, the BFEs along Hospital Wash will increase in some areas and decrease in some areas compared to the effective BFEs. The maximum increase, 2.6 feet, will occur approximately 200 feet downstream of Sombrero Road. The maximum decrease, 1.2 feet, will occur approximately 1,080 feet upstream of Cavaness Avenue. The width of the SFHA for Hospital Wash will increase in some areas and decrease in some areas compared to the effective SFHA width. The maximum increase in SFHA width, approximately 70 feet, will occur approximately 240 feet upstream of Sombrero Wash. The maximum decrease in SFHA width, approximately 380 feet, will occur just downstream of Rose Lane.

As a result of the revised hydrologic and hydraulic analysis, updated topographic information, and the proposed project, the width of the regulatory floodway for Hospital Wash will decrease compared to the effective floodway width. The maximum decrease in floodway width, approximately 100 feet, will occur approximately 750 feet downstream of Rose Lane.

As a result the proposed project, BFEs for Cassandro Wash will increase compared to effective BFEs. The maximum increase, 1.0 foot, will occur near the confluence with Sols Wash. The proposed project will

also result in a revised SFHA and floodway for Cassandro Wash. The SFHA and floodway widths will be reduced as compared to the effective SFHA and floodway width because they are based solely on the hydraulic analysis for Cassandro Wash.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report.

- With this request, your community has complied with all requirements of Paragraph 65.12(a) of the NFIP regulations. Compliance with Paragraph 65.12(b) also is necessary before FEMA can issue a Letter of Map Revision when a community proposes to permit encroachments into the effective regulatory floodway that will cause increases in BFE in excess of those permitted under Paragraph 60.3(d)(3). Please provide evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect post-project conditions, as stated in Paragraph 65.12(b).
- Detailed application and certification forms, which were used in processing this request, must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)
- The detailed application and certification forms listed below may be required if as-built conditions differ from the preliminary plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology & Hydraulics Form"

Form 3, entitled "Riverine Structures Form"

Hydraulic analyses, for as-built conditions, of the base flood; the 10-percent-, 2-percent-, and 0.2-percent-annual-chance floods; and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundaries, must be submitted with Form 2.

- Effective October 1, 2007, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is \$4,800 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

FEMA National Service Provider
3601 Eisenhower Avenue
Alexandria, VA 22304-6425

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request
- A copy of the public notice distributed by your community stating its intent to revise the regulatory floodway, or a statement by your community that it has notified all affected property owners and affected adjacent jurisdictions
- An officially adopted maintenance and operation plan for the levee system. This plan, which may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation, must describe the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.
- Evidence of notification of all property owners who will be affected by any increases in width and/or shifting of the base floodplain and/or increases in BFE.
- An annotated FIRM, at the scale of the effective FIRM, that shows the revised base floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the base floodplain and floodway boundary delineations shown on the effective FIRM at the downstream and upstream ends of the revised reach
- On July 3, 2007, we completed a CLOMR request (Case No. 07-09-0858R), that proposes to revise a reach of the Hassayampa River that influences the flooding in the revised reach of Sols Wash for this CLOMR. Flood protection described in this CLOMR is incomplete without the proposed changes described in the submittal for Case No. 07-09-0858R. Therefore, the Letter of Map Revision that follows this CLOMR must also incorporate the changes described in Case 07-09-0738R for FEMA to revise the FIRM as described in this CLOMR.

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the BFEs would change as a result of the project, a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

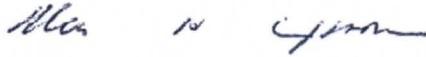
The basis of this CLOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in

Oakland, California, at (510) 627-7175. If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,



Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Directorate

Enclosures

cc: The Honorable Fulton Brock
Chairman, Maricopa County
Board of Supervisors

Mr. Lyle Murdock
Floodplain Administrator
Town of Wickenburg

Mr. Ted Collins, CFM
Principal Floodplain Administrator
Flood Control District of Maricopa County

Catherine W. Regester, P.E., CFM
Senior Civil Engineer
Flood Control District of Maricopa County

Mr. Tim S. Phillips, P.E.
Chief Engineer and General Manager
Flood Control District of Maricopa County

Mr. Brian Cosson, CFM
NFIP Coordinator
Office of Dam Safety and Flood Mitigation
Arizona Department of Water Resources

Lloyd Vick, P.E.
EEC



NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

FLOOD CONTROL DISTRICT RECEIVED	
APR 20 '07	
CH & GM	FINANCE
PIO	LANDS
ADMIN	O & M
REG	P & PM
ENG	FILE
CONTRACTS	
ROUTING	

April 17, 2007

Ms. Catherine W. Register, P.E., CFM
 Flood Control District of Maricopa County
 2801 West Durango Street
 Phoenix, Arizona 85009

IN REPLY REFER TO:
 Case No.: 07-09-0738R
 Communities: Town of Wickenburg
 and Maricopa County, AZ
 Community Nos.: 040056 and 040037

316-AD

Dear Ms. Register:

This responds to your request dated January 30, 2007, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a conditional revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Downtown Wickenburg Flooding Hazard Mitigation Project/FCD2005C006
Flooding Source:	Sols Wash and Hospital Wash
FIRM Panel(s) Affected:	04013C0251 H

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is enclosed for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please call the Revisions Coordinator for your State, Mounir Boudjemaa, M.S., who may be reached at (703) 960-8800, ext. 3012.

Sincerely,



Sheila M. Norlin, CFM
National LOMC Manager
Michael Baker Jr., Inc.

Enclosures

cc: Mr. Lyle Murdock
Floodplain Administrator
Town of Wickenburg
155 North Tegner Street, Suite A
Wickenburg, AZ 85390

Mr. Timothy S. Phillips
Chief Engineer and General Manager
Maricopa County
2801 West Durango Street
Phoenix, AZ 85009



NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

Summary of Additional Data Required to Support a Conditional Letter of Map Revision (CLOMR)

Case No.: 07-09-0738R

Requester: Ms. Catherine Regester, P.E., CFM

Communities: Town of Wickenburg and
Maricopa County, AZ

Community Nos.: 040056 and 040037

The issues listed below must be addressed before we can continue the review of your request.

1. Our review revealed that the submitted HEC-1 hydrologic models for Hospital Wash and the local flooding utilize an unrecognized rainfall distribution. Natural Resources Conservation Service (NRCS) procedures recommend that the Type II synthetic rainfall distribution should be used for your area. Please revise the submitted HEC-1 hydrologic models to utilize the Type II synthetic rainfall distribution or explain why this is not necessary. In addition, please make any associated revisions to the submitted HEC-RAS hydraulic models.
2. Please provide survey data or as-built information, certified by a registered professional engineer, for the existing Cavaness Avenue crossing over Hospital Wash.
3. Please submit an existing conditions hydraulic model to demonstrate the effects of the proposed project on the elevations of the base (1-percent-annual-chance) flood of Hospital Wash.
4. Our review revealed that the flow change locations in the submitted HEC-RAS hydraulic models for Sols Wash do not match the effective flow change locations from the FIS. Please correct the flow change locations to match the FIS, or explain why this is not necessary.
5. Our review revealed that the proposed project will affect the downstream portion of Cassandro Wash. Please provide existing and proposed conditions analysis, modeling, and mapping for Cassandro Wash.
6. The actual results of SEEP/W and the stability arcs that support the data in paragraph 5 of section E of the MT-2 forms need to be submitted for the record.
7. Please submit the specifications for the levee and structural fill, including material types, placement, moisture content and percent compaction.
8. The Special Flood Hazard Area (SFHA), the area that would be inundated by the base (1-percent-annual-chance) flood, designated Zone AO is subject to shallow flooding, usually sheet flow on sloping terrain, with average depths between 1 foot and 3 feet. This zone designation is typically not used on the overbanks of Zone AE flooding. Please change the Zone AO to Zone AE on the submitted maps entitled "Sols Wash CLOMR", panels 1-10, prepared by Engineering and Environmental Consultants, dated December 2006, or explain why this is not necessary.

3601 Eisenhower Avenue, Alexandria, VA 22304-6425 PH:1-877-FEMA MAP FX: 703.960.9125

The Mapping on Demand Team, under contract with the Federal Emergency Management Agency, is the
National Service Provider for the National Flood Insurance Program

9. The above-mentioned topographic work maps do not provide essential information required to complete our detailed review of this request. Please provide the following information, which was omitted from the submitted topographic work maps.

- (a) Boundary delineations of the currently effective base floodplain and floodway
- (b) Boundary delineation of the existing conditions base floodplain
- (c) Existing conditions topographic contour information, including the topographic information that has been altered by the existing floodwall and Goldmine Village improvements
- (d) Proposed conditions topographic contour information, including topographic information that will be altered by the proposed levee, which can be used to verify the boundary delineation of the base floodplain
- (e) Please submit both a hard copy and a digital copy of all work maps

10. Our detailed review revealed increases in Base Flood Elevation (BFE) as a result of the proposed project. Please provide evidence that the project meets all requirements of Section 65.12 of the NFIP regulations, including but not limited to: documentation of individual legal notice to all affected property owners, explaining the effects of the proposed action on their property; certification that no structures are located in areas that would be affected by the increases in BFE; and an evaluation of alternatives which would not result in base flood elevation increases.

Please send the required data directly to us at the address shown at the bottom of the first page. For identification purposes, please include the case number referenced above on all correspondence.



Federal Emergency Management Agency

Washington, D.C. 20472

FEE SCHEDULE FOR PROCESSING REQUESTS FOR MAP CHANGES

This notice contains the fee schedule for processing certain types of requests for changes to National Flood Insurance Program (NFIP) maps. The fee schedule allows FEMA to further reduce the expenses to the NFIP by more fully recovering the costs associated with processing conditional and final map change requests. The fee schedule for map changes is effective for all requests dated October 30, 2005, or later and supersedes the fee schedule that was established on September 1, 2002.

To develop the fee schedule for conditional and final map change requests, FEMA evaluated the actual costs of reviewing and processing requests for Conditional Letters of Map Amendment (CLOMAs), Conditional Letters of Map Revision – Based on Fill (CLOMR-Fs), Conditional Letters of Map Revision (CLOMRs), Letters of Map Revision – Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs), and Physical Map Revisions (PMRs).

Based on our review of actual cost data for Fiscal Years 2004 and 2005, FEMA has established the following review and processing fees, which are to be submitted with all requests that are not otherwise exempted under 44 CFR 72.5.

Fee Schedule for Requests for CLOMAs, CLOMR-Fs, and LOMR-Fs

Request for single-lot/single-structure CLOMA and CLOMR-F.....	\$500
Request for single-lot/single structure LOMR-F	\$425
Request for single-lot/single-structure LOMR-F based on as-built information (CLOMR-F previously issued by us)	\$325
Request for multiple-lot/multiple-structure CLOMA	\$700
Request for multiple-lot/multiple-structure CLOMR-F and LOMR-F	\$800
Request for multiple-lot/multiple-structure LOMR-F based on as-built information (CLOMR-F previously issued)	\$700

Fee Schedule for Requests for CLOMRs

Request based on new hydrology, bridge, culvert, channel, or combination of any of these.....	\$4,000
Request based on levee, berm, or other structural measure	\$5,000

Fee Schedule for Requests for LOMRs and PMRs

Requesters must submit the review and processing fees shown below with requests for LOMRs and PMRs that are not based on structural measures or alluvial fans.

Request based on bridge, culvert, channel, or combination thereof.....	\$4,400
Request based on levee, berm, or other structural measure	\$6,000
Request based on as-built information submitted as follow-up to CLOMR.....	\$4,000

Fees for CLOMRs, LOMRs, and PMRs Based on Structural Measures on Alluvial Fans

FEMA has revised the initial fee for requests for CLOMRs and LOMRs based on structural measures on alluvial fans to \$5,600. FEMA will also continue to recover the remainder of the review and processing costs by invoicing the requester before issuing a determination letter, consistent with current practice. The prevailing private-sector labor rate charged to FEMA (\$60 per hour) will be used to calculate the total reimbursable fees.

Payment Submission Requirements

Requesters must make fee payments for non-exempt requests before we render services. This payment must be in the form of a check or money order or by credit card payment. Please make all checks and money orders in U.S. funds payable to the *National Flood Insurance Program*. We will deposit all fees collected to the National Flood Insurance Fund, which is the source of funding for providing this service.





Flood Control District of Maricopa County

INTEROFFICE MEMORANDUM

Date: January 19, 2007

To: Timothy S. Phillips, P.E., Chief Engineer and General Manager *TSP 1/25/07*

From: Catherine W. Register, P.E., CFM

Subject: CLOMR package for Downtown Wickenburg Flood Hazard Mitigation Project

The subject project will tie-in to ADOT's US 93 Interim By-pass project at the confluence of Sols Wash and the Hassayampa River. The District's project will reduce flooding along Sols Wash through a combination of channelization, earthen levees and concrete floodwalls. The attached annotated FIRM panel shows the effective floodplain/floodway in blue, changes due to ADOT's project in green, and changes due to the District's project in red and yellow. Per the current GIS, all changes to the floodplain are within the Town of Wickenburg which performs its own floodplain management. A revised delineation for flooding along Hospital Wash is also proposed under this CLOMR. The Hospital Wash re-delineation is based on more detailed mapping and a lower 100-YR discharge. As this is a Conditional Letter of Map Revision, the analysis does **not** represent the "best available data". The project must first be constructed and a LOMR, based on as-built data, be approved by FEMA before the District can regulate to the improved conditions.

The project was designed by EEC under FCD 2005C006. The project has been extensively coordinated with the Town of Wickenburg, ADOT, ADOT's design consultant (Jacobs Engineering), and several local landowners.

Please concur and sign the attached FEMA form for submittal of the CLOMR to FEMA.

<i>C. Scott Vogel</i> PPM Project Manager	<i>1/24/07</i> Date:	
<i>[Signature]</i> Hydrology/Hydraulics Branch Manager	<i>1/19/07</i> Date:	
<i>Ryan M. Thomas</i> Floodplain Management Branch Manager	<i>1/24/07</i> Date:	
<i>Jim Mays</i> Floodplain Delineation Branch Manager	<i>1/22/07</i> Date:	
<i>Ed [Signature]</i> Engineering Division Manager	<i>1/24/07</i> Date:	
File Copies: 1. _____ 2. _____	<input type="checkbox"/> GIS Posted (Pending Floodplain Only) Date: N/A <input type="checkbox"/> No County Permits in this area Date: N/A	



Flood Control District of Maricopa County

Board of Directors
Fulton Brock, District 1
Don Stapley, District 2
Andrew Kunasek, District 3
Max Wilson, District 4
Mary Rose Wilcox, District 5

www.fcd.maricopa.gov

2801 West Durango Street
Phoenix, Arizona 85009
Phone: 602-506-1501
Fax: 602-506-4601
TT: 602-505-5897

July 5, 2007

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, #600
Alexandria, VA 22304-6425

ATTN: Mounir Boudjema

RE: Downtown Wickenburg Flooding Hazard Mitigation Project, CLOMR
Town of Wickenburg and Unincorporated County, Maricopa County, Arizona
FEMA Case No.: 07-09-0738R

Dear Mr. Boudjema:

We are in receipt of FEMA's comment letter dated April 17, 2007. This submittal responds to those comments. A detailed response to each comment is provided on the attached sheet. Where needed, additional information/back-up data (including revised work maps) is provided in the enclosed notebook.

Since our original submittal, there have been two design modifications. The first relates to the Goldmine Village property on the south side of Sols Wash, just west of the Tegner Street Bridge. Additional fill will be placed on the site, thereby, eliminating the need for much of the floodwall shown on the original submittal. A swale will be constructed within the property to allow on-site flows to drain into Sols Wash. This proposed on-site grading is shown on the enclosed work maps.

The second modification relates to the proposed storm drain running under Tegner Street on the north side of Sols Wash. This pipe was slightly re-aligned, resulting in a shorter length of pipe.

A few additional minor changes have been made to the design drawings, including the addition of details, correction of minor plotting errors, etc. A revised plan set is enclosed. The revised sheet numbers are highlighted in the plan set. Additionally, a "tag" has been placed on each

Mr. Mounir Boudjemaa
Page 2 of 2
July 5, 2007

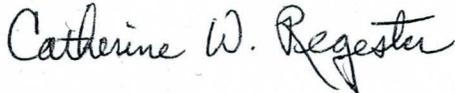
revised sheet so that you may more easily locate the revised sheets. (Please note: The quantities sheets have been revised but are not "tagged". Revised cross section sheets are also not "tagged".)

The following items are included for your review:

- *Wickenburg Downtown Flooding Hazard Mitigation Project, CLOMR, Response to FEMA Review Comments of April 17, 2007* notebook, including revised work maps, and digital files (2 CDs).
- *Wickenburg Downtown Flooding Hazard Mitigation Project*, final construction drawings with revisions through May 14, 2007.
- *Wickenburg Downtown Flooding Hazard Mitigation Project, Construction Documents*, dated January 17, 2007.

If you have any questions or require additional information, please feel free to call me at 602-506-4001 or contact me by e-mail at cwr@mail.maricopa.gov.

Yours truly,



Catherine W. Regester, P.E., CFM
Senior Civil Engineer

Enclosures: Listed above

Wickenburg Downtown CLOMR
FEMA Case No.: 07-09-0738R

Response to FEMA Comments dated April 17, 2007

1. The rainfall distribution utilized in the HEC-1 models for Hospital Wash and the local flooding is a hypothetical distribution for the 100-year, 6-hour storm. The 6-hour distribution was chosen in accordance with the criteria in the *Drainage Design Manual for Maricopa County, Arizona, Volume I Hydrology* which calls for use of the 6-hour storm distribution for flood studies of drainage areas less than 20 sq-mi. Generally, the 6-hour distribution results in higher peak discharges than the 100-year, 24-hour (SCS Type II distribution) for small watersheds as is evidenced in *Table 4.1.2 Peak Discharge for Hospital Wash*. The 6-hour storm distribution used in this study has been used on numerous other flood studies accepted by FEMA since the adoption of the District's *Drainage Design Manual* in 1991. If more information is needed, the District's manual is available for review at the following website:
<http://www.fcd.maricopa.gov/Resources/Software.asp>.
2. The as-built survey data for the existing crossing over Hospital Wash is enclosed as requested. The data is certified by a Registered Land Surveyor.
3. The existing 4 - 2.6 ft X 2 ft box culverts under Cavaness Ave were analyzed using HY-8. The results show, at the project 100-YR WSEL (el. 2068.94 @ project HEC-RAS cross section 0.081), the existing boxes are able to pass approximately 115 cfs. The project 2 - 10 ft X 4 ft RCBs are able to pass the full 100-YR Q of 500 cfs at this elevation. The existing conditions would include an overtopping of Cavaness Ave and significant flooding in the area. The project will lower the WSELs and contain the 100-YR flow to the proposed channel. For more information on the existing crossing at Cavaness Ave please see Detail M in the construction drawings and the submitted as-built survey data for the existing crossing. The results of the HY-8 analysis are enclosed in hard copy and on CD.
4. There are 3 effective discharge values along the study reach. They are: "Above confluence of Hospital Wash" (14,413 cfs), "Above confluence of Casandro Wash" (14,459 cfs), and, "At confluence with the Hassayampa" (15,045 cfs). Based on the FIS descriptions, it appears that the change between "Above confluence of Hospital Wash" and "Above confluence of Casandro Wash" may have been more appropriately made at cross section 0.708 rather than at cross section 1.081. The difference between these two discharges is only 46 cfs, or 0.3% of the total discharge. Modifying the HEC-RAS modeling results in a maximum lowering of the 100-YR WSEL by 0.03 ft at cross section 1.081 and by 0.01 ft at cross sections 0.746 through 1.021 and 1.224 through 1.319. A revised model (T1Q.prj) is enclosed. An Excel spreadsheet comparing the WSELs of the previously submitted model to the revised is also enclosed. No revision of the floodplain limits is needed.

In regard to the change between the "Above confluence of Casandro Wash" discharge at cross section 0.505 to the "At confluence with the Hassayampa"

discharge at cross section 0.485, this change is consistent with the location of the inflow from Casandro Wash.

5. The backwater flooding from Sols Wash is contained within a proposed swale on the Goldmine Villages property. The floodplain limits for this backwater area (el. 2065.9 NAVD 1988) have been added to the plans and tied-in to the Casandro Wash flood limits.
6. Please see the memo from Gannett Fleming, Inc. included in the submitted notebook.
7. A copy of the **Construction Documents** for the project is enclosed. Please see *Section 211 - Engineered Fill Construction* (page has been "tagged") for information regarding the specs for the levee and structural fill. If information is needed regarding the **MAG Uniform Standard Specifications**, that document may be obtained at the following web address:
<http://www.mag.maricopa.gov/pdf/cms.resource/2007-English-Written-Specifications.pdf>
8. At approximately HEC-RAS cross section 0.995, there is a "break-out" of flows over the north bank of Sols Wash into the north overbank area. The flow will continue through the mobile home community on the north bank of Sols Wash until it falls back into Sols Wash at approximately the Sols Wash/Hospital Wash Confluence. The area of this break-out flow has been shown as a Zone AO on the workmaps as it is an area of sheet flow with average depths of less than one foot. A Zone AE with BFEs associated with Sols Wash would not be appropriate for this area as only the ground at the actual break-out location would show as being below the BFE. (Please see section 5.1 of the submitted CLOMR notebook.)
9. Revised work maps are enclosed.
 - a) The effective floodplain/floodway limits have been added to the workmaps.
 - b) The existing conditions floodplain was not studied under this project as the overall intent of this project is to channelize the Sols Wash floodplain, thereby, greatly reducing the limits of the floodplain. Based on topographic information developed for this study and that for the original FEMA study for Sols Wash, however, there is no reason to expect any significant difference between a current "existing" conditions floodplain and that of the effective study. The only exception to this is in the north overbank area where flows on the west side of Tegner Street are likely to cross over the roadway into the north overbank area on the east side of Tegner St. This is not reflected in the effective delineation even though the original FEMA study workmaps indicated that flow elevations were such that 100-YR flows might overtop Tegner St. An existing conditions study, which addressed the flows overtopping Tegner, was performed under the Goldmine Village request for a CLOMR, submitted to and approved by FEMA.
 - c) Goldmine Village prepared a request for a CLOMR which was reviewed and approved by FEMA in a letter dated May 19, 2003. The proposed site work under that CLOMR included the placement of fill and the construction of some drainage structures. Much of the improvements have been completed

per the CLOMR. Some additional fill is required on the site to meet the CLOMR geometry. The Wickenburg Downtown Project will provide that fill. The proposed grading for the property has been added to the workmaps. The existing conditions topo shown on the submitted work maps is as the site currently exists today. Pre-fill topographic data is available in the Goldmine Village CLOMR. Please note: there is no existing floodwall on the Goldmine Village property.

- d) Proposed topographic contours have been added to reflect the proposed fill on the Goldmine Village property. Additional contours have been added where practical. Please note, in areas of vertical floodwalls, contours cannot be shown. In these areas, please refer to the cross section plots. Some revisions, to correct some minor discrepancies, have been made to several of the cross section sheets since the original submittal. Please see the revised plots in the design plan set.
 - e) Hard copies of the work maps are enclosed as is a CD containing the digital .PDF files of the work maps and shape files of the floodplain delineation.
10. The project meets the requirements of Section 65.12 of the NFIP regulations. Any increases in the BFEs occur in Sols Wash downstream of effective cross section G which is located approximately 1000 ft upstream of the Tegner St Bridge. This cross section corresponds approximately to project cross section 0.614. Comparing the WSELs: the BFE at effective cross section G is 2067.68 (NGVD 1929) + 1.98 ft (conversion factor from NGVD to NAVD 1988) yields a WSEL of 2069.66 (NAVD). Project cross section 0.614 has a WSEL of 2067.27 (NAVD) or 2.39 ft lower than the effective section. WSELs upstream of this location then remain lower until the tie-in at effective cross section M where the project WSEL is still lower than the effective but within the 0.5 ft tolerance permitted by FEMA. For the area impacted by the increases in BFEs, the District is purchasing a Right-of-Way for the project. The limits of that R-O-W are shown on the design drawings as "NEW R/W". The R-O-W has also been added to the revised work maps for clarification. The R-O-W ties in to the ADO T R-O-W at Tegner St and at the US 93 By-Pass. The Town of Wickenburg owns the property (Coffinger Park) on the north side of Sols Wash downstream of Tegner St; and, the property (Town of Wickenburg Community Center) on the south side of Sols downstream of River St. The Town is a project partner and no R-O-W is required on these properties. No buildings are located within the flood limits within the District's proposed R-O-W. Please see response to Comment # 10 in the enclosed notebook for documentation of notifications.

**FEMA Review Comments of
April 17, 2007**

FEMA Letter



NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

April 17, 2007

Ms. Catherine W. Regester, P.E., CFM
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

IN REPLY REFER TO:
Case No.: 07-09-0738R
Communities: Town of Wickenburg
and Maricopa County, AZ
Community Nos.: 040056 and 040037

FLOOD CONTROL DISTRICT RECEIVED	
APR 20 '07	
ICH & GM	FINANCE
PIO	LANDS
ADMIN	O & M
REG	P & PM
ENG	FILE
CONTRACTS	
ROUTING	

316-AD

Dear Ms. Regester:

This responds to your request dated January 30, 2007, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a conditional revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Downtown Wickenburg Flooding Hazard Mitigation Project/FCD2005C006
Flooding Source:	Sols Wash and Hospital Wash
FIRM Panel(s) Affected:	04013C0251 H

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is enclosed for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please call the Revisions Coordinator for your State, Mounir Boudjema, M.S., who may be reached at (703) 960-8800, ext. 3012.

Sincerely,



Sheila M. Norlin, CFM
National LOMC Manager
Michael Baker Jr., Inc.

Enclosures

cc: Mr. Lyle Murdock
Floodplain Administrator
Town of Wickenburg
155 North Tegner Street, Suite A
Wickenburg, AZ 85390

Mr. Timothy S. Phillips
Chief Engineer and General Manager
Maricopa County
2801 West Durango Street
Phoenix, AZ 85009



NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

Summary of Additional Data Required to Support a Conditional Letter of Map Revision (CLOMR)

Case No.: 07-09-0738R

Requester: Ms. Catherine Register, P.E., CFM

Communities: Town of Wickenburg and
Maricopa County, AZ

Community Nos.: 040056 and 040037

The issues listed below must be addressed before we can continue the review of your request.

1. Our review revealed that the submitted HEC-1 hydrologic models for Hospital Wash and the local flooding utilize an unrecognized rainfall distribution. Natural Resources Conservation Service (NRCS) procedures recommend that the Type II synthetic rainfall distribution should be used for your area. Please revise the submitted HEC-1 hydrologic models to utilize the Type II synthetic rainfall distribution or explain why this is not necessary. In addition, please make any associated revisions to the submitted HEC-RAS hydraulic models.
2. Please provide survey data or as-built information, certified by a registered professional engineer, for the existing Cavaness Avenue crossing over Hospital Wash.
3. Please submit an existing conditions hydraulic model to demonstrate the effects of the proposed project on the elevations of the base (1-percent-annual-chance) flood of Hospital Wash.
4. Our review revealed that the flow change locations in the submitted HEC-RAS hydraulic models for Sols Wash do not match the effective flow change locations from the FIS. Please correct the flow change locations to match the FIS, or explain why this is not necessary.
5. Our review revealed that the proposed project will affect the downstream portion of Cassandro Wash. Please provide existing and proposed conditions analysis, modeling, and mapping for Cassandro Wash.
6. The actual results of SEEP/W and the stability arcs that support the data in paragraph 5 of section E of the MT-2 forms need to be submitted for the record.
7. Please submit the specifications for the levee and structural fill, including material types, placement, moisture content and percent compaction.
8. The Special Flood Hazard Area (SFHA), the area that would be inundated by the base (1-percent-annual-chance) flood, designated Zone AO is subject to shallow flooding, usually sheet flow on sloping terrain, with average depths between 1 foot and 3 feet. This zone designation is typically not used on the overbanks of Zone AE flooding. Please change the Zone AO to Zone AE on the submitted maps entitled "Sols Wash CLOMR", panels 1-10, prepared by Engineering and Environmental Consultants, dated December 2006, or explain why this is not necessary.

9. The above-mentioned topographic work maps do not provide essential information required to complete our detailed review of this request. Please provide the following information, which was omitted from the submitted topographic work maps.

- (a) Boundary delineations of the currently effective base floodplain and floodway
- (b) Boundary delineation of the existing conditions base floodplain
- (c) Existing conditions topographic contour information, including the topographic information that has been altered by the existing floodwall and Goldmine Village improvements
- (d) Proposed conditions topographic contour information, including topographic information that will be altered by the proposed levee, which can be used to verify the boundary delineation of the base floodplain
- (e) Please submit both a hard copy and a digital copy of all work maps

10. Our detailed review revealed increases in Base Flood Elevation (BFE) as a result of the proposed project. Please provide evidence that the project meets all requirements of Section 65.12 of the NFIP regulations, including but not limited to: documentation of individual legal notice to all affected property owners, explaining the effects of the proposed action on their property; certification that no structures are located in areas that would be affected by the increases in BFE; and an evaluation of alternatives which would not result in base flood elevation increases.

Please send the required data directly to us at the address shown at the bottom of the first page. For identification purposes, please include the case number referenced above on all correspondence.



Federal Emergency Management Agency

Washington, D.C. 20472

FEE SCHEDULE FOR PROCESSING REQUESTS FOR MAP CHANGES

This notice contains the fee schedule for processing certain types of requests for changes to National Flood Insurance Program (NFIP) maps. The fee schedule allows FEMA to further reduce the expenses to the NFIP by more fully recovering the costs associated with processing conditional and final map change requests. The fee schedule for map changes is effective for all requests dated October 30, 2005, or later and supersedes the fee schedule that was established on September 1, 2002.

To develop the fee schedule for conditional and final map change requests, FEMA evaluated the actual costs of reviewing and processing requests for Conditional Letters of Map Amendment (CLOMAs), Conditional Letters of Map Revision – Based on Fill (CLOMR-Fs), Conditional Letters of Map Revision (CLOMRs), Letters of Map Revision – Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs), and Physical Map Revisions (PMRs).

Based on our review of actual cost data for Fiscal Years 2004 and 2005, FEMA has established the following review and processing fees, which are to be submitted with all requests that are not otherwise exempted under 44 CFR 72.5.

Fee Schedule for Requests for CLOMAs, CLOMR-Fs, and LOMR-Fs

Request for single-lot/single-structure CLOMA and CLOMR-F.....	\$500
Request for single-lot/single structure LOMR-F	\$425
Request for single-lot/single-structure LOMR-F based on as-built information (CLOMR-F previously issued by us).....	\$325
Request for multiple-lot/multiple-structure CLOMA	\$700
Request for multiple-lot/multiple-structure CLOMR-F and LOMR-F	\$800
Request for multiple-lot/multiple-structure LOMR-F based on as-built information (CLOMR-F previously issued)	\$700

Fee Schedule for Requests for CLOMRs

Request based on new hydrology, bridge, culvert, channel, or combination of any of these	\$4,000
Request based on levee, berm, or other structural measure	\$5,000

Fee Schedule for Requests for LOMRs and PMRs

Requesters must submit the review and processing fees shown below with requests for LOMRs and PMRs that are not based on structural measures or alluvial fans.

Request based on bridge, culvert, channel, or combination thereof.....	\$4,400
Request based on levee, berm, or other structural measure	\$6,000
Request based on as-built information submitted as follow-up to CLOMR.....	\$4,000

Fees for CLOMRs, LOMRs, and PMRs Based on Structural Measures on Alluvial Fans

FEMA has revised the initial fee for requests for CLOMRs and LOMRs based on structural measures on alluvial fans to \$5,600. FEMA will also continue to recover the remainder of the review and processing costs by invoicing the requester before issuing a determination letter, consistent with current practice. The prevailing private-sector labor rate charged to FEMA (\$60 per hour) will be used to calculate the total reimbursable fees.

Payment Submission Requirements

Requesters must make fee payments for non-exempt requests before we render services. This payment must be in the form of a check or money order or by credit card payment. Please make all checks and money orders in U.S. funds payable to the *National Flood Insurance Program*. We will deposit all fees collected to the National Flood Insurance Fund, which is the source of funding for providing this service.

**Response to FEMA Review Comments of
April 17, 2007**

Comment #2

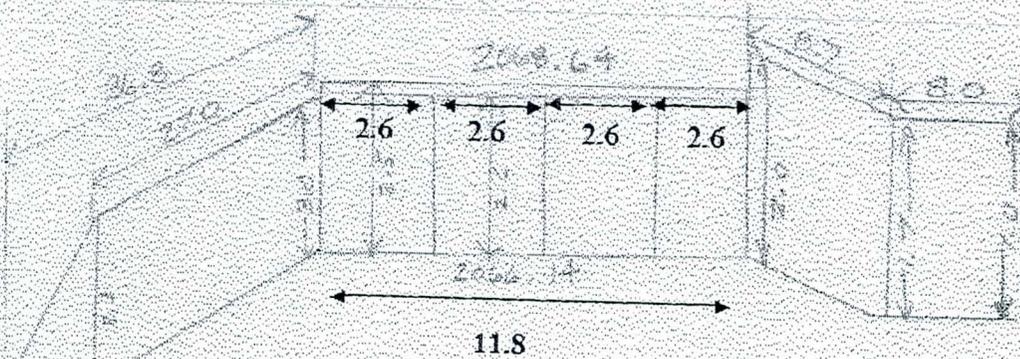
FCDMC Contract 2003C050
 Task 9 Sols Wash Survey
 Structure Detail Worksheet
 SW Mapping Project 05-0031

SEE ORIGINAL
 TDN, APPENDIX C
 FOR PREVIOUS
 SUBMITTAL

Type of Structure: Box Culvert Date: 3-6-06
 File Name: _____ Description Name: Hospital Wash
 Party Chief: DPK GDAC Control It # _____

(UPSTREAM)

Photo Taken HW-0-1 HW-0-2

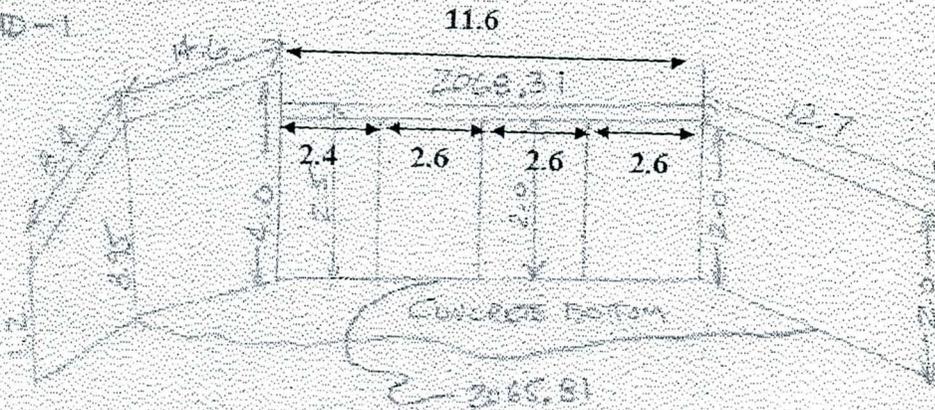


General Condition of the Structure: Good

(DOWNSTREAM)

Photo Taken

HW-ID-1



General Condition of the Structure: Good

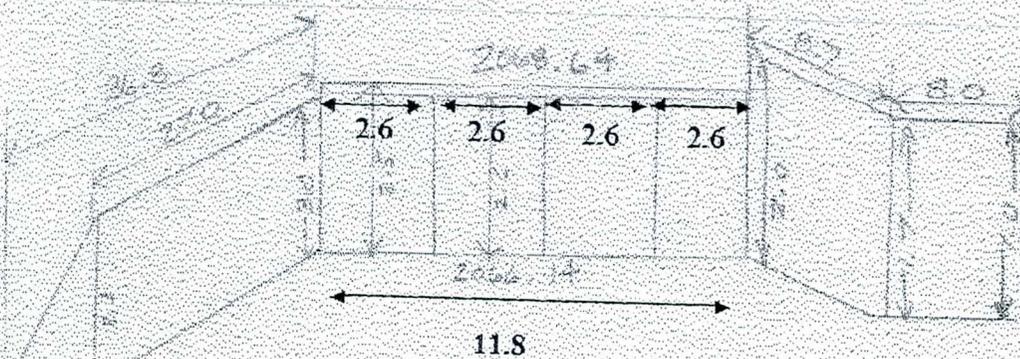


FCDMC Contract 2003C050
 Task 9 Sols Wash Survey
 Structure Detail Worksheet
 SW Mapping Project 05-0031

Type of Structure: Box Culvert Date: 5-6-06
 File Name: _____ Description Name: HOSPITAL WASH
 Party Chief: DDC GDAC Control It # _____

(UPSTREAM)

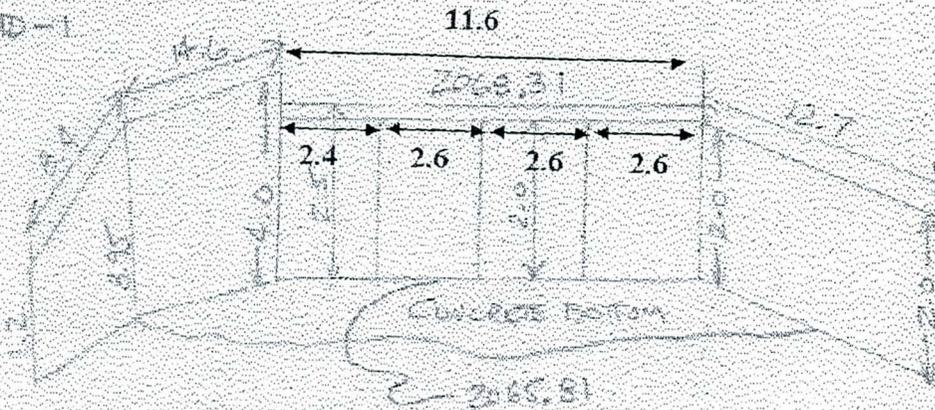
Photo Taken HW=0-1, HW=0-2



General Condition of the Structure: Good

(DOWNSTREAM)

Photo Taken
 HW-ID-1



General Condition of the Structure: Good



**Response to FEMA Review Comments of
April 17, 2007**

Comment #3

HEC-RAS Plan: Hospital River: Hospital Wash Reach: Hospital Wash

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Hospital Wash	0.703	100-yr	500.00	2100.45	2102.71	2102.47	2102.94	0.012613	4.13	141.34	136.58	0.63
Hospital Wash	0.703	100-yr FW	500.00	2100.45	2102.75	2102.46	2103.12	0.016806	4.84	103.29	74.44	0.72
Hospital Wash	0.703	10-yr	170.00	2100.45	2102.06	2101.87	2102.22	0.016951	3.20	55.14	100.77	0.66
Hospital Wash	0.703	50-yr	250.00	2100.45	2102.27	2102.08	2102.44	0.014379	3.46	82.06	133.36	0.63
Hospital Wash	0.703	500-yr	845.00	2100.45	2103.12	2102.80	2103.45	0.012622	4.95	199.10	139.67	0.66
Hospital Wash	0.643	100-yr	500.00	2095.69	2098.06	2097.95	2098.41	0.015820	5.15	123.09	126.20	0.72
Hospital Wash	0.643	100-yr FW	500.00	2095.69	2098.54	2097.97	2098.92	0.010549	4.93	102.66	52.28	0.61
Hospital Wash	0.643	10-yr	170.00	2095.69	2097.49	2097.09	2097.66	0.012150	3.37	55.62	91.26	0.59
Hospital Wash	0.643	50-yr	250.00	2095.69	2097.67	2097.45	2097.90	0.013966	3.98	75.13	116.61	0.65
Hospital Wash	0.643	500-yr	845.00	2095.69	2098.50	2098.34	2098.94	0.015675	6.03	180.90	135.64	0.75
Hospital Wash	0.577	100-yr	500.00	2091.17	2093.16		2093.38	0.013216	4.22	152.75	176.36	0.64
Hospital Wash	0.577	100-yr FW	500.00	2091.17	2093.28	2093.11	2093.79	0.022456	5.71	87.51	60.44	0.84
Hospital Wash	0.577	10-yr	170.00	2091.17	2092.59	2092.40	2092.74	0.016971	3.28	56.56	134.74	0.66
Hospital Wash	0.577	50-yr	250.00	2091.17	2092.78	2092.63	2092.95	0.014616	3.54	86.09	166.18	0.64
Hospital Wash	0.577	500-yr	845.00	2091.17	2093.51		2093.81	0.013966	5.06	214.15	178.13	0.69
Hospital Wash	0.530	100-yr	500.00	2087.99	2089.98	2089.80	2090.18	0.012264	4.10	169.13	257.42	0.62
Hospital Wash	0.530	100-yr FW	500.00	2087.99	2090.54	2089.83	2090.78	0.007126	3.92	128.87	68.39	0.50
Hospital Wash	0.530	10-yr	170.00	2087.99	2089.48	2089.14	2089.60	0.009587	2.80	68.99	140.00	0.51
Hospital Wash	0.530	50-yr	250.00	2087.99	2089.64	2089.41	2089.79	0.010863	3.24	95.49	175.92	0.56
Hospital Wash	0.530	500-yr	845.00	2087.99	2090.29	2090.14	2090.53	0.012135	4.68	248.62	259.39	0.64
Hospital Wash	0.458	100-yr	500.00	2083.21	2085.82	2085.67	2086.03	0.009945	4.33	164.18	191.47	0.58
Hospital Wash	0.458	100-yr FW	500.00	2083.21	2085.88	2085.65	2086.49	0.020495	6.27	79.81	45.43	0.83
Hospital Wash	0.458	10-yr	170.00	2083.21	2085.09	2084.76	2085.30	0.013711	3.72	48.34	84.77	0.63
Hospital Wash	0.458	50-yr	250.00	2083.21	2085.37	2085.20	2085.58	0.011500	3.88	82.23	147.90	0.60
Hospital Wash	0.458	500-yr	845.00	2083.21	2086.22	2085.95	2086.47	0.009607	4.89	240.94	194.79	0.59
Hospital Wash	0.388	100-yr	500.00	2075.30	2079.14	2079.14	2080.05	0.030103	7.67	65.27	36.70	1.01
Hospital Wash	0.388	100-yr FW	500.00	2075.30	2079.59	2079.59	2080.17	0.014477	6.12	81.94	36.73	0.72
Hospital Wash	0.388	10-yr	170.00	2075.30	2077.97	2077.84	2078.47	0.026180	5.63	30.20	23.86	0.88
Hospital Wash	0.388	50-yr	250.00	2075.30	2078.28	2078.24	2078.95	0.031367	6.60	37.89	27.02	0.98
Hospital Wash	0.388	500-yr	845.00	2075.30	2079.99	2079.99	2081.14	0.023030	8.67	102.26	53.22	0.94
Hospital Wash	0.343	100-yr	500.00	2073.00	2077.26		2077.40	0.003802	3.41	186.00	109.81	0.38
Hospital Wash	0.343	100-yr FW	500.00	2073.00	2077.79		2078.10	0.005442	4.49	111.99	37.87	0.45
Hospital Wash	0.343	10-yr	170.00	2073.00	2076.22	2075.30	2076.32	0.004058	2.61	81.03	91.14	0.36
Hospital Wash	0.343	50-yr	250.00	2073.00	2076.54		2076.64	0.004005	2.87	110.65	97.48	0.37
Hospital Wash	0.343	500-yr	845.00	2073.00	2077.93		2078.12	0.004039	4.11	263.19	124.59	0.41
Hospital Wash	0.270	100-yr	500.00	2071.51	2073.98	2073.98	2074.77	0.014938	7.16	69.88	44.75	1.01
Hospital Wash	0.270	100-yr FW	500.00	2071.51	2073.98	2073.98	2074.77	0.014938	7.16	69.88	44.74	1.01
Hospital Wash	0.270	10-yr	170.00	2071.51	2072.93	2072.93	2073.43	0.017545	5.63	30.20	31.29	1.01
Hospital Wash	0.270	50-yr	250.00	2071.51	2073.25	2073.25	2073.83	0.016480	6.14	40.74	35.35	1.01
Hospital Wash	0.270	500-yr	845.00	2071.51	2074.78	2074.78	2075.72	0.010423	7.88	117.20	85.00	0.90
Hospital Wash	0.215	100-yr	500.00	2067.77	2071.38		2071.76	0.004433	4.94	101.28	45.05	0.58
Hospital Wash	0.215	100-yr FW	500.00	2067.77	2071.38		2071.76	0.004429	4.94	101.31	45.06	0.58
Hospital Wash	0.215	10-yr	170.00	2067.77	2069.75		2070.04	0.006737	4.26	39.89	30.42	0.66
Hospital Wash	0.215	50-yr	250.00	2067.77	2070.28		2070.57	0.005380	4.38	57.02	35.12	0.61
Hospital Wash	0.215	500-yr	845.00	2067.77	2072.35		2072.84	0.004433	5.67	148.98	53.73	0.60
Hospital Wash	0.153	100-yr	500.00	2065.99	2070.43		2070.67	0.002459	3.95	126.71	50.50	0.44
Hospital Wash	0.153	100-yr FW	500.00	2065.99	2070.43		2070.67	0.002444	3.94	127.02	50.57	0.44
Hospital Wash	0.153	10-yr	170.00	2065.99	2068.97		2069.08	0.001521	2.60	65.37	33.89	0.33
Hospital Wash	0.153	50-yr	250.00	2065.99	2069.42		2069.56	0.001885	3.06	81.63	38.92	0.37
Hospital Wash	0.153	500-yr	845.00	2065.99	2071.82		2072.02	0.001377	3.71	307.12	186.95	0.35
Hospital Wash	0.097	100-yr	500.00	2066.00	2069.66	2068.60	2069.91	0.002633	4.00	127.35	62.48	0.45
Hospital Wash	0.097	100-yr FW	500.00	2066.00	2069.66	2068.60	2069.91	0.002671	4.01	125.61	53.45	0.46
Hospital Wash	0.097	10-yr	170.00	2066.00	2068.05	2067.68	2068.26	0.006094	3.65	46.58	41.84	0.61
Hospital Wash	0.097	50-yr	250.00	2066.00	2068.50	2067.95	2068.72	0.004649	3.78	66.11	45.89	0.56
Hospital Wash	0.097	500-yr	845.00	2066.00	2071.55		2071.69	0.000813	3.27	336.37	132.32	0.28
Hospital Wash	0.083	100-yr	500.00	2066.00	2068.47	2068.47	2069.58	0.004222	8.45	59.14	26.92	1.01
Hospital Wash	0.083	100-yr FW	500.00	2066.00	2068.47	2068.47	2069.58	0.004222	8.45	59.14	26.92	1.01
Hospital Wash	0.083	10-yr	170.00	2066.00	2067.24	2067.24	2067.82	0.004892	6.12	27.77	23.96	1.00
Hospital Wash	0.083	50-yr	250.00	2066.00	2067.58	2067.58	2068.32	0.004659	6.90	36.21	24.79	1.01
Hospital Wash	0.083	500-yr	845.00	2066.00	2070.95		2071.57	0.001137	6.34	133.34	32.88	0.55
Hospital Wash	0.081	100-yr	500.00	2064.90	2068.94	2067.44	2069.33	0.000883	5.04	99.28	28.88	0.48
Hospital Wash	0.081	100-yr FW	500.00	2064.90	2068.94	2067.44	2069.33	0.000883	5.04	99.28	28.88	0.48
Hospital Wash	0.081	10-yr	170.00	2064.90	2066.59	2066.19	2066.92	0.001954	4.60	36.98	24.18	0.66
Hospital Wash	0.081	50-yr	250.00	2064.90	2067.25	2066.54	2067.59	0.001379	4.68	53.39	25.50	0.57
Hospital Wash	0.081	500-yr	845.00	2064.90	2071.10	2068.43	2071.50	0.000575	5.07	174.03	111.00	0.40
Hospital Wash	0.080		Culvert									
Hospital Wash	0.074	100-yr	500.00	2064.41	2066.66	2066.60	2067.72	0.012176	8.27	60.44	47.27	0.97

HY-8 Culvert Analysis Report

Site Data - Hospital Wash @ Cavaness Ave

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 2066.14 ft

Outlet Station: 24.00 ft

Outlet Elevation: 2065.81 ft

Number of Barrels: 4

Culvert Data Summary - Hospital Wash @ Cavaness Ave

Barrel Shape: Concrete Box

Barrel Span: 2.60 ft

Barrel Rise: 2.00 ft

Barrel Material: Concrete

Barrel Manning's n: 0.0120

Inlet Type: Conventional

Inlet Edge Condition: Square Edge (90°) Headwall

Inlet Depression: None

Table 1 - Culvert Summary Table: Hospital Wash @ Cavaness Ave

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
20.00	20.00	2066.97	0.826	0.000	1-S2n	0.317	0.487	0.326	0.285	5.897	2.136
78.00	78.00	2068.17	2.033	0.000	5-S2n	0.816	1.207	0.926	0.637	8.100	3.608
136.00	111.25	2068.83	2.690	0.000	5-S2n	1.054	1.529	1.206	0.881	8.868	4.447
194.00	120.31	2069.03	2.890	0.000	5-S2n	1.116	1.611	1.279	1.083	9.043	5.071
252.00	127.28	2069.19	3.053	0.000	5-S2n	1.164	1.673	1.335	1.260	9.168	5.578
310.00	133.22	2069.34	3.197	0.000	5-S2n	1.204	1.724	1.381	1.419	9.272	6.010
368.00	138.47	2069.47	3.330	0.000	5-S2n	1.239	1.770	1.423	1.565	9.360	6.389
426.00	143.20	2069.59	3.454	0.000	5-S2n	1.270	1.810	1.459	1.701	9.440	6.728
484.00	147.50	2069.71	3.570	0.099	5-S2n	1.298	1.846	1.492	1.829	9.508	7.036
500.00	148.69	2069.74	3.603	0.133	5-S2n	1.306	1.856	1.501	1.863	9.528	7.116
600.00	155.31	2069.93	3.790	0.335	5-S2n	1.350	1.910	1.550	2.065	9.633	7.570

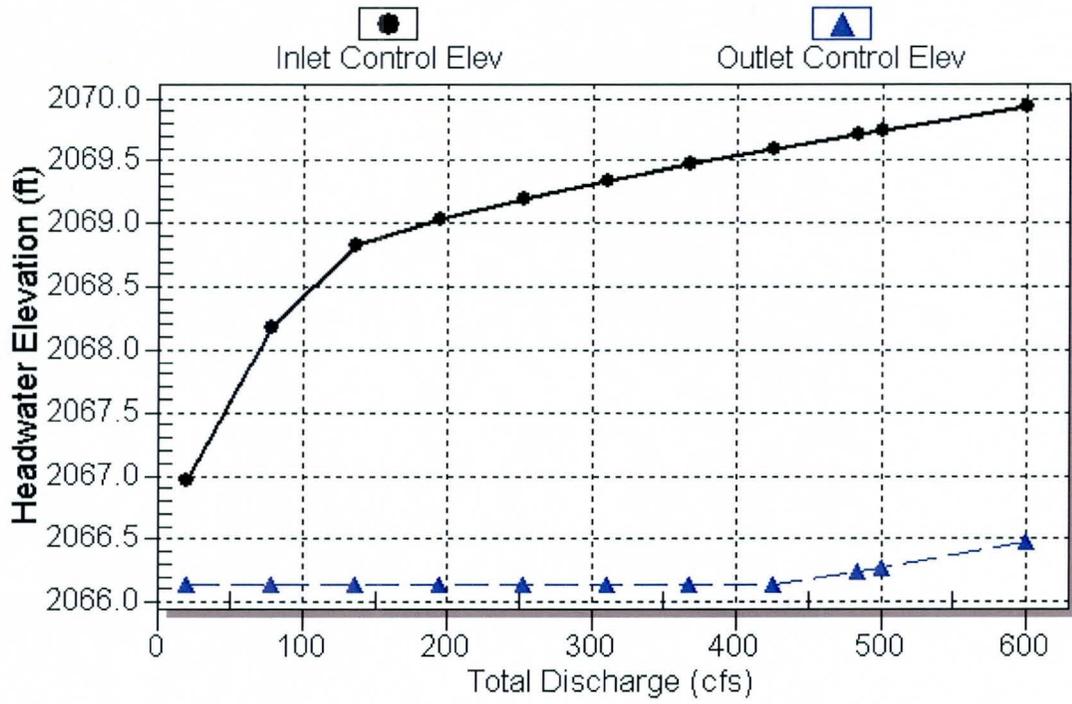
Inlet Elevation (invert): 2066.14 ft, Outlet Elevation (invert): 2065.81 ft

Culvert Length: 24.00 ft, Culvert Slope: 0.0137

Culvert Performance Curve Plot: Hospital Wash @ Cavaness Ave

Performance Curve

Culvert: Hospital Wash @ Cavaness Ave



Water Surface Profile Plot for Culvert: Hospital Wash @ Cavaness Ave

Crossing - Hospital Wash @ Cavaness Ave - Ex. Crossing, Design Discharge - 500.0 cfs

Culvert - Hospital Wash @ Cavaness Ave, Culvert Discharge - 148.7 cfs

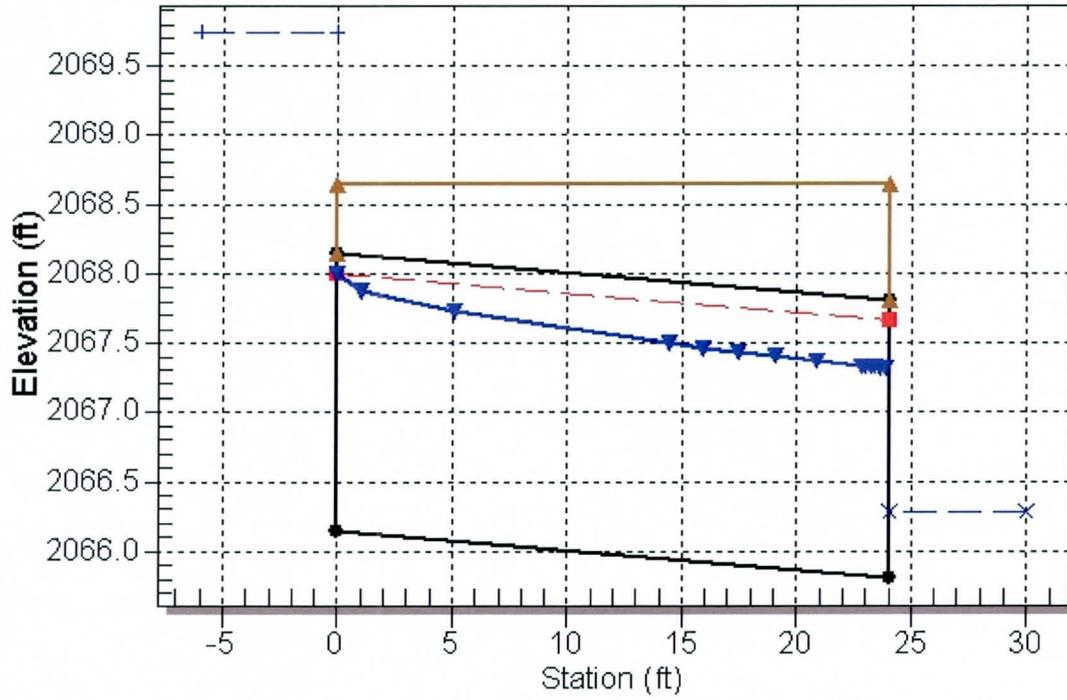


Table 2 - Downstream Channel Rating Curve (Crossing: Hospital Wash @ Cavaness

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
20.00	2064.69	0.28	2.14	0.23	0.71
78.00	2065.05	0.64	3.61	0.52	0.82
136.00	2065.29	0.88	4.45	0.71	0.87
194.00	2065.49	1.08	5.07	0.88	0.90
252.00	2065.67	1.26	5.58	1.02	0.92
310.00	2065.83	1.42	6.01	1.15	0.94
368.00	2065.98	1.57	6.39	1.27	0.96
426.00	2066.11	1.70	6.73	1.38	0.97
484.00	2066.24	1.83	7.04	1.48	0.98
500.00	2066.27	1.86	7.12	1.51	0.99
600.00	2066.47	2.06	7.57	1.68	1.02

Ave - Ex. Crossing)

Tailwater Channel Data - Hospital Wash @ Cavaness Ave - Ex. Crossing

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0130

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	9975.00	2069.00	0.0340
2	9980.47	2067.54	0.0340
3	9981.00	2067.40	0.0340
4	9982.50	2067.40	0.0340
5	9982.50	2066.40	0.0340
6	9984.00	2066.40	0.0340
7	9984.00	2064.41	0.0340
8	10016.00	2064.41	0.0340
9	10038.00	2068.00	0.0340
10	10090.00	2069.00	0.0500
11	10140.00	2070.00	0.0000

Roadway Data for Crossing: Hospital Wash @ Cavaness Ave - Ex. Crossing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 2068.64 ft

Roadway Surface: Paved

Roadway Top Width: 24.00 ft

Table 3 - Summary of Culvert Flows at Crossing: Hospital Wash @ Cavaness Ave -

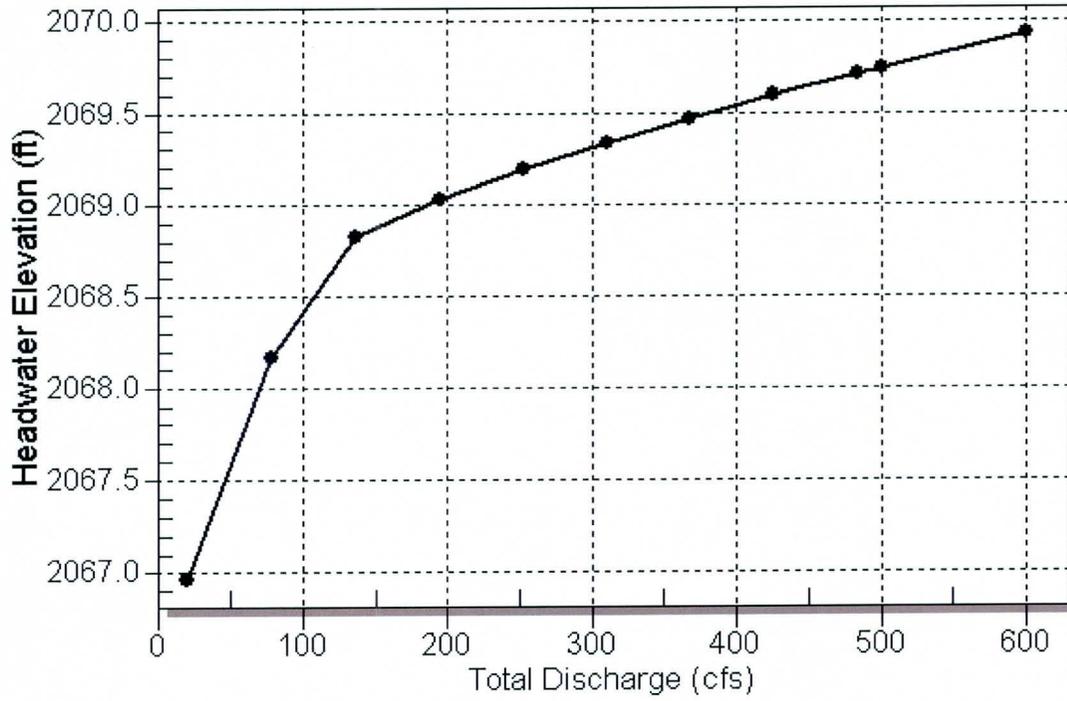
Headwater Elevation (ft)	Total Discharge (cfs)	Hospital Wash @ Cavaness Ave Discharge (cfs)	Roadway Discharge (cfs)	Iterations
2066.97	20.00	20.00	0.00	1
2068.17	78.00	78.00	0.00	1
2068.83	136.00	111.25	24.62	7
2069.03	194.00	120.31	73.37	5
2069.19	252.00	127.28	124.57	5
2069.34	310.00	133.22	176.37	4
2069.47	368.00	138.47	229.31	4
2069.59	426.00	143.20	282.70	4
2069.71	484.00	147.50	336.00	3
2069.74	500.00	148.69	351.16	3
2069.93	600.00	155.31	444.46	3

Ex. Crossing

Rating Curve Plot for Crossing: Hospital Wash @ Cavaness Ave - Ex. Crossing

Total Rating Curve

Crossing: Hospital Wash @ Cavaness Ave - Ex. Crossing



**Response to FEMA Review Comments of
April 17, 2007**

Comment #4

Sols Wash CLOMR

Original Submittal to FEMA					Revised Discharge Locations					
HEC-RAS Plan: Sols River: Sols Wash Reach: Sols Wash Main					HEC-RAS Plan: Sols River: Sols Wash Reach: Sols Wash Main					
Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.111	100-Sols	15045	2049.75	Sols Wash Main	0.111	100-Sols	15045	2049.75	0
Sols Wash Main	0.111	100-Sols FW	15045	2049.74	Sols Wash Main	0.111	100-Sols FW	15045	2049.74	0
Sols Wash Main	0.111	10-yr	7019	2047.16	Sols Wash Main	0.111	10-yr	7019	2047.16	0
Sols Wash Main	0.111	50-yr	12453	2049.02	Sols Wash Main	0.111	50-yr	12453	2049.02	0
Sols Wash Main	0.111	500-yr	20836	2051.17	Sols Wash Main	0.111	500-yr	20836	2051.17	0
Sols Wash Main	0.121		Bridge		Sols Wash Main	0.121		Bridge		
Sols Wash Main	0.132	100-Sols	15045	2052.45	Sols Wash Main	0.132	100-Sols	15045	2052.45	0
Sols Wash Main	0.132	100-Sols FW	15045	2052.45	Sols Wash Main	0.132	100-Sols FW	15045	2052.45	0
Sols Wash Main	0.132	10-yr	7019	2048.85	Sols Wash Main	0.132	10-yr	7019	2048.85	0
Sols Wash Main	0.132	50-yr	12453	2051.43	Sols Wash Main	0.132	50-yr	12453	2051.43	0
Sols Wash Main	0.132	500-yr	20836	2054.52	Sols Wash Main	0.132	500-yr	20836	2054.52	0
Sols Wash Main	0.14	100-Sols	15045	2052.49	Sols Wash Main	0.14	100-Sols	15045	2052.49	0
Sols Wash Main	0.14	100-Sols FW	15045	2052.49	Sols Wash Main	0.14	100-Sols FW	15045	2052.49	0
Sols Wash Main	0.14	10-yr	7019	2048.87	Sols Wash Main	0.14	10-yr	7019	2048.87	0
Sols Wash Main	0.14	50-yr	12453	2051.46	Sols Wash Main	0.14	50-yr	12453	2051.46	0
Sols Wash Main	0.14	500-yr	20836	2054.55	Sols Wash Main	0.14	500-yr	20836	2054.55	0
Sols Wash Main	0.15	100-Sols	15045	2052.45	Sols Wash Main	0.15	100-Sols	15045	2052.45	0
Sols Wash Main	0.15	100-Sols FW	15045	2052.45	Sols Wash Main	0.15	100-Sols FW	15045	2052.45	0
Sols Wash Main	0.15	10-yr	7019	2048.86	Sols Wash Main	0.15	10-yr	7019	2048.86	0
Sols Wash Main	0.15	50-yr	12453	2051.43	Sols Wash Main	0.15	50-yr	12453	2051.43	0
Sols Wash Main	0.15	500-yr	20836	2054.49	Sols Wash Main	0.15	500-yr	20836	2054.49	0
Sols Wash Main	0.159	100-Sols	15045	2052.33	Sols Wash Main	0.159	100-Sols	15045	2052.33	0
Sols Wash Main	0.159	100-Sols FW	15045	2052.33	Sols Wash Main	0.159	100-Sols FW	15045	2052.33	0
Sols Wash Main	0.159	10-yr	7019	2048.81	Sols Wash Main	0.159	10-yr	7019	2048.81	0
Sols Wash Main	0.159	50-yr	12453	2051.34	Sols Wash Main	0.159	50-yr	12453	2051.34	0
Sols Wash Main	0.159	500-yr	20836	2054.34	Sols Wash Main	0.159	500-yr	20836	2054.34	0

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.169	100-Sols	15045	2052.14	Sols Wash Main	0.169	100-Sols	15045	2052.14	0
Sols Wash Main	0.169	100-Sols FW	15045	2052.14	Sols Wash Main	0.169	100-Sols FW	15045	2052.14	0
Sols Wash Main	0.169	10-yr	7019	2048.73	Sols Wash Main	0.169	10-yr	7019	2048.73	0
Sols Wash Main	0.169	50-yr	12453	2051.17	Sols Wash Main	0.169	50-yr	12453	2051.17	0
Sols Wash Main	0.169	500-yr	20836	2054.08	Sols Wash Main	0.169	500-yr	20836	2054.08	0
Sols Wash Main	0.18	100-Sols	15045	2051.73	Sols Wash Main	0.18	100-Sols	15045	2051.73	0
Sols Wash Main	0.18	100-Sols FW	15045	2051.73	Sols Wash Main	0.18	100-Sols FW	15045	2051.73	0
Sols Wash Main	0.18	10-yr	7019	2048.62	Sols Wash Main	0.18	10-yr	7019	2048.62	0
Sols Wash Main	0.18	50-yr	12453	2050.88	Sols Wash Main	0.18	50-yr	12453	2050.88	0
Sols Wash Main	0.18	500-yr	20836	2053.4	Sols Wash Main	0.18	500-yr	20836	2053.4	0
Sols Wash Main	0.182	100-Sols	15045	2051.61	Sols Wash Main	0.182	100-Sols	15045	2051.61	0
Sols Wash Main	0.182	100-Sols FW	15045	2051.61	Sols Wash Main	0.182	100-Sols FW	15045	2051.61	0
Sols Wash Main	0.182	10-yr	7019	2048.57	Sols Wash Main	0.182	10-yr	7019	2048.57	0
Sols Wash Main	0.182	50-yr	12453	2050.78	Sols Wash Main	0.182	50-yr	12453	2050.78	0
Sols Wash Main	0.182	500-yr	20836	2053.22	Sols Wash Main	0.182	500-yr	20836	2053.22	0
Sols Wash Main	0.184	100-Sols	15045	2052.82	Sols Wash Main	0.184	100-Sols	15045	2052.82	0
Sols Wash Main	0.184	100-Sols FW	15045	2052.82	Sols Wash Main	0.184	100-Sols FW	15045	2052.82	0
Sols Wash Main	0.184	10-yr	7019	2049.23	Sols Wash Main	0.184	10-yr	7019	2049.23	0
Sols Wash Main	0.184	50-yr	12453	2051.81	Sols Wash Main	0.184	50-yr	12453	2051.81	0
Sols Wash Main	0.184	500-yr	20836	2054.82	Sols Wash Main	0.184	500-yr	20836	2054.82	0
Sols Wash Main	0.187	100-Sols	15045	2052.75	Sols Wash Main	0.187	100-Sols	15045	2052.75	0
Sols Wash Main	0.187	100-Sols FW	15045	2052.75	Sols Wash Main	0.187	100-Sols FW	15045	2052.75	0
Sols Wash Main	0.187	10-yr	7019	2049.2	Sols Wash Main	0.187	10-yr	7019	2049.2	0
Sols Wash Main	0.187	50-yr	12453	2051.76	Sols Wash Main	0.187	50-yr	12453	2051.76	0
Sols Wash Main	0.187	500-yr	20836	2054.73	Sols Wash Main	0.187	500-yr	20836	2054.73	0
Sols Wash Main	0.189	100-Sols	15045	2052.6	Sols Wash Main	0.189	100-Sols	15045	2052.6	0
Sols Wash Main	0.189	100-Sols FW	15045	2052.6	Sols Wash Main	0.189	100-Sols FW	15045	2052.6	0
Sols Wash Main	0.189	10-yr	7019	2049.14	Sols Wash Main	0.189	10-yr	7019	2049.14	0
Sols Wash Main	0.189	50-yr	12453	2051.64	Sols Wash Main	0.189	50-yr	12453	2051.64	0
Sols Wash Main	0.189	500-yr	20836	2054.5	Sols Wash Main	0.189	500-yr	20836	2054.5	0
Sols Wash Main	0.192	100-Sols	15045	2052.49	Sols Wash Main	0.192	100-Sols	15045	2052.49	0

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.192	100-Sols FW	15045	2052.49	Sols Wash Main	0.192	100-Sols FW	15045	2052.49	0
Sols Wash Main	0.192	10-yr	7019	2049.1	Sols Wash Main	0.192	10-yr	7019	2049.1	0
Sols Wash Main	0.192	50-yr	12453	2051.55	Sols Wash Main	0.192	50-yr	12453	2051.55	0
Sols Wash Main	0.192	500-yr	20836	2054.35	Sols Wash Main	0.192	500-yr	20836	2054.35	0
Sols Wash Main	0.195	100-Sols	15045	2052.37	Sols Wash Main	0.195	100-Sols	15045	2052.37	0
Sols Wash Main	0.195	100-Sols FW	15045	2052.37	Sols Wash Main	0.195	100-Sols FW	15045	2052.37	0
Sols Wash Main	0.195	10-yr	7019	2049.04	Sols Wash Main	0.195	10-yr	7019	2049.04	0
Sols Wash Main	0.195	50-yr	12453	2051.45	Sols Wash Main	0.195	50-yr	12453	2051.45	0
Sols Wash Main	0.195	500-yr	20836	2054.17	Sols Wash Main	0.195	500-yr	20836	2054.17	0
Sols Wash Main	0.198	100-Sols	15045	2051.71	Sols Wash Main	0.198	100-Sols	15045	2051.71	0
Sols Wash Main	0.198	100-Sols FW	15045	2051.71	Sols Wash Main	0.198	100-Sols FW	15045	2051.71	0
Sols Wash Main	0.198	10-yr	7019	2048.16	Sols Wash Main	0.198	10-yr	7019	2048.16	0
Sols Wash Main	0.198	50-yr	12453	2050.63	Sols Wash Main	0.198	50-yr	12453	2050.63	0
Sols Wash Main	0.198	500-yr	20836	2053.76	Sols Wash Main	0.198	500-yr	20836	2053.76	0
Sols Wash Main	0.201	100-Sols	15045	2055.03	Sols Wash Main	0.201	100-Sols	15045	2055.03	0
Sols Wash Main	0.201	100-Sols FW	15045	2055.04	Sols Wash Main	0.201	100-Sols FW	15045	2055.04	0
Sols Wash Main	0.201	10-yr	7019	2051.59	Sols Wash Main	0.201	10-yr	7019	2051.59	0
Sols Wash Main	0.201	50-yr	12453	2054.03	Sols Wash Main	0.201	50-yr	12453	2054.03	0
Sols Wash Main	0.201	500-yr	20836	2057.19	Sols Wash Main	0.201	500-yr	20836	2057.19	0
Sols Wash Main	0.204	100-Sols	15045	2056.67	Sols Wash Main	0.204	100-Sols	15045	2056.67	0
Sols Wash Main	0.204	100-Sols FW	15045	2056.67	Sols Wash Main	0.204	100-Sols FW	15045	2056.67	0
Sols Wash Main	0.204	10-yr	7019	2052	Sols Wash Main	0.204	10-yr	7019	2052	0
Sols Wash Main	0.204	50-yr	12453	2055.2	Sols Wash Main	0.204	50-yr	12453	2055.2	0
Sols Wash Main	0.204	500-yr	20836	2059.39	Sols Wash Main	0.204	500-yr	20836	2059.39	0
Sols Wash Main	0.212	100-Sols	15045	2057.22	Sols Wash Main	0.212	100-Sols	15045	2057.22	0
Sols Wash Main	0.212	100-Sols FW	15045	2057.22	Sols Wash Main	0.212	100-Sols FW	15045	2057.22	0
Sols Wash Main	0.212	10-yr	7019	2052.98	Sols Wash Main	0.212	10-yr	7019	2052.98	0
Sols Wash Main	0.212	50-yr	12453	2055.99	Sols Wash Main	0.212	50-yr	12453	2055.99	0
Sols Wash Main	0.212	500-yr	20836	2059.7	Sols Wash Main	0.212	500-yr	20836	2059.7	0
Sols Wash Main	0.22	100-Sols	15045	2057.53	Sols Wash Main	0.22	100-Sols	15045	2057.53	0
Sols Wash Main	0.22	100-Sols FW	15045	2057.53	Sols Wash Main	0.22	100-Sols FW	15045	2057.53	0

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.22	10-yr	7019	2053.33	Sols Wash Main	0.22	10-yr	7019	2053.33	0
Sols Wash Main	0.22	50-yr	12453	2056.3	Sols Wash Main	0.22	50-yr	12453	2056.3	0
Sols Wash Main	0.22	500-yr	20836	2060.09	Sols Wash Main	0.22	500-yr	20836	2060.09	0
Sols Wash Main	0.227	100-Sols	15045	2057.96	Sols Wash Main	0.227	100-Sols	15045	2057.96	0
Sols Wash Main	0.227	100-Sols FW	15045	2057.96	Sols Wash Main	0.227	100-Sols FW	15045	2057.96	0
Sols Wash Main	0.227	10-yr	7019	2053.63	Sols Wash Main	0.227	10-yr	7019	2053.63	0
Sols Wash Main	0.227	50-yr	12453	2056.68	Sols Wash Main	0.227	50-yr	12453	2056.68	0
Sols Wash Main	0.227	500-yr	20836	2060.69	Sols Wash Main	0.227	500-yr	20836	2060.69	0
Sols Wash Main	0.288	100-Sols	15045	2059.3	Sols Wash Main	0.288	100-Sols	15045	2059.3	0
Sols Wash Main	0.288	100-Sols FW	15045	2059.3	Sols Wash Main	0.288	100-Sols FW	15045	2059.3	0
Sols Wash Main	0.288	10-yr	7019	2054.77	Sols Wash Main	0.288	10-yr	7019	2054.77	0
Sols Wash Main	0.288	50-yr	12453	2057.95	Sols Wash Main	0.288	50-yr	12453	2057.95	0
Sols Wash Main	0.288	500-yr	20836	2061.93	Sols Wash Main	0.288	500-yr	20836	2061.93	0
Sols Wash Main	0.306	100-Sols	15045	2059.42	Sols Wash Main	0.306	100-Sols	15045	2059.42	0
Sols Wash Main	0.306	100-Sols FW	15045	2059.42	Sols Wash Main	0.306	100-Sols FW	15045	2059.42	0
Sols Wash Main	0.306	10-yr	7019	2054.9	Sols Wash Main	0.306	10-yr	7019	2054.9	0
Sols Wash Main	0.306	50-yr	12453	2058.07	Sols Wash Main	0.306	50-yr	12453	2058.07	0
Sols Wash Main	0.306	500-yr	20836	2062.03	Sols Wash Main	0.306	500-yr	20836	2062.03	0
Sols Wash Main	0.359	100-Sols	15045	2060.08	Sols Wash Main	0.359	100-Sols	15045	2060.08	0
Sols Wash Main	0.359	100-Sols FW	15045	2060.08	Sols Wash Main	0.359	100-Sols FW	15045	2060.08	0
Sols Wash Main	0.359	10-yr	7019	2055.45	Sols Wash Main	0.359	10-yr	7019	2055.45	0
Sols Wash Main	0.359	50-yr	12453	2058.67	Sols Wash Main	0.359	50-yr	12453	2058.67	0
Sols Wash Main	0.359	500-yr	20836	2062.77	Sols Wash Main	0.359	500-yr	20836	2062.77	0
Sols Wash Main	0.389	100-Sols	15045	2060.76	Sols Wash Main	0.389	100-Sols	15045	2060.76	0
Sols Wash Main	0.389	100-Sols FW	15045	2060.76	Sols Wash Main	0.389	100-Sols FW	15045	2060.76	0
Sols Wash Main	0.389	10-yr	7019	2056.55	Sols Wash Main	0.389	10-yr	7019	2056.55	0
Sols Wash Main	0.389	50-yr	12453	2059.48	Sols Wash Main	0.389	50-yr	12453	2059.48	0
Sols Wash Main	0.389	500-yr	20836	2063.29	Sols Wash Main	0.389	500-yr	20836	2063.29	0
Sols Wash Main	0.412	100-Sols	15045	2061.01	Sols Wash Main	0.412	100-Sols	15045	2061.01	0
Sols Wash Main	0.412	100-Sols FW	15045	2061.01	Sols Wash Main	0.412	100-Sols FW	15045	2061.01	0
Sols Wash Main	0.412	10-yr	7019	2056.97	Sols Wash Main	0.412	10-yr	7019	2056.97	0

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.412	50-yr	12453	2059.76	Sols Wash Main	0.412	50-yr	12453	2059.76	0
Sols Wash Main	0.412	500-yr	20836	2063.49	Sols Wash Main	0.412	500-yr	20836	2063.49	0
Sols Wash Main	0.423		Bridge		Sols Wash Main	0.423		Bridge		
Sols Wash Main	0.442	100-Sols	15045	2065.73	Sols Wash Main	0.442	100-Sols	15045	2065.73	0
Sols Wash Main	0.442	100-Sols FW	15045	2065.73	Sols Wash Main	0.442	100-Sols FW	15045	2065.73	0
Sols Wash Main	0.442	10-yr	7019	2059.9	Sols Wash Main	0.442	10-yr	7019	2059.9	0
Sols Wash Main	0.442	50-yr	12453	2064.59	Sols Wash Main	0.442	50-yr	12453	2064.59	0
Sols Wash Main	0.442	500-yr	20836	2067.58	Sols Wash Main	0.442	500-yr	20836	2067.58	0
Sols Wash Main	0.447	100-Sols	15045	2065.87	Sols Wash Main	0.447	100-Sols	15045	2065.87	0
Sols Wash Main	0.447	100-Sols FW	15045	2065.87	Sols Wash Main	0.447	100-Sols FW	15045	2065.87	0
Sols Wash Main	0.447	10-yr	7019	2060.03	Sols Wash Main	0.447	10-yr	7019	2060.03	0
Sols Wash Main	0.447	50-yr	12453	2064.72	Sols Wash Main	0.447	50-yr	12453	2064.72	0
Sols Wash Main	0.447	500-yr	20836	2067.79	Sols Wash Main	0.447	500-yr	20836	2067.79	0
Sols Wash Main	0.467	100-Sols	15045	2065.8	Sols Wash Main	0.467	100-Sols	15045	2065.8	0
Sols Wash Main	0.467	100-Sols FW	15045	2065.8	Sols Wash Main	0.467	100-Sols FW	15045	2065.8	0
Sols Wash Main	0.467	10-yr	7019	2059.96	Sols Wash Main	0.467	10-yr	7019	2059.96	0
Sols Wash Main	0.467	50-yr	12453	2064.65	Sols Wash Main	0.467	50-yr	12453	2064.65	0
Sols Wash Main	0.467	500-yr	20836	2067.69	Sols Wash Main	0.467	500-yr	20836	2067.69	0
Sols Wash Main	0.485	100-Sols	15045	2065.98	Sols Wash Main	0.485	100-Sols	15045	2065.98	0
Sols Wash Main	0.485	100-Sols FW	15045	2065.98	Sols Wash Main	0.485	100-Sols FW	15045	2065.98	0
Sols Wash Main	0.485	10-yr	7019	2060.34	Sols Wash Main	0.485	10-yr	7019	2060.34	0
Sols Wash Main	0.485	50-yr	12453	2064.81	Sols Wash Main	0.485	50-yr	12453	2064.81	0
Sols Wash Main	0.485	500-yr	20836	2067.95	Sols Wash Main	0.485	500-yr	20836	2067.95	0
Sols Wash Main	0.505	100-Sols	14459	2066.5	Sols Wash Main	0.505	100-Sols	14459	2066.5	0
Sols Wash Main	0.505	100-Sols FW	14459	2066.5	Sols Wash Main	0.505	100-Sols FW	14459	2066.5	0
Sols Wash Main	0.505	10-yr	6758	2061.05	Sols Wash Main	0.505	10-yr	6758	2061.05	0
Sols Wash Main	0.505	50-yr	11964	2065.25	Sols Wash Main	0.505	50-yr	11964	2065.25	0
Sols Wash Main	0.505	500-yr	20005	2068.69	Sols Wash Main	0.505	500-yr	20005	2068.69	0
Sols Wash Main	0.529	100-Sols	14459	2066.78	Sols Wash Main	0.529	100-Sols	14459	2066.78	0
Sols Wash Main	0.529	100-Sols FW	14459	2066.78	Sols Wash Main	0.529	100-Sols FW	14459	2066.78	0

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.529	10-yr	6758	2061.66	Sols Wash Main	0.529	10-yr	6758	2061.66	0
Sols Wash Main	0.529	50-yr	11964	2065.52	Sols Wash Main	0.529	50-yr	11964	2065.52	0
Sols Wash Main	0.529	500-yr	20005	2069.02	Sols Wash Main	0.529	500-yr	20005	2069.02	0
Sols Wash Main	0.557	100-Sols	14459	2066.79	Sols Wash Main	0.557	100-Sols	14459	2066.79	0
Sols Wash Main	0.557	100-Sols FW	14459	2066.79	Sols Wash Main	0.557	100-Sols FW	14459	2066.79	0
Sols Wash Main	0.557	10-yr	6758	2061.97	Sols Wash Main	0.557	10-yr	6758	2061.97	0
Sols Wash Main	0.557	50-yr	11964	2065.54	Sols Wash Main	0.557	50-yr	11964	2065.54	0
Sols Wash Main	0.557	500-yr	20005	2069	Sols Wash Main	0.557	500-yr	20005	2069	0
Sols Wash Main	0.592	100-Sols	14459	2066.89	Sols Wash Main	0.592	100-Sols	14459	2066.89	0
Sols Wash Main	0.592	100-Sols FW	14459	2066.88	Sols Wash Main	0.592	100-Sols FW	14459	2066.88	0
Sols Wash Main	0.592	10-yr	6758	2063.22	Sols Wash Main	0.592	10-yr	6758	2063.22	0
Sols Wash Main	0.592	50-yr	11964	2065.7	Sols Wash Main	0.592	50-yr	11964	2065.7	0
Sols Wash Main	0.592	500-yr	20005	2069.05	Sols Wash Main	0.592	500-yr	20005	2069.05	0
Sols Wash Main	0.614	100-Sols	14459	2067.27	Sols Wash Main	0.614	100-Sols	14459	2067.27	0
Sols Wash Main	0.614	100-Sols FW	14459	2067.27	Sols Wash Main	0.614	100-Sols FW	14459	2067.27	0
Sols Wash Main	0.614	10-yr	6758	2064.4	Sols Wash Main	0.614	10-yr	6758	2064.4	0
Sols Wash Main	0.614	50-yr	11964	2066.19	Sols Wash Main	0.614	50-yr	11964	2066.19	0
Sols Wash Main	0.614	500-yr	20005	2069.39	Sols Wash Main	0.614	500-yr	20005	2069.39	0
Sols Wash Main	0.642	100-Sols	14459	2068.53	Sols Wash Main	0.642	100-Sols	14459	2068.53	0
Sols Wash Main	0.642	100-Sols FW	14459	2068.52	Sols Wash Main	0.642	100-Sols FW	14459	2068.52	0
Sols Wash Main	0.642	10-yr	6758	2065.68	Sols Wash Main	0.642	10-yr	6758	2065.68	0
Sols Wash Main	0.642	50-yr	11964	2067.58	Sols Wash Main	0.642	50-yr	11964	2067.58	0
Sols Wash Main	0.642	500-yr	20005	2070.55	Sols Wash Main	0.642	500-yr	20005	2070.55	0
Sols Wash Main	0.668	100-Sols	14459	2068.95	Sols Wash Main	0.668	100-Sols	14459	2068.95	0
Sols Wash Main	0.668	100-Sols FW	14459	2068.94	Sols Wash Main	0.668	100-Sols FW	14459	2068.94	0
Sols Wash Main	0.668	10-yr	6758	2066.16	Sols Wash Main	0.668	10-yr	6758	2066.16	0
Sols Wash Main	0.668	50-yr	11964	2068.02	Sols Wash Main	0.668	50-yr	11964	2068.02	0
Sols Wash Main	0.668	500-yr	20005	2070.95	Sols Wash Main	0.668	500-yr	20005	2070.95	0
Sols Wash Main	0.708	100-Sols	14459	2069.15	Sols Wash Main	0.708	100-Sols	14413	2069.15	0
Sols Wash Main	0.708	100-Sols FW	14459	2069.15	Sols Wash Main	0.708	100-Sols FW	14413	2069.15	0
Sols Wash Main	0.708	10-yr	6758	2067.38	Sols Wash Main	0.708	10-yr	6725	2067.37	-0.01

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	0.708	50-yr	11964	2068.39	Sols Wash Main	0.708	50-yr	11927	2068.38	-0.01
Sols Wash Main	0.708	500-yr	20005	2071.07	Sols Wash Main	0.708	500-yr	19986	2071.07	0
Sols Wash Main	0.746	100-Sols	14459	2070.59	Sols Wash Main	0.746	100-Sols	14413	2070.58	-0.01
Sols Wash Main	0.746	100-Sols FW	14459	2070.59	Sols Wash Main	0.746	100-Sols FW	14413	2070.58	-0.01
Sols Wash Main	0.746	10-yr	6758	2069.29	Sols Wash Main	0.746	10-yr	6725	2069.28	-0.01
Sols Wash Main	0.746	50-yr	11964	2070.34	Sols Wash Main	0.746	50-yr	11927	2070.33	-0.01
Sols Wash Main	0.746	500-yr	20005	2071.69	Sols Wash Main	0.746	500-yr	19986	2071.69	0
Sols Wash Main	0.785	100-Sols	14459	2072.86	Sols Wash Main	0.785	100-Sols	14413	2072.85	-0.01
Sols Wash Main	0.785	100-Sols FW	14459	2072.85	Sols Wash Main	0.785	100-Sols FW	14413	2072.84	-0.01
Sols Wash Main	0.785	10-yr	6758	2071.08	Sols Wash Main	0.785	10-yr	6725	2071.07	-0.01
Sols Wash Main	0.785	50-yr	11964	2072.32	Sols Wash Main	0.785	50-yr	11927	2072.31	-0.01
Sols Wash Main	0.785	500-yr	20005	2074.06	Sols Wash Main	0.785	500-yr	19986	2074.06	0
Sols Wash Main	0.822	100-Sols	14459	2074.79	Sols Wash Main	0.822	100-Sols	14413	2074.78	-0.01
Sols Wash Main	0.822	100-Sols FW	14459	2074.8	Sols Wash Main	0.822	100-Sols FW	14413	2074.79	-0.01
Sols Wash Main	0.822	10-yr	6758	2072.97	Sols Wash Main	0.822	10-yr	6725	2072.96	-0.01
Sols Wash Main	0.822	50-yr	11964	2074.26	Sols Wash Main	0.822	50-yr	11927	2074.25	-0.01
Sols Wash Main	0.822	500-yr	20005	2075.76	Sols Wash Main	0.822	500-yr	19986	2075.76	0
Sols Wash Main	0.886	100-Sols	14459	2076.77	Sols Wash Main	0.886	100-Sols	14413	2076.76	-0.01
Sols Wash Main	0.886	100-Sols FW	14459	2076.77	Sols Wash Main	0.886	100-Sols FW	14413	2076.76	-0.01
Sols Wash Main	0.886	10-yr	6758	2074.82	Sols Wash Main	0.886	10-yr	6725	2074.81	-0.01
Sols Wash Main	0.886	50-yr	11964	2076.2	Sols Wash Main	0.886	50-yr	11927	2076.19	-0.01
Sols Wash Main	0.886	500-yr	20005	2077.95	Sols Wash Main	0.886	500-yr	19986	2077.94	-0.01
Sols Wash Main	0.955	100-Sols	14459	2079.85	Sols Wash Main	0.955	100-Sols	14413	2079.84	-0.01
Sols Wash Main	0.955	100-Sols FW	14459	2079.85	Sols Wash Main	0.955	100-Sols FW	14413	2079.84	-0.01
Sols Wash Main	0.955	10-yr	6758	2077.65	Sols Wash Main	0.955	10-yr	6725	2077.64	-0.01
Sols Wash Main	0.955	50-yr	11964	2079.12	Sols Wash Main	0.955	50-yr	11927	2079.11	-0.01
Sols Wash Main	0.955	500-yr	20005	2081.59	Sols Wash Main	0.955	500-yr	19986	2081.55	-0.04
Sols Wash Main	1.021	100-Sols	14459	2083.09	Sols Wash Main	1.021	100-Sols	14413	2083.08	-0.01
Sols Wash Main	1.021	100-Sols FW	14459	2083.09	Sols Wash Main	1.021	100-Sols FW	14413	2083.08	-0.01
Sols Wash Main	1.021	10-yr	6758	2081.17	Sols Wash Main	1.021	10-yr	6725	2081.16	-0.01
Sols Wash Main	1.021	50-yr	11964	2082.51	Sols Wash Main	1.021	50-yr	11927	2082.49	-0.02

Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Change in WSEL (ft)
Sols Wash Main	1.021	500-yr	20005	2084.81	Sols Wash Main	1.021	500-yr	19986	2084.84	0.03
Sols Wash Main	1.081	100-Sols	14459	2086.48	Sols Wash Main	1.081	100-Sols	14413	2086.45	-0.03
Sols Wash Main	1.081	100-Sols FW	14459	2086.47	Sols Wash Main	1.081	100-Sols FW	14413	2086.45	-0.02
Sols Wash Main	1.081	10-yr	6758	2084.14	Sols Wash Main	1.081	10-yr	6725	2084.14	0
Sols Wash Main	1.081	50-yr	11964	2085.58	Sols Wash Main	1.081	50-yr	11927	2085.57	-0.01
Sols Wash Main	1.081	500-yr	20005	2087.66	Sols Wash Main	1.081	500-yr	19986	2087.64	-0.02
Sols Wash Main	1.141	100-Sols	14459	2089.09	Sols Wash Main	1.141	100-Sols	14413	2089.09	0
Sols Wash Main	1.141	100-Sols FW	14459	2089.09	Sols Wash Main	1.141	100-Sols FW	14413	2089.09	0
Sols Wash Main	1.141	10-yr	6758	2087.41	Sols Wash Main	1.141	10-yr	6725	2087.4	-0.01
Sols Wash Main	1.141	50-yr	11964	2088.84	Sols Wash Main	1.141	50-yr	11927	2088.85	0.01
Sols Wash Main	1.141	500-yr	20005	2089.59	Sols Wash Main	1.141	500-yr	19986	2089.59	0
Sols Wash Main	1.224	100-Sols	14413	2092.89	Sols Wash Main	1.224	100-Sols	14413	2092.88	-0.01
Sols Wash Main	1.224	100-Sols FW	14413	2092.89	Sols Wash Main	1.224	100-Sols FW	14413	2092.88	-0.01
Sols Wash Main	1.224	10-yr	6725	2091.75	Sols Wash Main	1.224	10-yr	6725	2091.75	0
Sols Wash Main	1.224	50-yr	11927	2092.52	Sols Wash Main	1.224	50-yr	11927	2092.51	-0.01
Sols Wash Main	1.224	500-yr	19986	2093.58	Sols Wash Main	1.224	500-yr	19986	2093.58	0
Sols Wash Main	1.319	100-Sols	14413	2098.62	Sols Wash Main	1.319	100-Sols	14413	2098.61	-0.01
Sols Wash Main	1.319	100-Sols FW	14413	2098.6	Sols Wash Main	1.319	100-Sols FW	14413	2098.6	0
Sols Wash Main	1.319	10-yr	6725	2097.25	Sols Wash Main	1.319	10-yr	6725	2097.25	0
Sols Wash Main	1.319	50-yr	11927	2098.15	Sols Wash Main	1.319	50-yr	11927	2098.15	0
Sols Wash Main	1.319	500-yr	19986	2099.34	Sols Wash Main	1.319	500-yr	19986	2099.34	0

**Response to FEMA Review Comments of
April 17, 2007**

Comment #6



Gannett Fleming

Memo

To: Lloyd A. Vick, Environmental and Engineering Consultants, Inc.
From: Frances Ackerman, Gannett Fleming
CC: John Gleason, Dean Durkee
Date: 6/19/2007
Re: Response to Summary of Additional Data Required to Support a Conditional Letter of Map Revision item #6

The National Flood Insurance Program FEMA National Service Provider Summary of Additional Data Required to Support a Conditional Letter of Map Revision (CLOMR), Case No. 07-09-0738R in the Town of Wickenburg, Arizona cites issue #6 as follows:

The actual results of SEEP/W and the stability arcs that support the data in paragraph 5 of section E of the MT-2 forms need to be submitted for the record.

This memo is intended to provide adequate backup for the seepage and slope stability analyses performed in support of this project.

Seepage and slope stability analyses were performed for the Wickenburg project using Geo-Slope International software. Seepage analysis was performed to check exit gradients for piping potential and to simulate pore water pressures in the embankment for the stability analyses.

Geotechnical parameters for the foundation soils and embankment backfill used in the seepage and stability analyses were developed based on the subsurface data and laboratory test results presented in Geotechnical Study Report, Wickenburg Downtown Flooding Hazard Mitigation Project, prepared by Kleinfelder, Inc. in May 2006. The following permeability values and material strength parameters were used in the seepage and stability analyses:

Permeability and Material Strength Parameters for Seepage and Slope Stability Analyses

Material	Permeability (cm/sec)	Density (lb/ft ³)	Friction angle (°)	Cohesion (lb/ft ²)
Compacted embankment	1.0 x 10 ⁻⁴	120	32	5
Native silty sand	1.0 x 10 ⁻⁴	103	31	5

The nominal value of 5 lb/ft² used in the stability analyses was assumed for cohesion of the generally silty granular materials found at the site to correctly model the effect of embankment height (GEO-SLOPE International, Ltd., 2002).

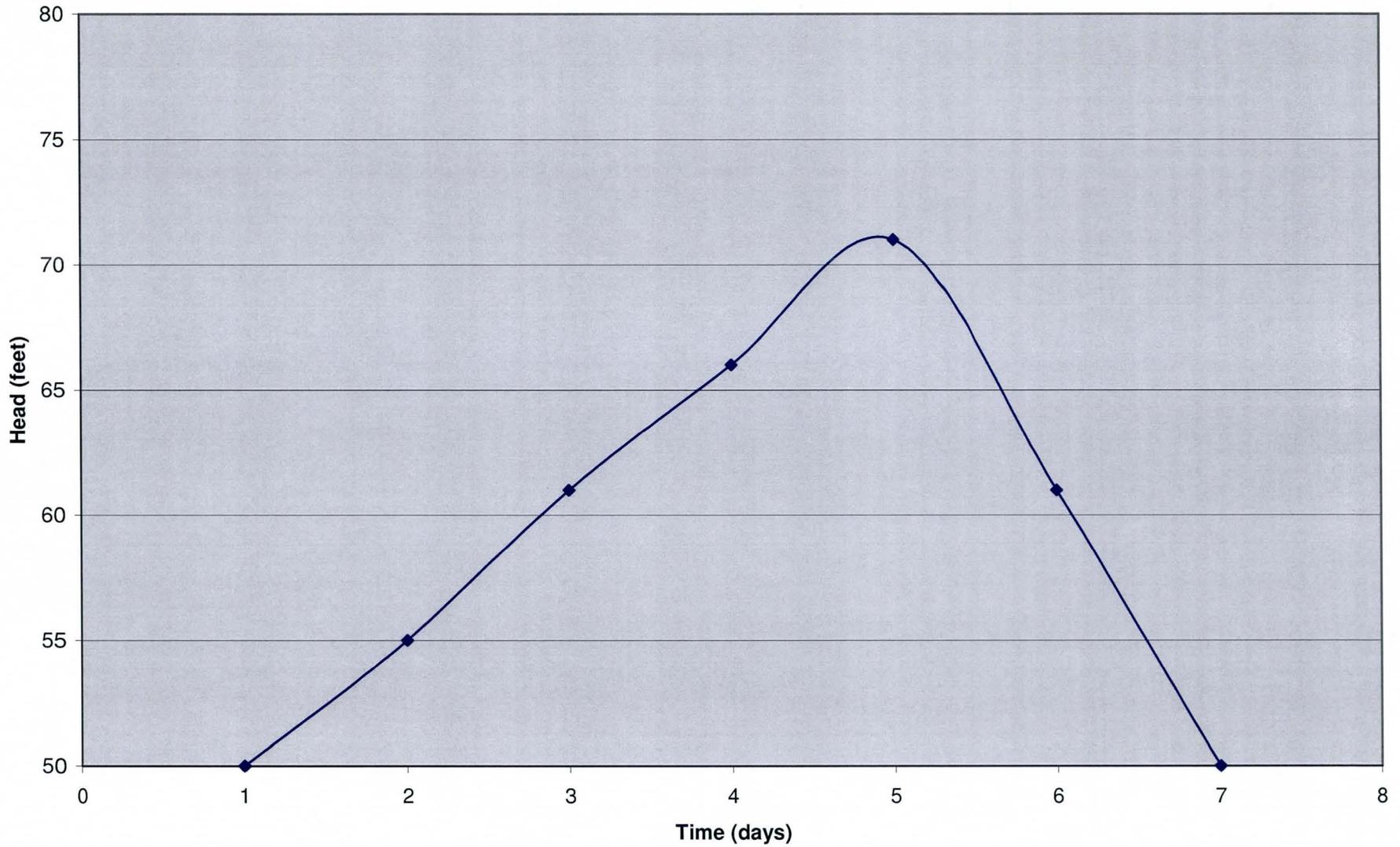
The seepage analysis consisted of performing a transient analysis of river conditions based on a conservatively assumed hydrograph. The HEC-1 hydrograph developed for the project indicated that flow in the normally dry river could be expected to reach a maximum in a period of several hours, with the water receding over a period of 8 to 10 hours. To simulate an assumed worst-case condition where

maximum pore water pressures are allowed to develop in the embankment, a hydrograph with a rising limb of 4 days and a falling limb of 3 days was used for the seepage analysis (see attached seepage analysis hydrograph).

The results of the transient seepage analysis are shown graphically on the attached computer printout. The figure shows the water infiltration into the embankment for the seven day rising and falling hydrograph period. It is apparent that under these conditions, water infiltrates only a small distance into the embankment; there is no water discharging on the downstream face of the embankment. Based on this, there is no possibility of piping associated with a high exit gradient because water is not exiting the embankment. In addition, the seepage analysis results indicate that analyzing the stability of the slope for steady-state conditions (a fully saturated embankment) is not necessary because these conditions do not exist at the project site.

Slope stability analyses were performed using method of slices developed by Morgenstern and Price. This method satisfies static equilibrium conditions for both force and moment. Analyses were performed on the embankment for end of construction (dry) conditions and rapid drawdown (upstream slope) conditions. End of construction conditions were analyzed by assuming the embankment would be dry. For the rapid drawdown analysis, coupled seepage-slope stability analyses were performed by incorporating the pore-water pressure distributions developed in SEEP/W into the stability analyses performed using SLOPE/W. Steady state stability was not calculated because the fully saturated embankment conditions are not expected to be present at the project site. The results are shown graphically on the attached computer printouts. Two printouts for each stability analysis are attached. One shows the critical slip surface for global stability and the other shows 100 of the more than 1,100 trial slip surfaces checked during each analysis.

Sols Wash Seepage Analysis Head vs. Time Hydrograph

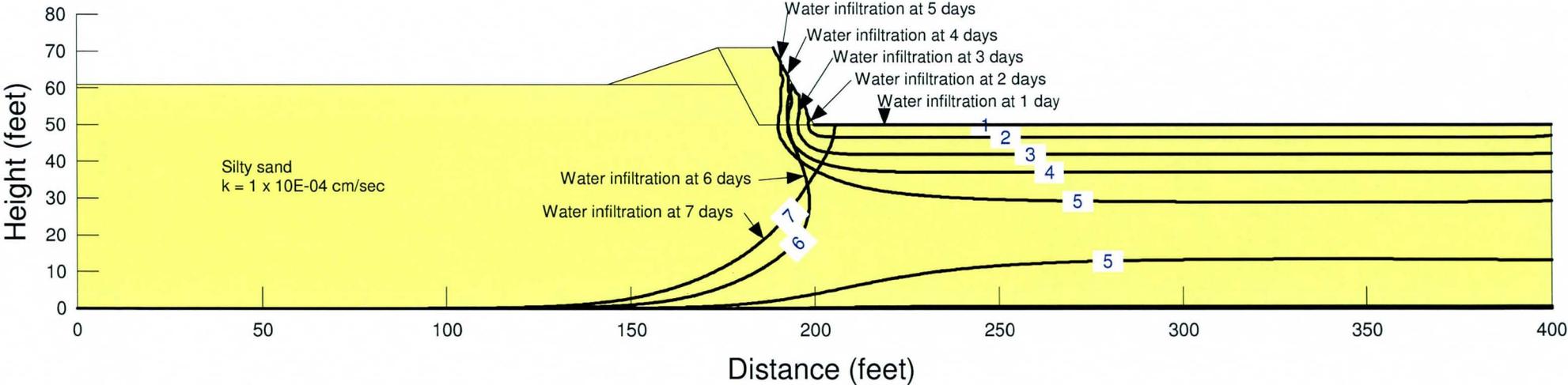


Gannett Fleming

Sols Wash Seepage Analysis Hydrograph
June 19, 2007

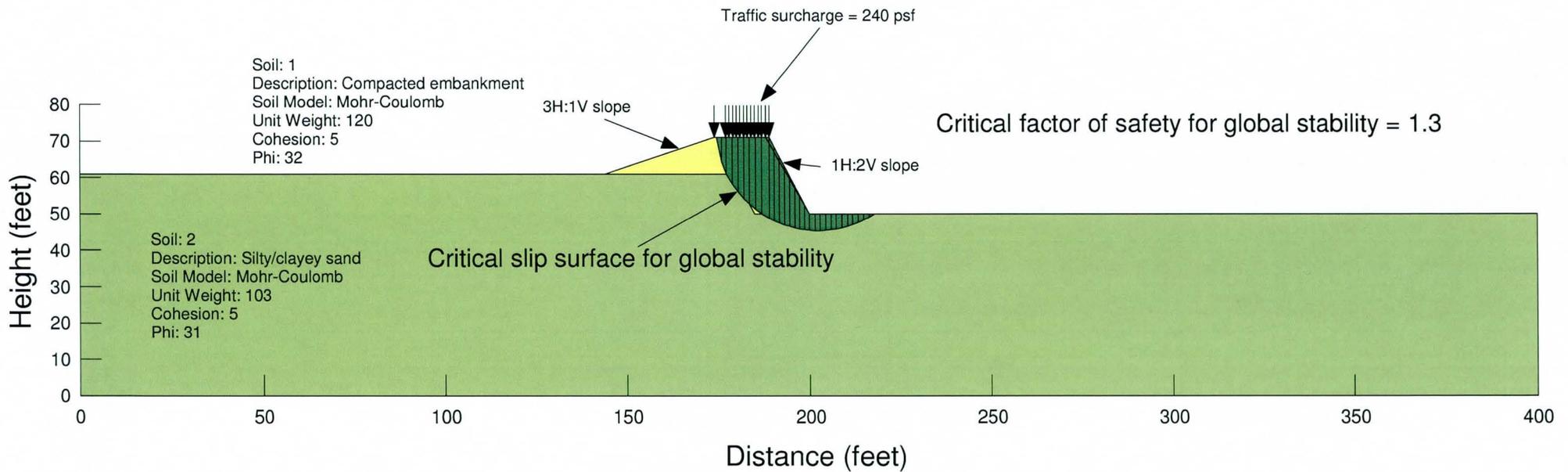
**FIGURE
1**

Description: Sols Wash Section 212+50 SB
Analysis Type: Transient



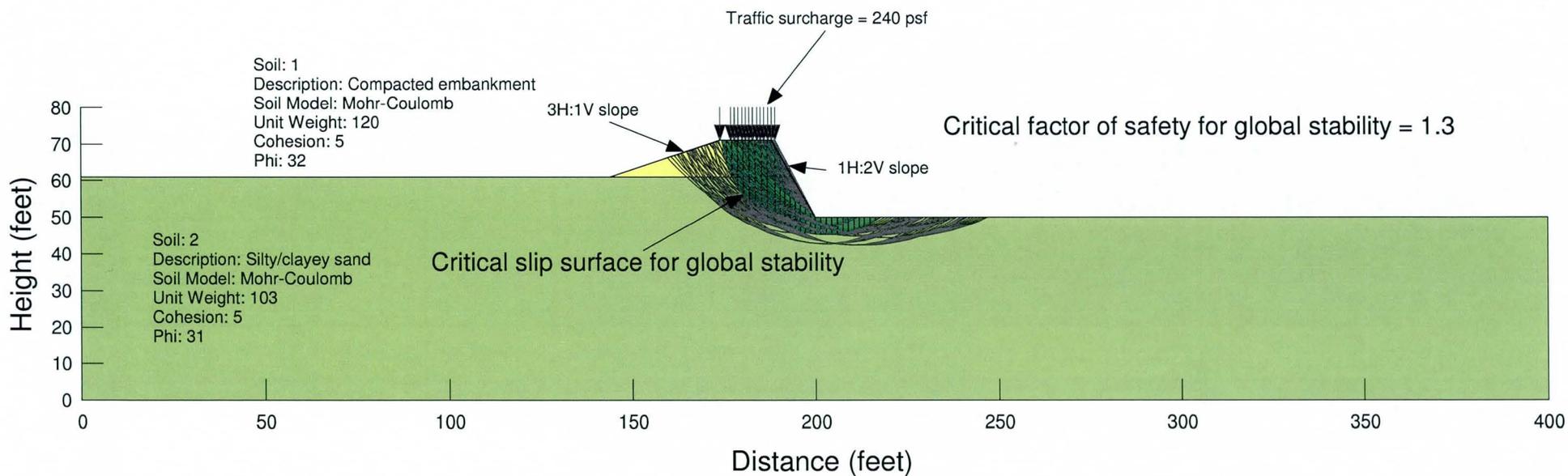
Description: Sols Wash Section 212+50 SB
Analysis Method: Morgenstern-Price
P.W.P. Option: (none)

End of Construction



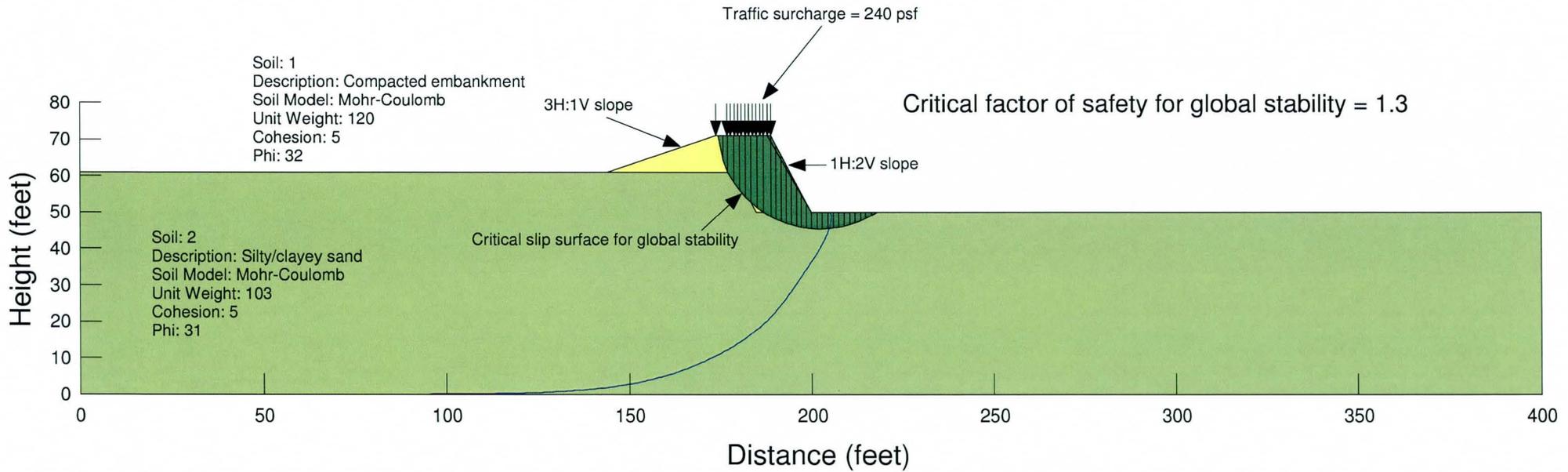
Description: Sols Wash Section 212+50 SB
Analysis Method: Morgenstern-Price
P.W.P. Option: (none)

End of Construction



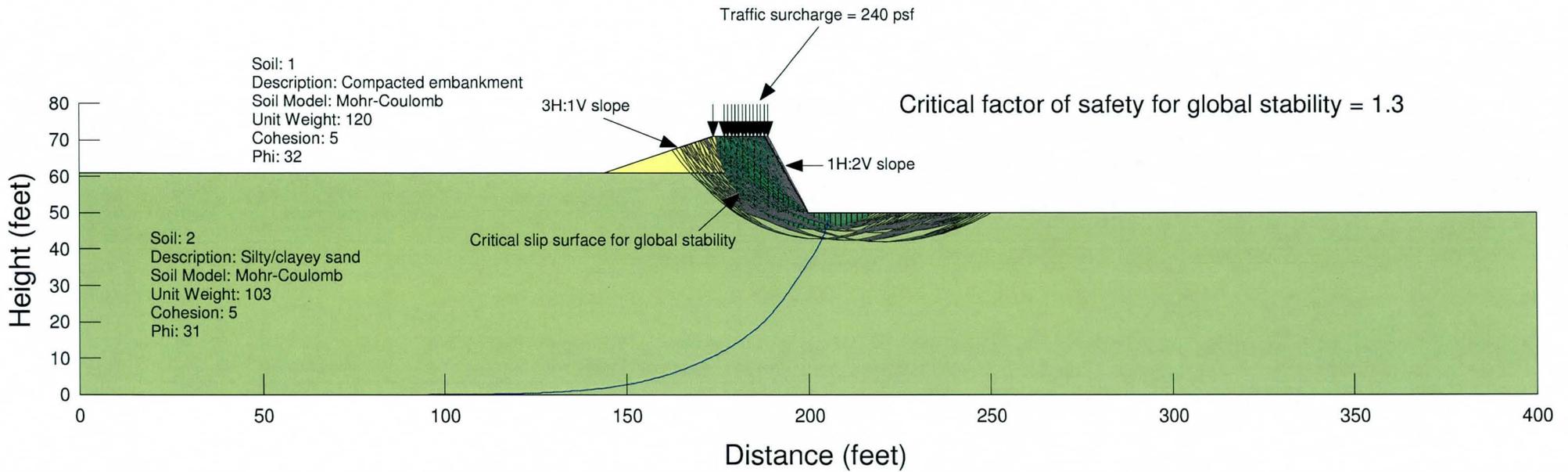
Description: Sols Wash Section 212+50 SB
Analysis Method: Morgenstern-Price
P.W.P. Option: SEEP/W Heads

Rapid drawdown



Description: Sols Wash Section 212+50 SB
Analysis Method: Morgenstern-Price
P.W.P. Option: SEEP/W Heads

Rapid drawdown



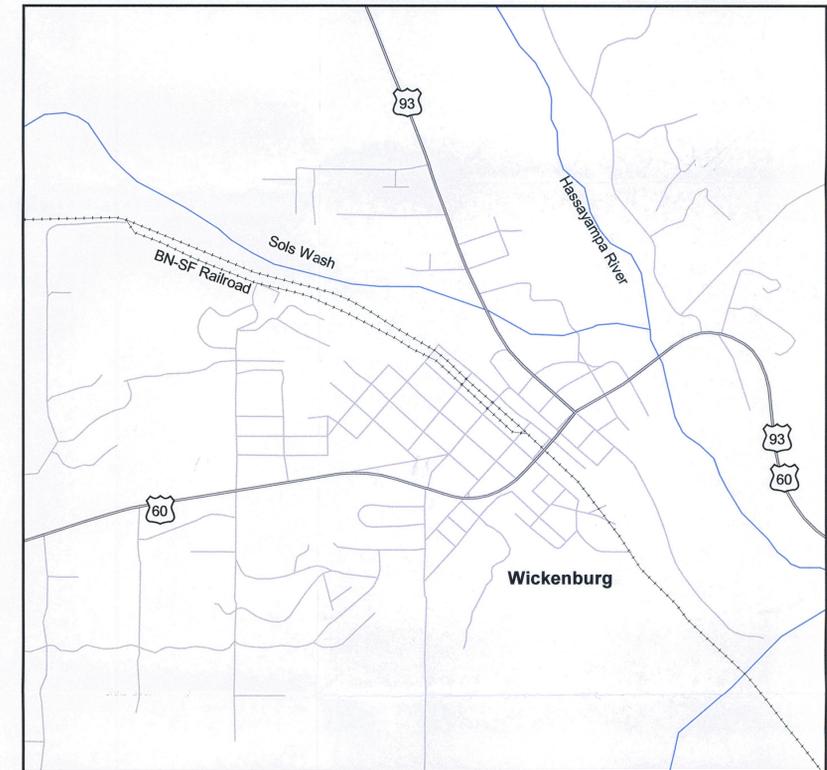
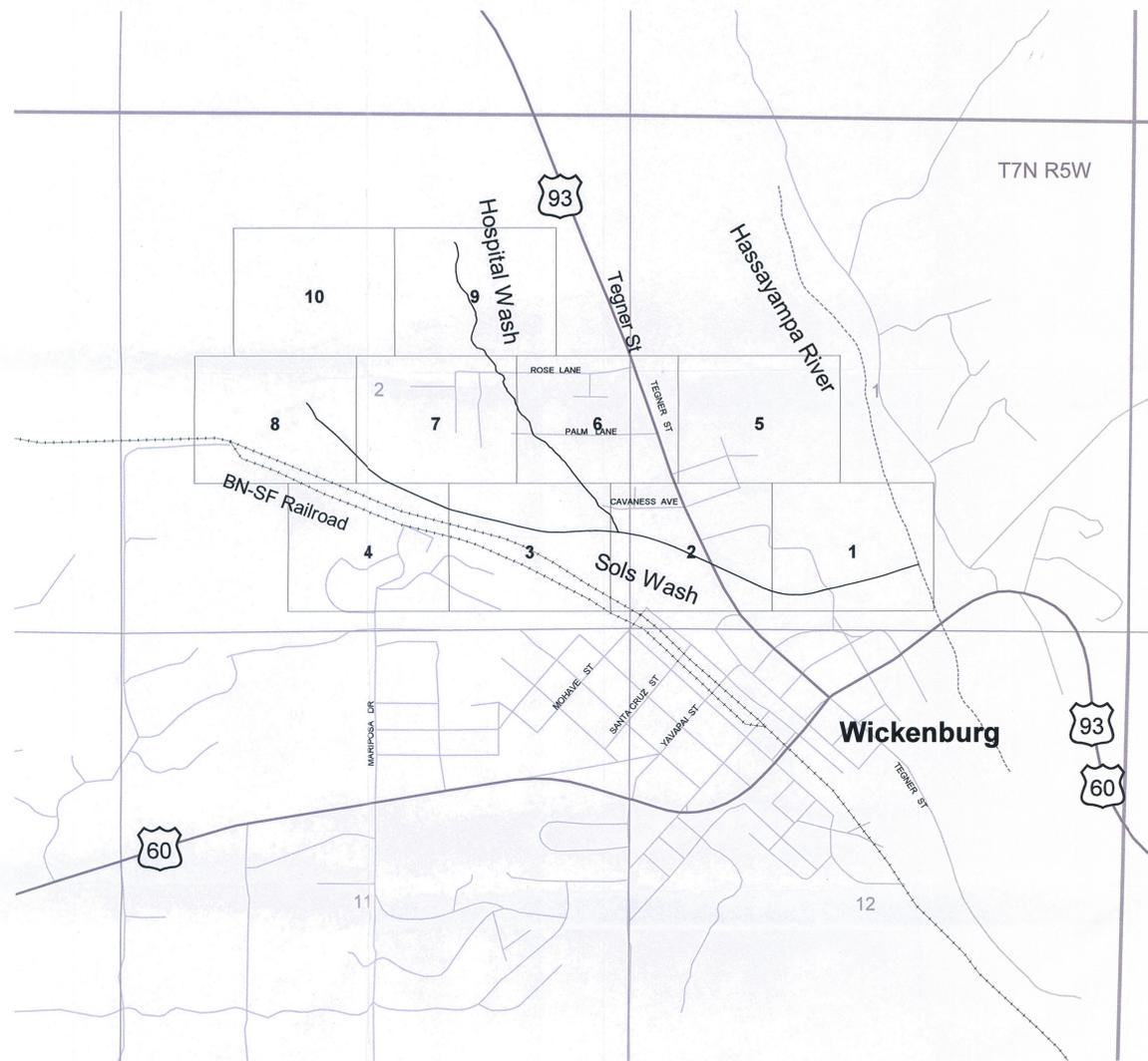
**Response to FEMA Review Comments of
April 17, 2007**

Comment #9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR
FCD CONTRACT NUMBER FCD2005C006



DATUM

HORIZONTAL: NORTH AMERICAN DATUM OF 1983
VERTICAL: NORTH AMERICAN VERTICAL DATUM OF 1988

AERIAL MAPPING

STEWART GEO-TECHNOLOGIES
NOVEMBER 2004
2' CONTOUR INTERVAL

STATEMENTS BY PROFESSIONAL REGISTRANTS

THE FOLLOWING STATEMENTS APPLY TO THE INDIVIDUAL SEALS AFFIXED TO EACH OF THE MAPS FOLLOWING THE COVER SHEET.

HYDRAULICS

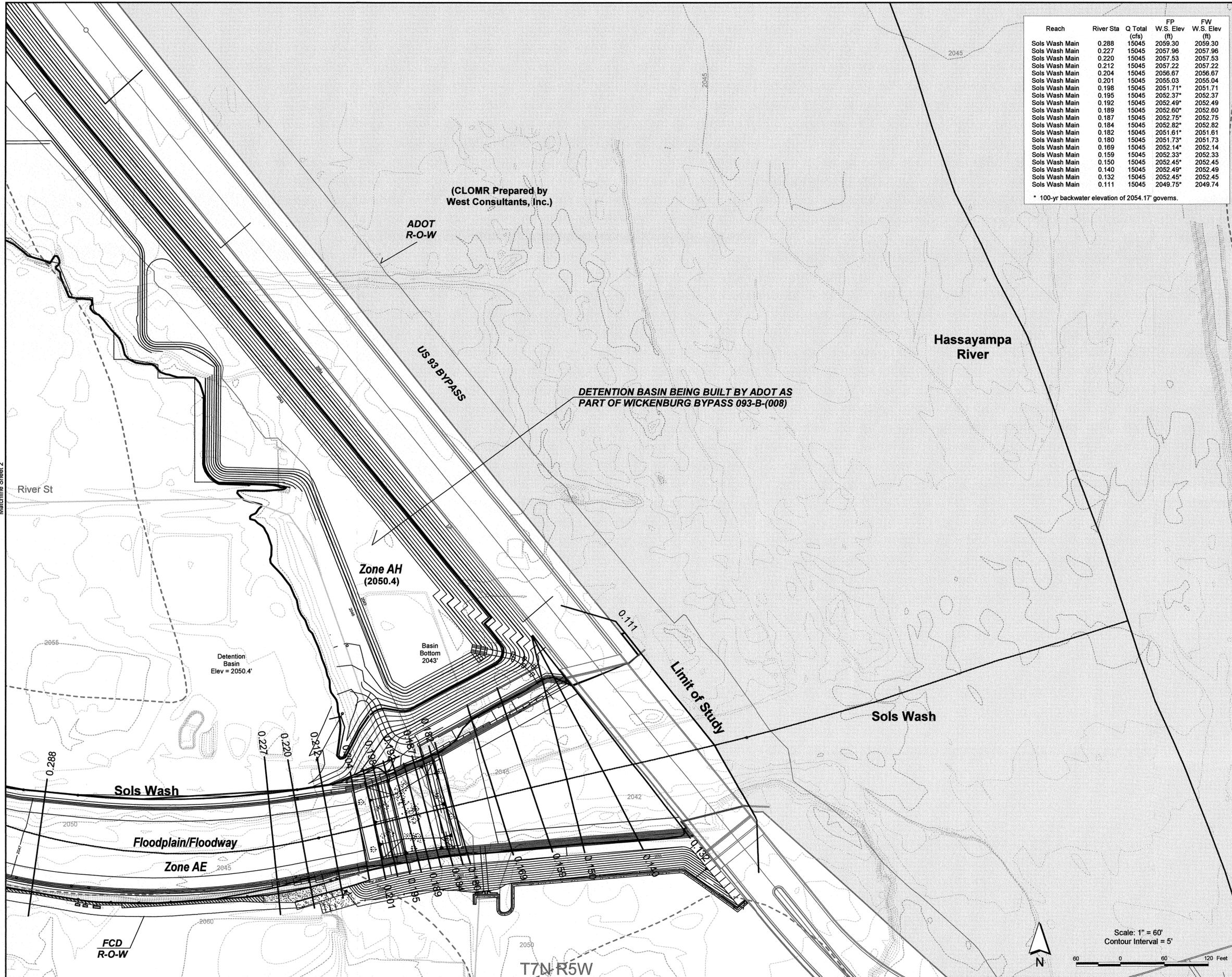
ENGINEERING AND ENVIRONMENTAL CONSULTANTS, INC.
3003 NORTH CENTRAL AVENUE, SUITE 600
PHOENIX, ARIZONA 85012

THE FLOODPLAIN AND FLOODWAY DELINEATION WERE PREPARED UNDER MY DIRECT SUPERVISION:



LIMIT OF ACCURACY

TOWNSHIP AND RANGE LINES WERE DIGITIZED FROM THE USGS 7.5' TOPOGRAPHICAL QUADRANGLE MAPS.



Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Sols Wash Main	0.288	15045	2059.30	2059.30
Sols Wash Main	0.227	15045	2057.96	2057.96
Sols Wash Main	0.220	15045	2057.53	2057.53
Sols Wash Main	0.212	15045	2057.22	2057.22
Sols Wash Main	0.204	15045	2056.67	2056.67
Sols Wash Main	0.201	15045	2055.03	2055.04
Sols Wash Main	0.198	15045	2051.71*	2051.71
Sols Wash Main	0.195	15045	2052.37*	2052.37
Sols Wash Main	0.192	15045	2052.49*	2052.49
Sols Wash Main	0.189	15045	2052.50*	2052.60
Sols Wash Main	0.187	15045	2052.75*	2052.75
Sols Wash Main	0.184	15045	2052.82*	2052.82
Sols Wash Main	0.182	15045	2051.61*	2051.61
Sols Wash Main	0.180	15045	2051.73*	2051.73
Sols Wash Main	0.169	15045	2052.14*	2052.14
Sols Wash Main	0.159	15045	2052.33*	2052.33
Sols Wash Main	0.150	15045	2052.45*	2052.45
Sols Wash Main	0.140	15045	2052.49*	2052.49
Sols Wash Main	0.132	15045	2052.45*	2052.45
Sols Wash Main	0.111	15045	2049.75*	2049.74

* 100-yr backwater elevation of 2054.17' governs.

Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (1' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

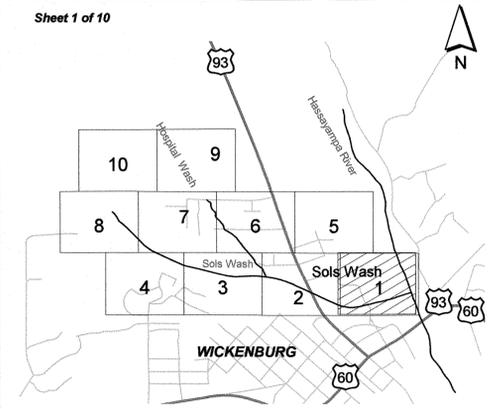
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

Sheet 1 of 10



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR FCD Contract No. FCD2005C006



EEC Engineering and Environmental Consultants, Inc.

	BY	DATE
DESIGN	CTG	06 - 07
DESIGN CHK	LAV	06 - 07
PLANS	ESM	06 - 07
PLANS CHK	LAV	06 - 07

Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Sols Wash Main	0.642	14459	2068.53	2068.52
Sols Wash Main	0.614	14459	2067.27	2067.27
Sols Wash Main	0.592	14459	2066.89	2066.98
Sols Wash Main	0.557	14459	2066.79	2066.79
Sols Wash Main	0.529	14459	2066.78	2066.78
Sols Wash Main	0.505	14459	2066.50	2066.50
Sols Wash Main	0.485	15045	2065.98	2065.98
Sols Wash Main	0.467	15045	2065.80	2065.80
Sols Wash Main	0.447	15045	2065.87	2065.87
Sols Wash Main	0.442	15045	2065.73	2065.73
Sols Wash Main	0.412	15045	2061.01	2061.01
Sols Wash Main	0.389	15045	2060.76	2060.76
Sols Wash Main	0.359	15045	2060.08	2060.08
Sols Wash Main	0.306	15045	2059.42	2059.42



Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (1' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

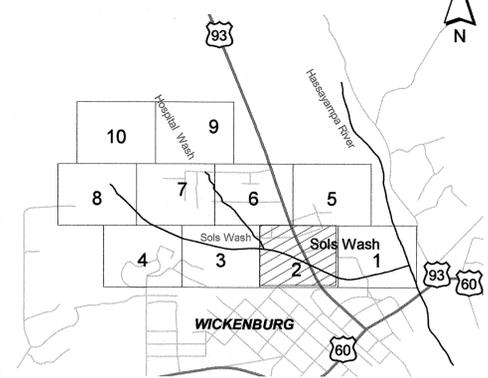
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

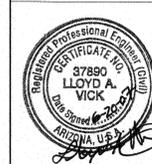
Sheet 2 of 10



No.	REVISION	BY	DATE
2			
1			

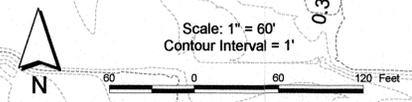
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR
FCD Contract No. FCD2005C006



eec Engineering and Environmental Consultants, Inc.		BY	DATE
DESIGN	CTG	LAV	06 - 07
DESIGN CHK	LAV	LAV	06 - 07
PLANS	ESM	ESM	06 - 07
PLANS CHK	LAV	LAV	06 - 07

Scale: 1" = 60'
Contour Interval = 1'



2 1

T7N/R5W



Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (1' Interval)
- Proposed Elevation Contour (1' interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

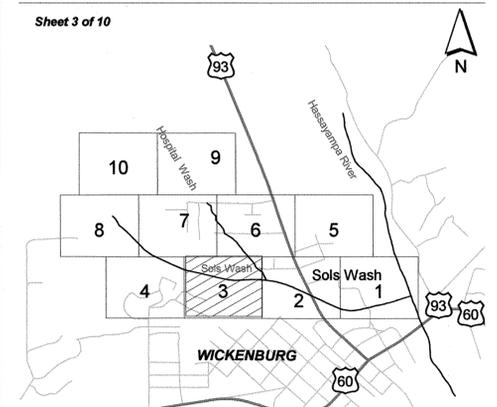
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

Sheet 3 of 10



Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Hospital Wash	0.097	500	2069.66	2069.66
Hospital Wash	0.083	500	2068.47	2068.47
Hospital Wash	0.081	500	2068.94	2068.94
Hospital Wash	0.074	500	2066.66	2066.66
Hospital Wash	0.070	500	2066.37	2066.37
Sols Wash Main	0.955	14459	2079.85	2079.85
Sols Wash Main	0.886	14459	2076.77	2076.77
Sols Wash Main	0.822	14459	2074.79	2074.80
Sols Wash Main	0.785	14459	2072.86	2072.85
Sols Wash Main	0.746	14459	2070.59	2070.59
Sols Wash Main	0.708	14459	2069.15	2069.15
Sols Wash Main	0.668	14459	2068.94	2068.94
Sols Wash Main	0.642	14459	2068.53	2068.52

No.	REVISION	BY	DATE
2			
1			

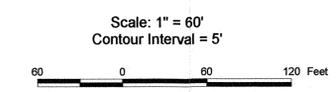
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR FCD Contract No. FCD2005C006

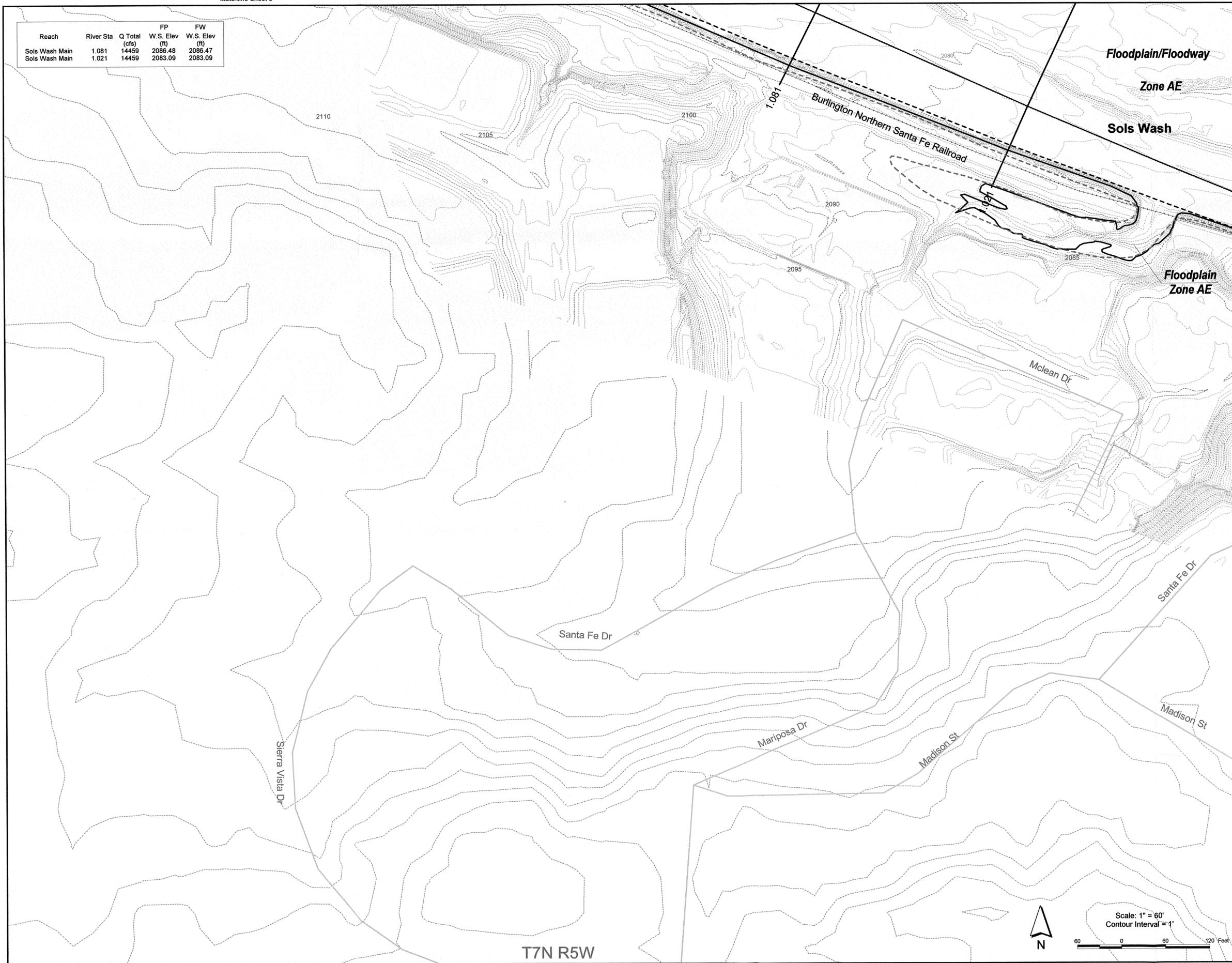


EEC Engineering and Environmental Consultants, Inc.

	BY	DATE
DESIGN	CTG	06 - 07
DESIGN CHK	LAV	06 - 07
PLANS	ESM	06 - 07
PLANS CHK	LAV	06 - 07



Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Sols Wash Main	1.081	14459	2086.48	2086.47
Sols Wash Main	1.021	14459	2083.09	2083.09



Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (1' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

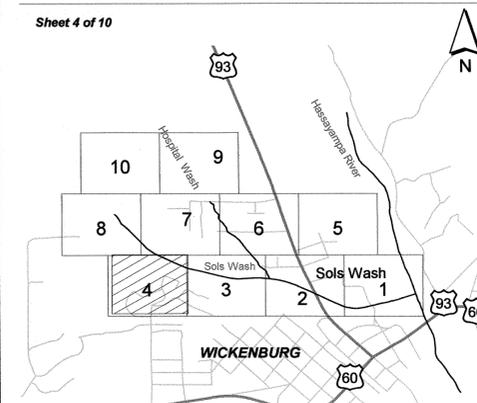
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

Sheet 4 of 10



No.	REVISION	BY	DATE
2			
1			

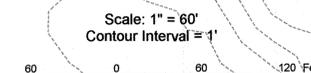
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR FCD Contract No. FCD2005C006

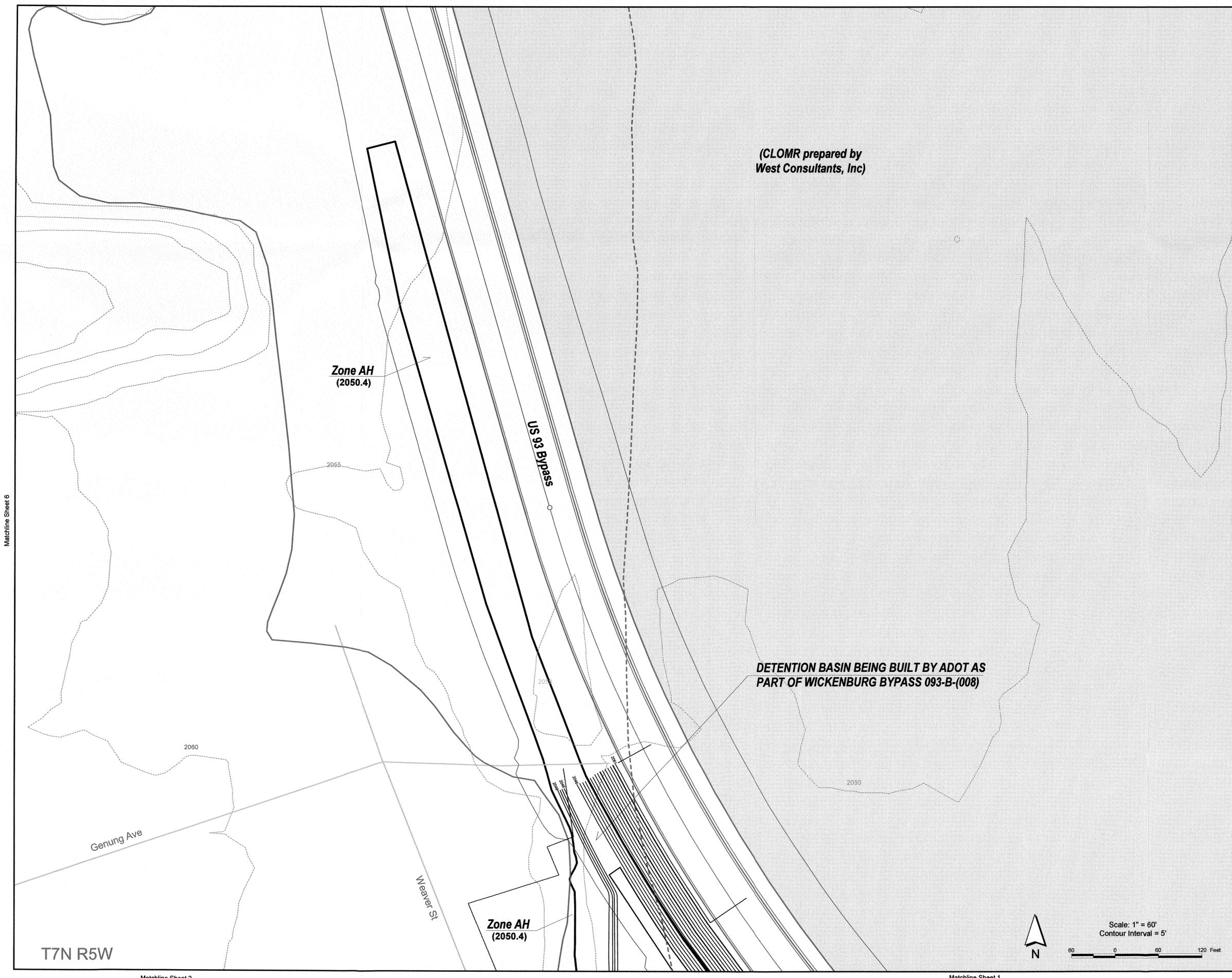


eec Engineering and Environmental Consultants, Inc.		BY	DATE
DESIGN	CTG	LAV	06 - 07
DESIGN CHK	LAV	LAV	06 - 07
PLANS	ESM	ESM	06 - 07
PLANS CHK	LAV	LAV	06 - 07

T7N R5W



Matchline Sheet 6



Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (1' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

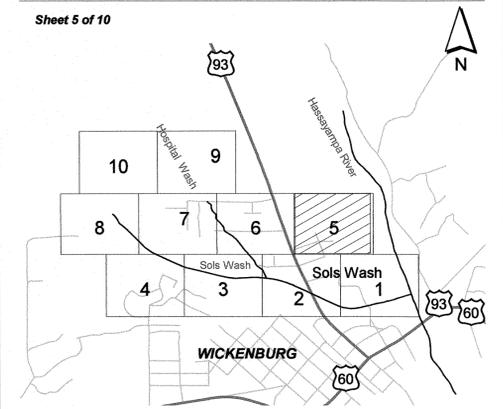
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.
3. SEE ADOT GRADING PLAN FOR HOW CONTOURS TIE INTO GRADING PLAN.

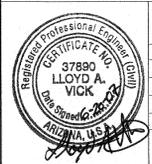
Sheet 5 of 10



2			
1			
No.	REVISION	BY	DATE

**FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

SOLS WASH CLOMR
FCD Contract No. FCD2005C006



EEC Engineering and Environmental Consultants, Inc.

	BY	DATE
DESIGN	CTG	06 - 07
DESIGN CHK	LAV	06 - 07
PLANS	ESM	06 - 07
PLANS CHK	LAV	06 - 07

T7N R5W

Matchline Sheet 2

Matchline Sheet 1



Scale: 1" = 60'
Contour Interval = 5'

T7N R5W

2 1

Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Hospital Wash	0.343	500	2077.26	2077.79
Hospital Wash	0.270	500	2073.98	2073.98
Hospital Wash	0.215	500	2071.38	2071.38
Hospital Wash	0.153	500	2070.43	2070.44
Sols Wash Main	0.822	14459	2074.79	2074.80

Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (5' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

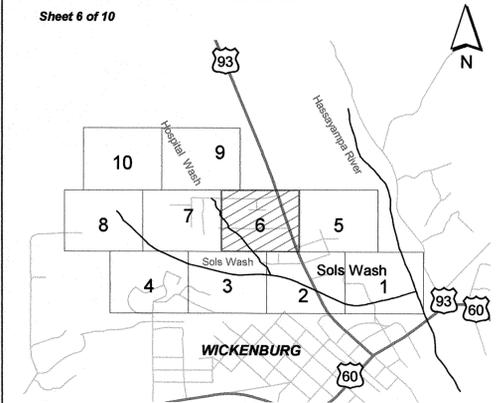
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

Sheet 6 of 10



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR
FCD Contract No. FCD2005C006



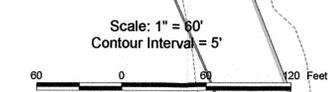
eec Engineering and Environmental Consultants, Inc.		BY	DATE
DESIGN		CTG	06 - 07
DESIGN CHK		LAV	06 - 07
PLANS		ESM	06 - 07
PLANS CHK		LAV	06 - 07

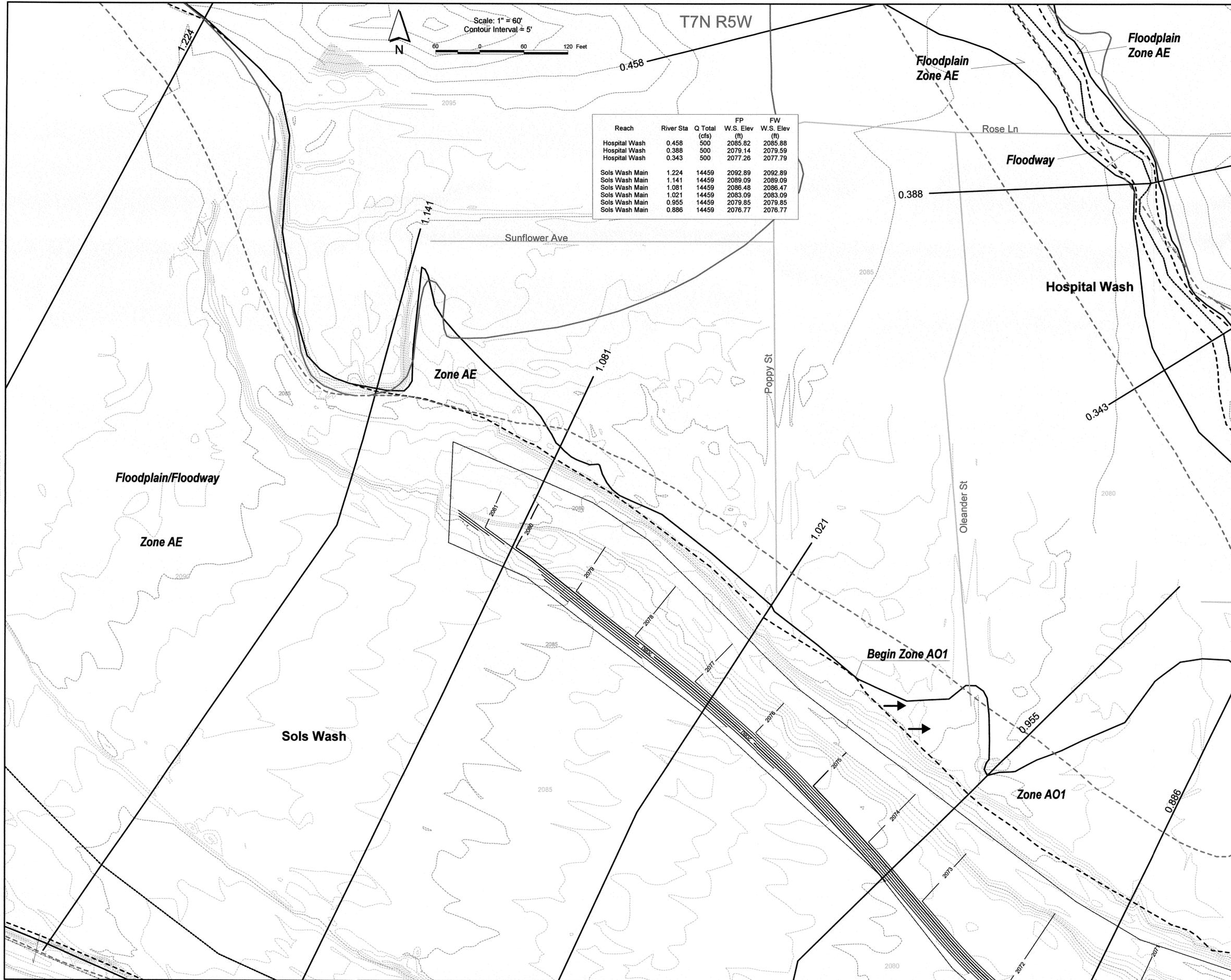
Matchline Sheet 7

Matchline Sheet 5

Matchline Sheet 3

Matchline Sheet 2





Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (5' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile
- Flood Control ROW

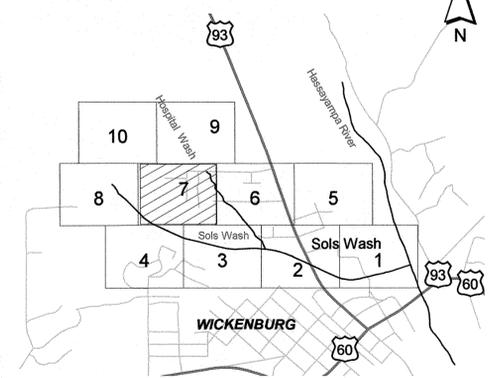
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

- THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
- SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

Sheet 7 of 10



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR

FCD Contract No. FCD2005C006



EEC Engineering and Environmental Consultants, Inc.

	BY	DATE
DESIGN	CTG	06 - 07
DESIGN CHK	LAV	06 - 07
PLANS	ESM	06 - 07
PLANS CHK	LAV	06 - 07

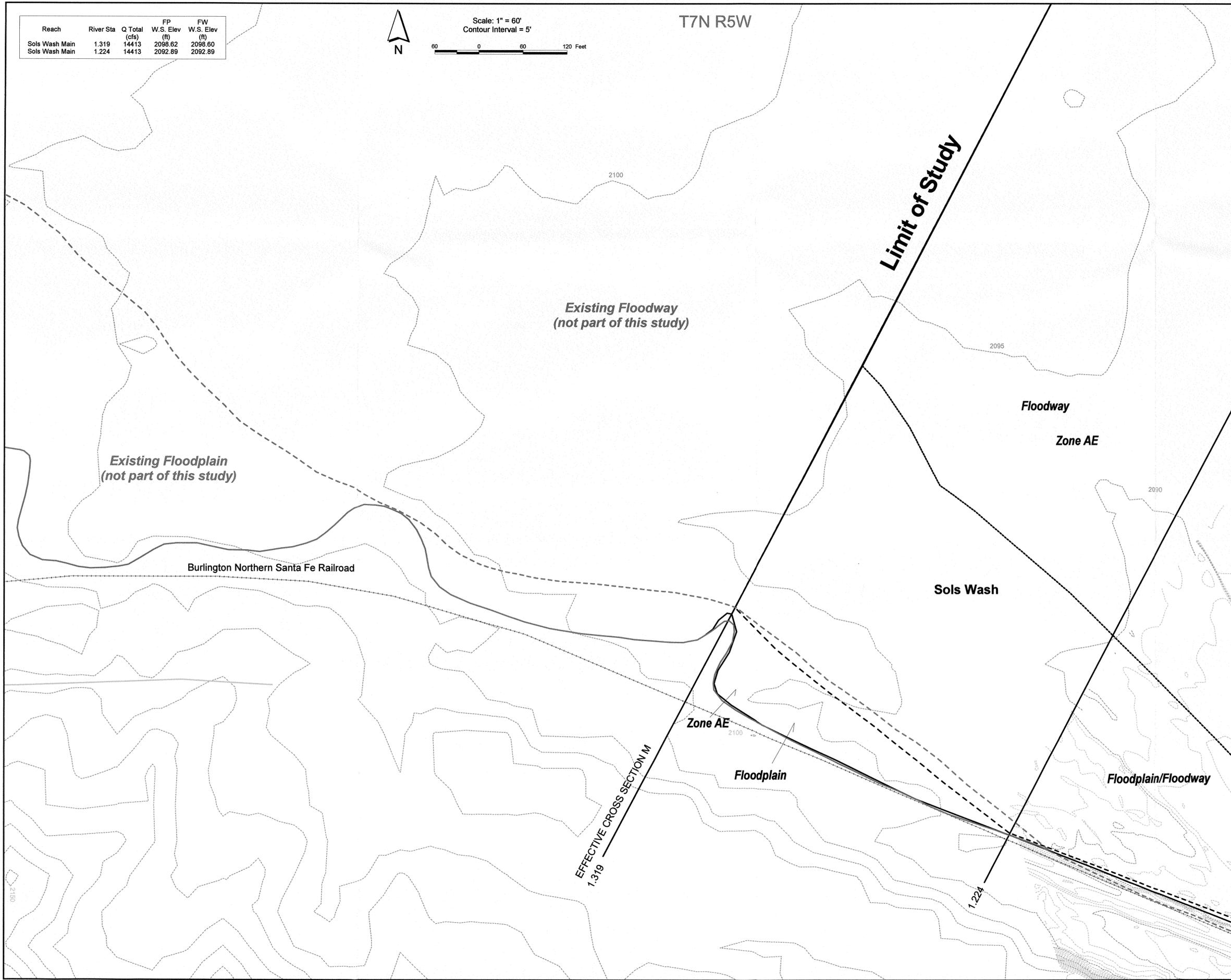
Reach	River Sta	Q Total (cfs)	FP W.S. Elev (ft)	FW W.S. Elev (ft)
Sols Wash Main	1.319	14413	2098.62	2098.60
Sols Wash Main	1.224	14413	2092.89	2092.89



Scale: 1" = 60'
Contour Interval = 5'

T7N R5W

Matchline Sheet 10



Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (5' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile

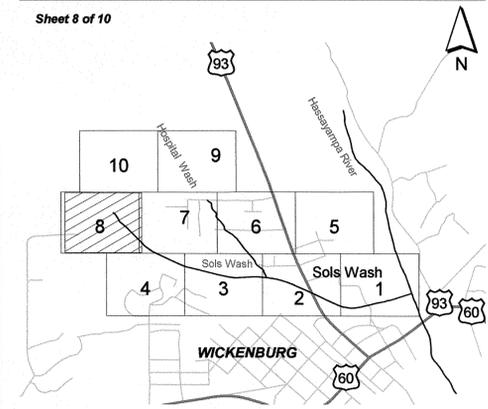
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

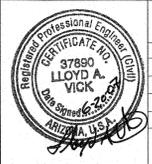
Sheet 8 of 10



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR
FCD Contract No. FCD2005C006



EEC Engineering and Environmental Consultants, Inc.

	BY	DATE
DESIGN	CTG	06 - 07
DESIGN CHK	LAV	06 - 07
PLANS	ESM	06 - 07
PLANS CHK	LAV	06 - 07

Matchline Sheet 4

T7N R5W

Scale: 1" = 60'
Contour Interval = 5'



Limit of Study

0.703

0.643

0.577

0.530

0.458

Zone AE

Zone AE

Hospital Wash

Floodplain

Floodway

Reach	River Sta	Q Total (cfs)	FP		FW	
			W.S. Elev (ft)	W.S. Elev (ft)	W.S. Elev (ft)	W.S. Elev (ft)
Hospital Wash	0.703	500	2102.71	2102.75	2098.54	2098.54
Hospital Wash	0.643	500	2098.06	2098.16	2093.28	2093.28
Hospital Wash	0.577	500	2093.16	2093.28	2089.98	2089.98
Hospital Wash	0.530	500	2089.98	2090.54	2085.82	2085.88
Hospital Wash	0.458	500	2085.82	2085.88		

Legend

- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (5' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- 1.862 River Mile

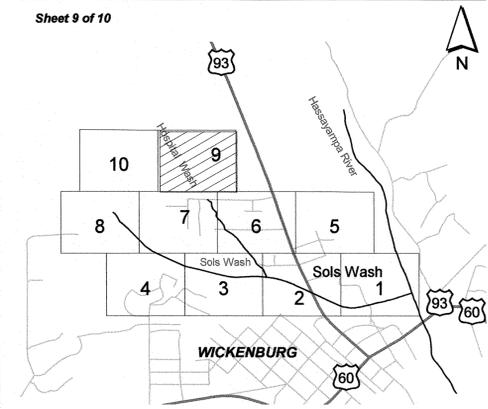
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10,000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.

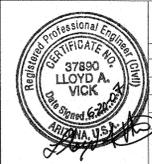
Sheet 9 of 10



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR
FCD Contract No. FCD2005C006

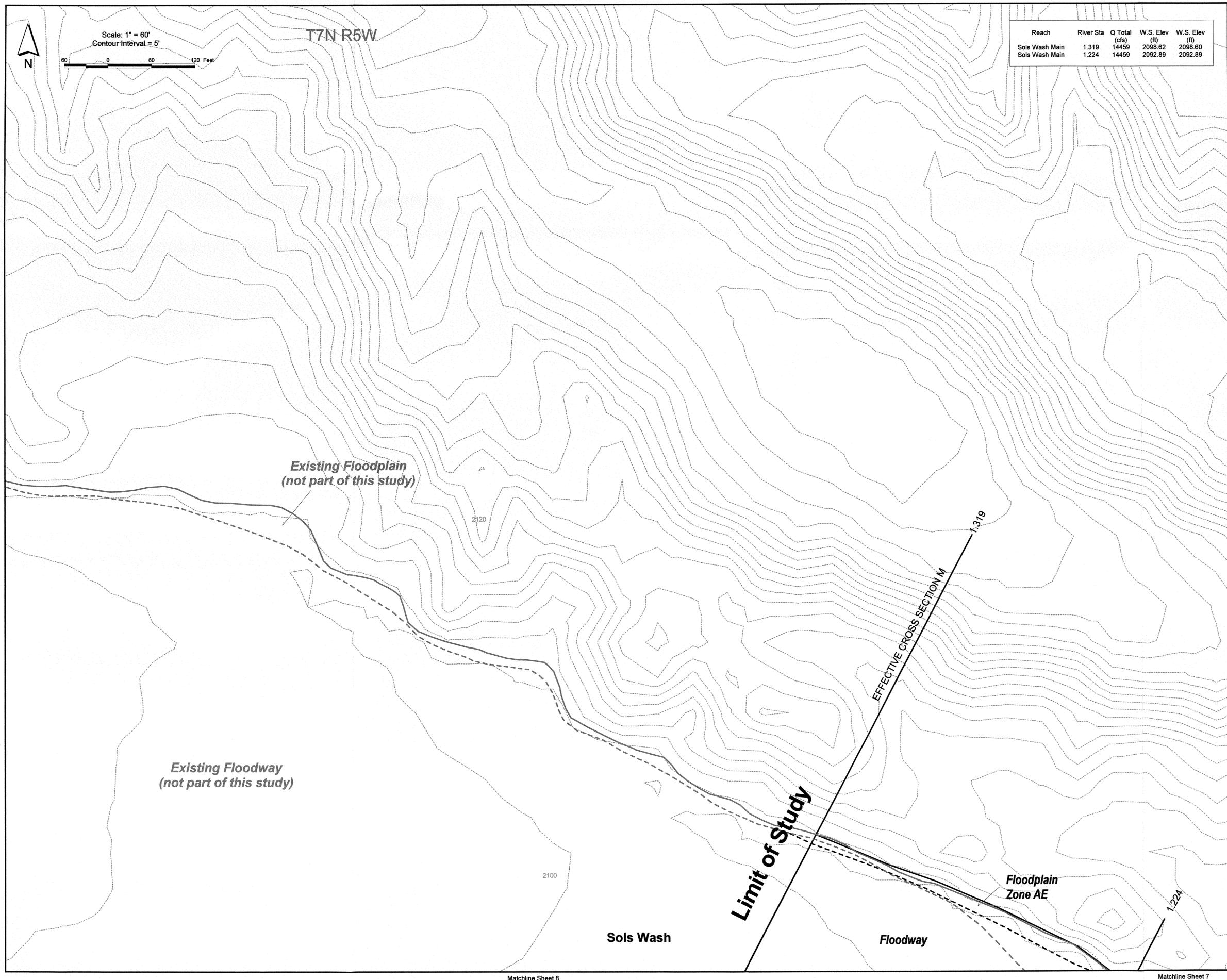


eec Engineering and Environmental Consultants, Inc.		BY	DATE
DESIGN	CTG		06 - 07
DESIGN CHK	LAV		06 - 07
PLANS	ESM		06 - 07
PLANS CHK	LAV		06 - 07

Matchline Sheet 10

Matchline Sheet 7

Matchline Sheet 6



Reach	River Sta	Q Total (cfs)	W.S. Elev (ft)	W.S. Elev (ft)
Sols Wash Main	1.319	14459	2098.62	2098.60
Sols Wash Main	1.224	14459	2092.89	2092.89

Legend

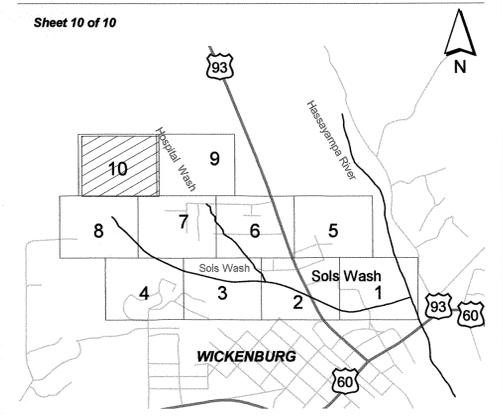
- Cross Section
- Hydraulic Baseline
- Existing Elevation Contour (5' Interval)
- Proposed Elevation Contour (1' Interval)
- Township Boundary
- Section Boundary
- New 1% Annual Chance of Flood Hazard Boundary
- New Floodway
- Effective Floodplain
- Effective Floodway
- Floodplain from West CLOMR
- Highway
- Local Road
- Railroad
- River Mile

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NAVD88

NOTES

1. THE HYDRAULIC BASE LINE IS CROSS SECTION STATION 10.000 UNLESS OTHERWISE NOTED
2. SEE ADOT GRADING PLANS FOR WICKENBURG BYPASS [093-B-(008)] DETAILED INFORMATION.



No.	REVISION	BY	DATE
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

SOLS WASH CLOMR FCD Contract No. FCD2005C006



eec Engineering and Environmental Consultants, Inc.		BY	DATE
DESIGN	CTG	LAV	06 - 07
DESIGN CHK	LAV	ESM	06 - 07
PLANS	ESM	LAV	06 - 07
PLANS CHK	LAV		

**FEMA Review Comments of
April 17, 2007**

Comment #10

Public Notifications:

- The District and Town of Wickenburg have coordinated extensively with the Goldmine Village property throughout this project. Prior to this re-submittal, the revised work maps (sheets 2 and 3 of 10) and the annotated FIRM were e-mailed to the Phil Richardson, the owner/developer of Goldmine Village, and to W. Scott Ogden of JE Fuller Hydrology and Geomorphology, Mr. Richardson's drainage consultant. A copy of that e-mail correspondence follows.
- Two open house meetings were held to inform the public of the project and to receive public input. Copies of those meeting notices are included in this section.

Catherine Regester - FCDX

From: Scott Vogel - FCDX
Sent: Thursday, June 28, 2007 1:56 PM
To: 'W. Scott Ogden'; 'Phil Richardson'
Cc: Catherine Regester - FCDX
Subject: RE: Wickenburg Downtown CLOMR Response

Scott, Thanks for the quick review.
Phil, we will go ahead and provide this information to FEMA.
Thanks

From: W. Scott Ogden [mailto:scott@jefuller.com]
Sent: Thursday, June 28, 2007 12:12 PM
To: Scott Vogel - FCDX; 'Phil Richardson'
Cc: Catherine Regester - FCDX
Subject: RE: Wickenburg Downtown CLOMR Response

Scott and Phil:

These look fine to me. Good luck with the resubmittal!

Thanks,
Scott

From: Scott Vogel - FCDX [mailto:csv@mail.maricopa.gov]
Sent: Thursday, June 28, 2007 11:25 AM
To: Phil Richardson; W. Scott Ogden
Cc: Catherine Regester - FCDX
Subject: FW: Wickenburg Downtown CLOMR Response

Gentlemen,

Attached is the Sols Wash information that we propose to send to FEMA, that relates to the Goldmine Village area.

Please take a look and reply to Cathy and me with any comments/questions or an OK.

We are on a tight schedule to resubmit to FEMA, so we'd appreciate a response by Monday, July 2.

Thanks, Scott

From: Catherine Regester - FCDX
Sent: Wednesday, June 27, 2007 4:30 PM
To: Scott Vogel - FCDX
Subject: Wickenburg Downtown CLOMR Response

Scott,

I have attached PDFs of the 2 work maps covering the Goldmine Village property as well as a copy of the FIRM,

07/02/2007

annotated to reflect the revised flood limits resulting from the project. I have also attached my response to FEMA's comments. In the cover letter to FEMA (not written yet), I will explain that we have revised the floodwall along the south side of Sols, upstream of Tegner, to allow on-site flows from Goldmine Village to drain, via a proposed swale, into Sols. Therefore, we are submitting new plan sheets for this area.

See what you think. I thought this might be the appropriate material for GV to review (or they are welcome to all of the work maps, if they would like). It would be great if we could get a response from GV on the floodplain limits on their property so that there is no question that we have met the requirements of Section 65.12 of the NFIP.

Thank you,

Cathy

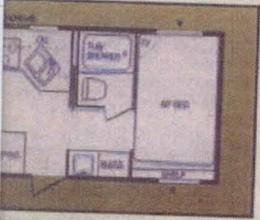
<<Response to Comments dated 2007 0417.doc>> <<workmap_02.pdf>> <<workmap_03.pdf>> <<Annotated FIRM.pdf>>

07/02/2007

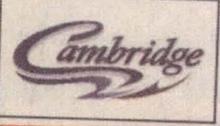
NEW WOOD RIVER CENTER



... TODAY!



**... 74
4-3000**



**... a job
... andle?
... Directory
... can.**

The Adolescent Substance Abuse Subtle Screening Inventory (The SASSI-A2) will help identify if your teen is having a problem with alcohol and/or drugs. This screening questionnaire takes into consideration false answers, is utilized in the privacy of your home, and provides total confidentiality. Test results are designed to help you decide if further intervention is needed.

**\$20 Limited Time Offer
Call 800.586.7279**
www.addictions-resources.com
Visa & MasterCard Accepted

12 LOST & FOUND

LOST AND FOUND

Ads Are Free!

Find Something?
Find the Owner!
Lose something?

The Sun can help!
Call 928-684-5454

FOUND: Medium size black Lab mix, female, brown leather collar. Found off Hwy 60 between Wickenburg & Morristown. 928-925-4913.

13 NOTICES

PUBLIC OPEN HOUSE NOTICE

The Flood Control District of Maricopa County and the Town of Wickenburg will be hosting a public open house on May 26, 2005. The open house will start at 6:00 pm at the Wickenburg Community Center Banquet Room.

The purpose of the open house is to provide information as to a flood control project on the Sols Wash Tributary of the Hassayampa River and to receive public input on the project.

For additional information contact Amy Brown at the Town of Wickenburg at 928-668-0522

of management/supervision. Job description and application packet available at Wickenburg Town Hall, 155 North Tegner Street, Suite A, Wickenburg, AZ 85390. Salary starting at \$13.99 per hour DOQ. EOE/RAE. Open until filled.

Weston Concrete & Materials, Inc. is now accepting applications for mature drivers with experience. Must have current CDL and clean record. Must pass pre-employment drug screening. Submit resumes and applications to: Weston Concrete & Materials, Inc., 1550 N Tegner St., Wickenburg, AZ 85390. Office 928-684-5112. Fax 928-684-5184. Dispatch 928-231-4222

Receptionist needed. Able to multi task, computer skills and like people. Send resume to PO Box 2449, Wickenburg, AZ 85358.

Sitter for summer. 10 yr. old boy. Tuesday - Friday 684-7757

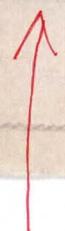
REMUDA
Nourishment for Life
Feeds
Programs for Anorexia and Bulimia

OPEN POSITIONS:

- Asst. Director of Nursing
- RN's & LPN's (On-Call)
- Primary Therapist
- Program Therapist
- Education Coordinator
- Asst. to Program Director
- Executive Asst. to VP Finance
- Medical Records Supervisor
- Insurance Relations
- Admin. Asst. to Dir. of REQ
- Recreation Therapy Coordinator
- Sr. Software Developer
- Culinary Services Associates

Remuda Ranch provides individualized treatment for eating-disordered females meeting medical, nutritional and psychological needs.
Stop by the Human Resource Office today or forward your resume to:

Remuda Ranch,
Human Resources
One East Apache Street
Wickenburg, AZ 85390
Main Line: 800-445-1900, x4297
Fax: 928-684-4247
Email: jobs@remudaranch.com
www.remudaranch.com
EOE



RAN IN MAY 18, 2005 ISSUE OF "WICKENBURG SUN"



FOR MORE INFORMATION CONTACT:

Doug Hauth, Public Information Officer
Flood Control District of Maricopa County
(602) 506-6762 dch@mail.maricopa.gov

Flood Control District Of Maricopa County To Host Public Meeting

August 18 meeting to discuss proposed drainage improvements along Sols Wash

FOR IMMEDIATE RELEASE: Phoenix, AZ - The Town of Wickenburg (Town) and the Flood Control District of Maricopa County (District) are hosting an open house on Thursday, August 18, 2005 from 6-8:00 p.m. at the Wickenburg Community Center, located at 160 N. Valentine St., Wickenburg, AZ. The subject of the open house is the Wickenburg Downtown Flooding Hazard Mitigation Project.

The central purpose of this open house is to provide residents with pertinent information about the purpose and need for this project, which is to mitigate flooding hazards to Downtown Wickenburg. The meeting will also inform area residents of proposed project features that will contain the flows in Sols Wash under the Tegner Bridge and under the proposed Interim Arizona Department of Transportation (ADOT) State Route-93 (SR-93) bypass bridge near the Hassayampa River. Finally, the meeting will educate residents of the projected schedule for the design and construction of this project.

This project will provide 100-year flood protection to approximately 100 residential properties and; 12 commercial properties, and to Coffinger Park in the Town of Wickenburg upon completion. The benefit to many properties will be removal from the floodplain; others will simply be provided increased flood protection.

Members of the Flood Control District, the Town of Wickenburg, and consultants to this project will be available to answer resident's questions during the open house.

The Flood Control District of Maricopa County is tasked to provide regional flood hazard identification, regulation, remediation, and education to Maricopa County residents so that they can reduce their risks of injury, death, and property damage from flooding, while still enjoying the natural and beneficial values served by floodplains. The Maricopa County Board of Supervisors also serves as the Board of Directors for the District. The Town of Wickenburg has requested District involvement in this important project.

###



TOWN OF WICKENBURG

155 N. Tegner, Ste. A - Wickenburg, Arizona 85390
(928) 684-5451 X522 FAX (602) 506-1580
Amy Brown, HR Analyst HRD@ci.wickenburg.az.us

PUBLIC OPEN HOUSE NOTICE

The Flood Control District of Maricopa County and the Town of Wickenburg will be hosting a public open house on August 18, 2005. The open house will start at 6:00 pm at the Wickenburg Community Center.

The purpose of the open house is to provide information as to a flood control project on the Sols Wash Tributary of the Hassayampa River and to receive public input on the project.

For additional information contact Amy Brown at the Town of Wickenburg at 928-668-0522.

Publish in:

The Wickenburg Sun 08/10/05
Post in Town Hall
Post in the Community Center
Post in the Wickenburg Town Library

Additional Data

Revised Annotated FIRM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Arizona State Plane Zone 3176 (Central Arizona). The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Maricopa County. Orthophoto images were produced at a scale of 1:5000 using HARN for control. Aerial photography is dated December 2000 to December 2002.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

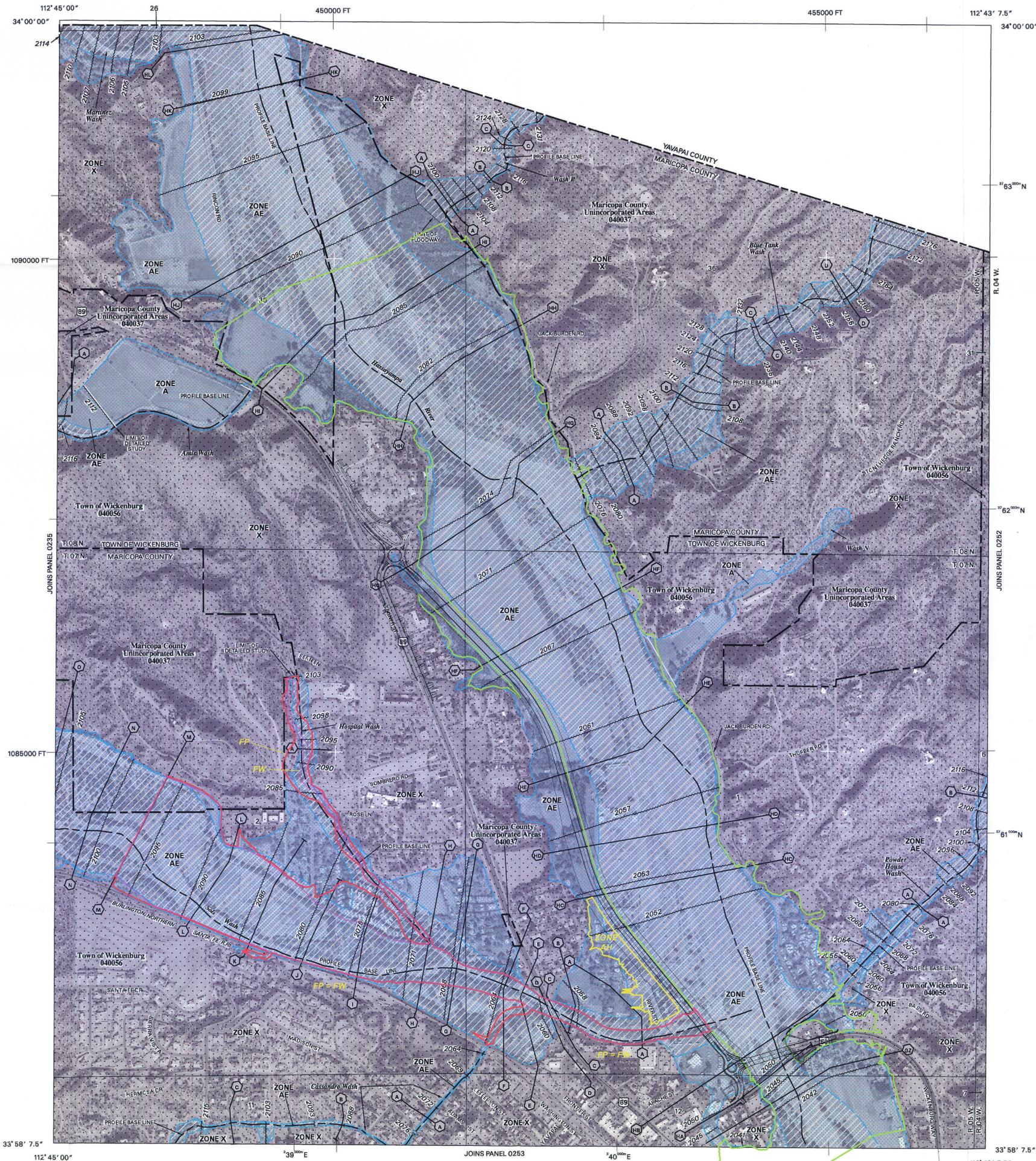
Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9816 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9820 and its website at <http://www.msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMAMAP (1-877-336-2827) or visit the FEMA website at <http://www.fema.gov/>.

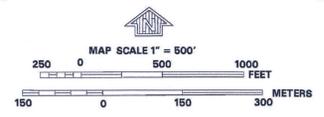
Legend

-  Floodway
-  Floodplain
-  Floodplain (per US-93 Bypass CLOMR prepared by West and Assoc)



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
 - ZONE AE** Base Flood Elevations determined.
 - ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
 - ZONE AO** Flood depths of 1 to 3 feet (usually shallow flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
 - ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently described. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
 - ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
 - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
 - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
 - OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodplain.
 - ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHER PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
 - 0.2% annual chance floodplain boundary
 - Floodway boundary
 - Zone D boundary
 - CBRS and OPA boundary
 - Boundary dividing Special Flood Hazard Area Zones, and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
 - Base Flood Elevation line and value, elevation in feet*
 - Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the National Geodetic Vertical Datum of 1929
-  A Cross section line
 -  B Transsect line
- 112° 07' 08", 33° 25' 41" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere.
- 176°E 1000-meter Universal Transverse Mercator grid tick values zone 12.
- 875000 FT 5000-foot grid tick values: Arizona State Plane coordinate system, central zone (FIPSZONE 3176) NAD83 (Transverse Mercator)
- XDV2313 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M.S. River Mile
- MAP REPOSITORY**
- Refer to Repositories Listing on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
- April 15, 1988
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**
- September 29, 1989, September 4, 1991, July 19, 2001
- September 30, 2005 - to update corporate limits, to change Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to incorporate previously issued Letters of Map Amendment.
- For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6820.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0251H

FIRM FLOOD INSURANCE RATE MAP MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 251 OF 4350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	0251	H
WICKENBURG TOWN OF	040056	0251	H

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
04013C0251H

MAP REVISED
SEPTEMBER 30, 2005

Federal Emergency Management Agency

Additional Data

Revised Cross Section Sheets