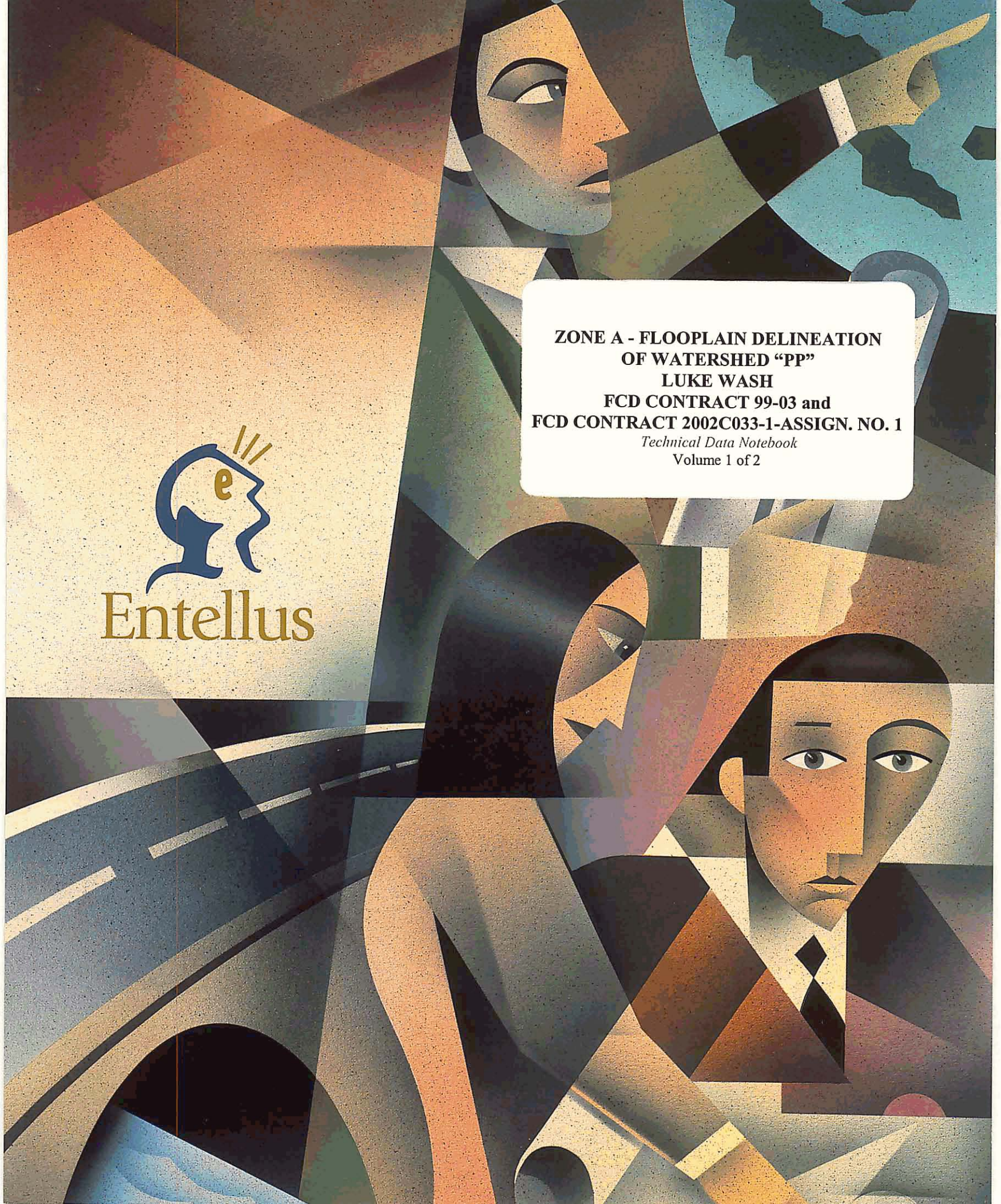

ZONE A - FLOOPLAIN DELINEATION OF WATERSHED "PP" LUKE WASH

FCD CONTRACT 99-03 and
FCD CONTRACT 2002C033-1-ASSIGN. NO. 1

Technical Data Notebook

Volume 1 of 2

Entellus

ZONE A - FLOOPLAIN DELINEATION OF WATERSHED "PP" LUKE WASH FCD CONTRACT 99-03 and FCD CONTRACT 2002C033-1-ASSIGNMENT NO. 1

Technical Data Notebook

Volume 1 of 2

Prepared by:

Intelligent Engineering
Environmental *Solutions*

Registered Professional Engineer (Civil)
CERTIFICATE NO.
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Date Signed 6/18/03
ARIZONA, U.S.A.

JUN 18 2003

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June, 2003

ZONE A – FLOODPLAIN DELINEATION OF WATERSHED "PP"

LUKE WASH

F.C.D CONTRACT 99-03

REVISED BY F.C.D. CONTRACT 2002C033-1

TECHNICAL DATA NOTEBOOK

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 6/12/04
ARIZONA, U.S.A.

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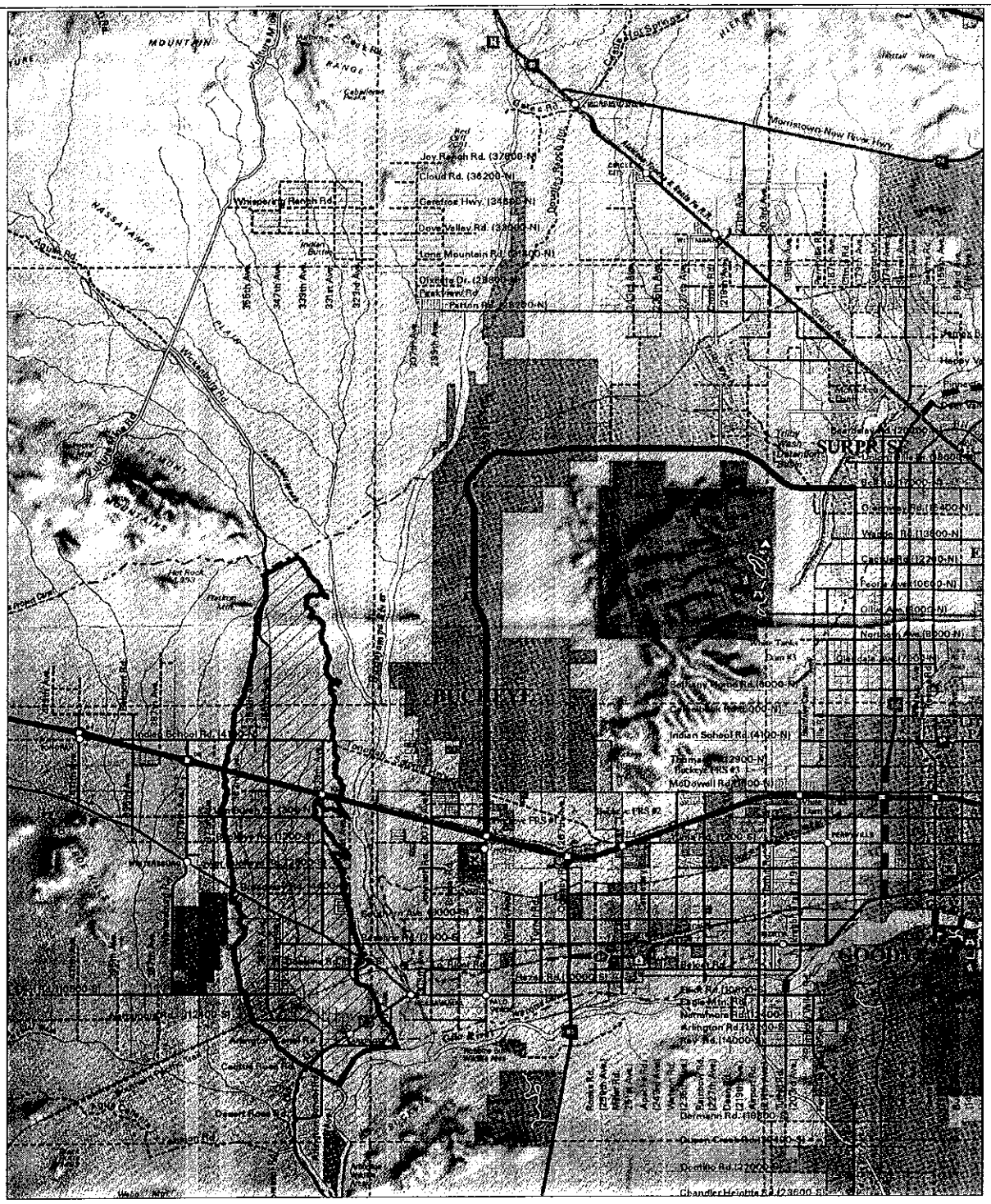
SECTION 1: INTRODUCTION

The information and analysis presented in this report are part of the scope of work performed by Entellus, Inc. for the Flood Control District of Maricopa County (District) under Contract FCD No. 99-03 – Assignments Nos.1 and 2 and revised by Contract FCD 2002C033-1 – Assignment No. 1. The project under this contract consists of the development of the 100-year hydrology and delineation of approximate Zone A 100-year floodplain for the major un-delineated watercourses that are located within watershed "PP" (approximately 90 miles) and of approximately 20 miles of watercourses tributary to the Hassayampa River. As part of this project, the study area located within Interstate-10 and the Southern Pacific Railroad was mapped using LIDAR technology.

The study area is located in an unincorporated area of western Maricopa County. The general location of the study area is between 363rd Avenue (east of Palo Verde Nuclear Generating Station) and 319th Avenue (west of the Hassayampa River); and between the Gila River and the Central Arizona Project Canal (CAP) as shown in **Figure 1**. The study area is bisected by Interstate-10, Solome Highway, and the Southern Pacific Railroad.

The area is primarily natural undeveloped desert with small portions of agricultural farmland and urban development. Most of the agricultural and urban developments are located within the southern portion of the watershed (south of Interstate-10).



LEGEND

PROJECT AREA BOUNDARY

FIGURE 1
VICINITY MAP

SECTION 2: ADWR/FEMA FORMS

FEMA Form 1: Revision Requester and Community Official Form

FEMA Form 3: Hydraulic Analysis

FEMA Form 4: Riverine Hydraulic Analysis

FEMA Form 5: Riverine/Coastal Mapping

FEMA Form 7: Bridge/Culvert

Zone A - Floodplain Delineation of Watershed "PP"
Luke Wash F.C.D. Contract No. 99-03
Revised by Contract FCD 2002C033-1

FEMA Form 1: Revision Requester and Community Official Form

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL FORM**	O.M.B No. 3067-0148 Expires April 30, 2001

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☐ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).

☐ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☒ Other Describe: New approximated flood insurance study - area studied for flood hazard determination and mapping

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☐ Physical Change ☐ Improved Methodology/Data ☐ Floodway Revision

☒ Other Describe: New flood insurance study
Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Washes within the Luke Wash Watershed

3. Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

4. FEMA zone designations affected: X
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
040037	Maricopa County, Unincorporated Areas	AZ	04013C	1510	12/03/93
	See section 7.3 of the TDN for all the annotated FIRM panels				

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☒ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☐ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☐ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
   ☐ Yes ☐ No

If Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☐ No ☒ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☐ Yes ☒ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☐ performing ☒ overseeing compliance with the maintenance and operation plans of the _____
(Name)
flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☐ **Yes** ☐ **No** ☒ **N/A**

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☐ Yes Fee amount: $_____

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt. ☒ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

Note: **I understand that my signature indicates that all information submitted in support of this request is correct**

Signature of Revision Requester

Tim Murphy, Floodplain Branch Manager
Printed Name and Title of Revision Requester

Flood Control District of Maricopa County.
Company Name

Telephone No.: (602) 506-4601 Date: Jan 7, 2002

Note: **Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.**

Signature of Community Official

Michael Ellegood, FCDMC Chief Engineer and General Manager
Printed Name and Title of Community Official

Maricopa County Unincorporated Areas
Community Name

Telephone No.: _____ Date: _____

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

Signature

Hernan A Aristizabal, Entellus, Inc. Project Manager
Printed Name and Title of Revision Requester

Registr No. 29737 Expires (Date) _____ State AZ

Type of License/Expertise: Register Professional Engineer/Civil

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ **Hydrologic** (3)	new or revised discharges
☒ **Hydraulic** (4)	new or revised water-surface elevations
☒ ***Mapping*** (5)	*floodplain/floodway changes*
☐ **Channelization** (6)	channel is modified
☒ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☐ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan

Zone A - Floodplain Delineation of Watershed "PP"
Luke Wash F.C.D. Contract No. 99-03
Revised by Contract FCD 2002C033-1

FEMA Form 4: Riverine Hydraulic Analysis

FEMA Form 4: Riverine Hydraulic Analysis

1. T1S-R5W-S29
2. T1S-R5W-S29W
3. T1S-R5W-S29E
4. T1S-R5W-S17
5. T2N-R6W-S35
6. T1N-R6W-S11
7. T2N-R6W-S36
8. T2N-R6W-S36W
9. T1S-R5W-S32 (Luke Wash)
10. T1N-R5W-S32
11. T1N-R6W-S12
12. T1S-R6W-S13 (Phillips Wash South)
13. T2N-R5W-S31W (Phillips Wash North)
14. T2N-R5W-S19
15. T2N-R5W-S08
16. T3N-R5W-S31
17. T3N-R5W-S30
18. T1N-R6W-S05 (Dickey Wash South)
19. T2N-R5W-S31 (Dickey Wash North)
20. T1N-R5W-S30
21. T2N-R5W-S32
22. T1S-R5W-S08
23. T1S-R5W-S09
24. T1N-R5W-S33W
25. T1N-R5W-S33N
26. T1N-R5W-S28W
27. T1S-R5W-S09W
28. T1N-R5W-S33E
29. T1N-R5W-S28E
30. T1S-R5W-S16
31. T1S-R5W-S22N
32. T1S-R5W-S22S
33. T1N-R5W-S22
34. T1N-R5W-S15
35. T1N-R5W-S10
36. T1N-R5W-S04
37. T2N-R5W-S33E
38. T2N-R5W-S33W
39. T2N-R5W-S21
40. T2N-R5W-S05E
41. T3N-R5W-S32E
42. T2N-R5W-S28
43. T2N-R5W-S05W
44. T2N-R5W-S27S
45. T2N-R5W-S27N
46. T2N-R5W-S04
47. T3N-R5W-S28S
48. T3N-R5W-S28N
49. T3N-R5W-S20
50. T3N-R5W-S21S
51. T3N-R5W-S21N

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S29

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 3/5 mile west of Arlinton School Road at ODL U.S. 80

Upstream Limit: 1/5 mile east of 347th Ave (alignment) and 1/16 mile south of Arlington Canal Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ *Community Name* ☐ *Corporate Limits labeled* ☐ *Study limits labeled*

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S29W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 347th Ave (alignment) and 1/16 mile south of Arlington Canal Road (alignment), confluence with T1S-R5W-S29

Upstream Limit: 1/8 mile east of 355th Ave (alignment) and 1/2 mile north of Arlington Canal Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See nstructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and *revised or post-project* conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ ***Natural*** ***File Name*** _____ ☐ ***Floodway*** ***File Name*** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S29E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 347th Ave (alignment) and 1/16 mile south of Arlington Canal Road (alignment), confluence with T1S-R5W-S29

Upstream Limit: 1/3 mile east of 363rd Ave (aligment) and 1/4 mile north of Dobbuns Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S17

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 347th Ave (alignment) and 7/8 mile north of Narramore Road at Southern Pacific Railroad

Upstream Limit: 1/8 mile west of 363rd Ave at Interstate-10

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other *– Please attach a sheet describing all other models submitted along with the file names.* ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: *T2N-R6W-S35*

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/8 mile west of 363rd Ave at Interstate-10, confluence with T1S-R5W-S17

Upstream Limit: 2/5 mile west of 355th Ave and 1/4 mile south of Bethany Home Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R6W-S11

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile west of 363rd Ave and 1/16 mile south of Van Buren Road, confluence with T1S-R5W-S17

Upstream Limit: 2/5 mile east of 363rd Ave and 1/16 mile north of Interstate-10

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See *instructions for directions on when other models may be required.*	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – *Please attach a sheet describing* all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and *reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this* burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R6W-S36

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: *1/16 mile west of 355th Ave and 1/16 mile south of McDowell Road, confluence with T1S-R6W-S13*

Upstream Limit: 1/16 mile west of 355th Ave (alignment) and 1/3 mile north of Northern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R6W-S36W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/16 mile west of 355th Ave at Interstate-10, confluence with T1N-R6W-S36

Upstream Limit: 1/8 mile east of 355th Ave and 1/8 mile south of Indian School Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	***for areas which do not have detailed flooding:***
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., *Duplicate Effective model to* Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required *for areas* which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ ***Natural*** ***File Name*** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S32 (Luke Wash)

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: *2/3 mile west of 339th Ave (alignment) and 1/8 mile south of Elliot Road (alignment)*

Upstream Limit: 1/16 mile west of 347th Ave (alignment) and 1/16 mile north of Broadway Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S32

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: At 347th Ave (alignment) and Salome Highway, confluence with T1S-R5W-S32 (Luke Wash)

Upstream Limit: 1/16 mile west of 347th Ave (alignment) and 1/16 mile north of Broadway Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: *Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC* 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R6W-S12

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/4 mile west of 355th Ave and 1/3 mile south of Van Buren Road, confluence with T1S-R6W-S13

Upstream Limit: 3/10 mile west of 355th Ave and 1/16 mile south of McDowell Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R6W-S13 (Phillips Wash South)

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: *1/16 mile west of 347th Ave (alignment) and 1/16 mile north of Broadway (alignment), confluence with* T1S-R5W-S32

Upstream Limit: 1/16 mile west of 355th Ave at Interstate-10

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S31W (Phillips Wash North)

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 355th Ave at Interstate-10

Upstream Limit: 2/5 mile east of 355th Ave (alignment) and 2/5 mile south of Cactus Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ *Natural* *File Name* _____ ☐ *Floodway* *File Name* _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S19

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 355th Ave at Indian School Road, confluence with T2N-R5W-S31W

Upstream Limit: 2/5 mile east of 355th Ave and 1/8 mile south of Bethany Home Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see Instructions for Information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S08

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/10 mile east of 347th Ave (alignment) and 1/5 mile north of Bethany Home Road (alignment), confluence with T2N-R5W-S31W

Upstream Limit: `1/8 mile east of 347th Ave (alignment) and 1/4 mile north of Glendale Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. *This model must incorporate any physical changes to the floodplain since* the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S31

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 355th Ave (alignment) and 1/5 mile North of Olive Ave (alignment), confluence with T3N-R5W-S30

Upstream Limit: 3/4 mile east of 355th Ave (alignment) and 1/16 mile south of Peoria Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. *This model must incorporate any physical changes to the floodplain since* the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S30

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 355th Ave (alignment) and 1/16 mile south of Olive Ave (alignment), confluence with T2N-R5W-S31W

Upstream Limit: 1/16 mile east of 347th Ave (alignment) and 2/5 mile south of Peoria Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ *Natural* *File Name* _____ ☐ *Floodway* *File Name* _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R6W-S05 (Dickey Wash South)

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/3 mile west of 347th Ave (alignment) and 1/5 mile south of Lower Buckeye Road, confluence with T1S-R6W-S13

Upstream Limit: 1/8 mile west of 347th Ave (alignment) at McDowell Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S31 (Dickey Wash North)

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/8 mile west of 347th Ave (alignment) at McDowell Road, confluence with T1N-R6W-S05

Upstream Limit: 1/4 mile west of 347th Ave (alignment) and 1/8 mile north of Camelback Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S30

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/16 mile north of Broadway Road (alignment) and 1/16 mile west of 347th Ave (alignment), confluence with T1S-R5W-S32

Upstream Limit: 1/3 mile west of 339th Ave and 1/5 mile north of Van Buren Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S32

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/8 mile east of 347th Ave (alignment) at McDowell Road, comfluence with T1N-R6W-S05

Upstream Limit: 1/2 mile east of 347th Ave (alignment) and 1/2 mile north of Thomas Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S08

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/3 mile west of 339th Ave (alignment) at Southern Pacific Railroad

Upstream Limit: 1/3 mile west of 339th Ave (alignment) and 1/8 mile south of Dobbins Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S09

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 339TH Ave (alignment) at Southern Pacific Railroad

Upstream Limit: 1/2 mile west of 331st Ave and 1/4 mile north of Southern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and *revised or post-project conditions must be submitted.*

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S33W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile west of Salome Highway and 1/10 mile south of Baseline Road, confluence with T1S-R5W-S09

Upstream Limit: 1/8 mile west of 399th Ave and 1/16 mile north of Southern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S33N

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile west of 331st Ave and 2/5 mile south of Southern Ave (alignment), confluence with T1S-R5W-S09

Upstream Limit: 1/10 mile east of 339TH Ave and 1/8 mile south of Braodway Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ ***Natural*** ***File Name*** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ ***Floodway*** ***File Name*** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ ***Natural*** ***File Name*** _____ ☐ ***Floodway*** ***File Name*** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S28W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile west of 331st Ave and 1/4 mile north of Southern Ave (alignment), confluence with T1S-R5W-S09

Upstream Limit: 1/2 mile west of 331st Ave and 2/5 mile north of Broadway Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined: Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ *Project causes* 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S09W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 2/5 mile west of 331st Ave (alignment) and 1/16 mile north of Southern Pacific Railroad, confluence with T1S-R5W-S09

Upstream Limit: 1/16 mile east of 331st Ave and 1/4 mile north of Dobbins Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S33E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision *OR* *submit a copy of the FIRM* with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile west of 331st Ave and 1/16 mile south of Baseline Road, confluence with T1S-R5W-S09

Upstream Limit: 1/16 mile east of 331st Ave and 1/3 mile south of Southern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S28E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile west of 331ST Ave and 1/4 mile north of Southern Ave (alignment), confluence with T1S-R5W-S09

Upstream Limit: 1/4 mile west of 331st Ave and 3/5 mile north of Broadway Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S16

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/4 mile west of 331st Ave (alignment) and 1/4 mile south of Elliot Road (alignment)

Upstream Limit: 1/5 mile east of 331st Ave (alignment) and 1/4 mile south of Southern Pacific Railroad

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S22N

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 331st Ave and 1/2 mile north of Arlington Canal Road (alignment) at ODL U.S. 80

Upstream Limit: 1/3 mile west of 323rd Ave (alignment) and 2/5 mile south of Elliot Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1S-R5W-S22S

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/8 mile west of 323rd Ave and 1/16 mile south of Arlington Canal Road (alignment)

Upstream Limit: 1/5 mile north of Narramore Road (alignment) at OLD U.S. 80

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S22

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east 331st Ave and 5/8 mile north of Broadway Road (alignment)

Upstream Limit: 1/8 mile east of 339th Ave and 3/5 mile north of Buckey Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S15

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/4 mile east of 331st Ave and 1/3 mile south of Buckey Road (alignment)

Upstream Limit: 1/2 mile east of 339th Ave and 1/2 mile north of Buckey Road (allignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S10

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/16 mile east of 331st Ave and 5/8 mile south of Interstate-10

Upstream Limit: 1/4 mile east of 339th Ave at Interstate-10

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T1N-R5W-S04

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/8 mile west of 331st Ave (alignment) at Interstate-10, confluence with T2N-R5W-S33E

Upstream Limit: 1/4 mile east of 339th Ave and 2/5 mile south of Thomas Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to *Corrected Effective model*). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S33E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 331st Ave and 1/16 mile south of Interstate-10

Upstream Limit: 1/2 mile west of 339th Ave (alignment) and 1/4 mile south of Olive Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any *changes made from* model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – *Please attach a sheet describing all other models submitted along with the file names.* ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S33W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 339th Ave and 3/10 mile south of Thomas Road (alignment), confluence with T2N-R5W-S33E

Upstream Limit: 3/5 mile east of 347th Ave (alignment) at Indian School Road

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S21

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/4 mile east of 337th Ave and 1/4 mile north Indian School Road, confluence with T2N-R5W-S33E

Upstream Limit: 1/5 mile west 337th Ave and 2/5 mile south of Camelback Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any *changes made from* model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – *Please attach a sheet describing all other models submitted along with the file names.* ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S05E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: *3/10 mile west of 339th Ave (alignment) and 1/5 mile north of Glendale Ave (alignment), confluence with* T2N-R5W-S33E

Upstream Limit: 1/2 mile east of 347th Ave (alignment) and 1/8 mile south of Northern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S32E

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 347th Ave (alignment) and 1/8 mile north of Northern Ave (alignment), confluence with T2N-R5W-S33E

Upstream Limit: 1/32 mile east of 347th Ave (alignment) and 1/16 mile south of Olive Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S28

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/3 mile east of 339th Ave and 3/4 mile north of Thomas Road (alignment), confluence with T2N-R5W-S33E

Upstream Limit: 1/3 mile east of 337th Ave and 1/4 mile south of Camelback Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S05W

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/4 mile west of 339th Ave (alignment) and 1/2 mile south of Northern Ave (alignment), confluence with T2N-R5W-S33E

Upstream Limit: 1/4 mile west of 339th Ave (alignment) and 1/3 mile north of Northern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ ***Natural*** ***File Name*** _____ ☐ ***Floodway*** ***File Name*** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ ***Natural*** ***File Name*** _____ ☐ ***Floodway*** ***File Name*** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – *Please attach a sheet describing all other models submitted along with the file names.* ☒ ***Natural*** ☐ ***Floodway***

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S27S

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 2/5 mile east of 331st Ave (alignment) and 1/8 mile north of Thomas Road (alignment)

Upstream Limit: 1/4 mile west of 331st Ave (alignment) and 1/8 mile south of Camelback Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S27N

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/2 mile east of 331st Ave (alignment) and 2/5 mile north of Thomas Road (alignment)

Upstream Limit: 1/4 mile west of 331st Ave (alignment) and 1/3 mile north of Camelback Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 *described below must be submitted.*

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model *must reflect proposed conditions.*

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T2N-R5W-S04

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 3/5 mile east of 339th Ave (alignment) and 1/8 mile north of Glendale Ave (alignment)

Upstream Limit: 1/16 mile east of 339th Ave (alignment) and 1/2 mile north of Northern Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ Natural File Name _____ ☐ Floodway File Name _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – *Please attach a sheet describing all other models submitted along with the file names.* ☒ Natural ☐ Floodway

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see Instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S28S

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/3 mile east of 339th Ave (alignment) and 1/8 mile north of Olive Ave (alignment)

Upstream Limit: 1/32 mile west of 339th Ave (alignment) and 2/5 mile south of Peoria Ave (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 *described below must be submitted.*

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S28N

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/5 mile east of 339th Ave (alignment) and 1/8 mile south of Peoria Ave (alignment)

Upstream Limit: 1/16 mile west of 347th Ave (alignment) and 1/4 mile north of Cactus Road (alignment) at Cap Hayden Rhodes Aqueduct

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S20

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/3 mile west of 339th Ave (alignment) and 1/4 mile north of Peoria Road (alignment), confluence with T3N-R5W-S28N

Upstream Limit: 1/5 mile west of 347th Ave (alignment) and 1/2 mile south of Cactus Road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any *changes made from model to model (e.g.,* Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the *requester's equipment and to assure* that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not *reflect any man-made physical changes since the date* of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____
The Existing or *Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S21S

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/16 mile east of 339th Ave (alignment) and 2/3 mile south of Cactus Road (alignment)

Upstream Limit: 2/5 mile west of 339th Ave (alignment) and 1/16 mile south of Cactus road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	**for areas which do not have detailed flooding:**
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the *Duplicate Effective (item 1)* and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed *flooding; however, BFEs may not be added to* the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any *modifications that have occurred within the floodplain* since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended. For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ Horizontal/Vertical Scales indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Maricopa County

Flooding Source: T3N-R5W-S21N

Project Name/Identifier: Zone A Delineation of Watershed "PP", Luke Wash FCD 99-03

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: 1/16 mile east of 339th Ave (alignment) and 1/8 mile south of Cactus Road (alignment)

Upstream Limit: 3/10 mile west of 339th Ave (alignment) and 1/5 mile north of Cactus road (alignment)

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	***for areas which do not have detailed flooding:***
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☐ **Natural** **File Name** _____ ☐ ***Floodway*** ***File Name*** _____

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☐ **Natural** **File Name** _____ ☐ **Floodway** **File Name** _____

The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is *revised to reflect revised or post-project conditions.* This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☒ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☐ Yes ☒ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☐ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☐ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☐ Project causes 100-year floodplain or floodway elevations to increase *(state if increases are located off the requester's property)*

Explanation attached with Form ☐ **Explanation provided on attached printout** ☐

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☐ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

☐ Stream Name ☐ Community Name ☐ Corporate Limits labeled ☐ Study limits labeled

☐ Confluences labeled ☐ Channel Stationing ☐ Streambed profiled ☐ Cross Sections labeled

☐ *Horizontal/Vertical Scales* indicated ☐ 100-year elevs profiled*

☐ Road Crossings ☐ Labeled ☐ Low Chord Elevations ☐ Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached ☐ **Yes** ☒ **Not Required**

Zone A - Floodplain Delineation of Watershed "PP"
Luke Wash F.C.D. Contract No. 99-03
Revised by Contract FCD 2002C033-1

FEMA Form 5: Riverine/Coastal Mapping

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE / COASTAL MAPPING**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Glendale/Peoria Watershed, Maricopa County, AZ

Flooding Source: Washes within the Glendale/Peoria Watershed

Project Name/Identifier: Glendale/Peoria ADMP Update - Zone A floodplain delineation

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☐ Yes	☐ No	☒ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☐ Yes	☐ No	☒ N/A
c. Revised floodway boundaries	☐ Yes	☐ No	☒ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☐ Yes	☐ No	☒ N/A
e. Stream alignments, road alignments and dam alignments.	☒ Yes	☐ No	☒ N/A
f. Current community boundaries.	☒ Yes	☐ No	☐ N/A
g. Effective 100- year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☒ Yes	☐ No	☐ N/A
i. The requester's property boundaries and community easements	☐ Yes	☐ No	☒ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)? USGS 7.5 min quadrangle

3. What is the scale and contour interval of the following workmaps?

Effective FIS	Scale N/A	Contour Interval N/A
Revision Request	Scale 2000	Contour Interval 10-40

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ **Yes** ☐ **No**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed

2. Has fill been/will be placed in the regulatory floodway? ☐ Yes ☐ No
If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☐ Yes ☐ No

If Yes, then complete A, B, C, and D below.

a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☐ No

If Yes, justify steeper slopes _____

b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)*

☐ Yes ☐ No

If No, describe erosion protection provided _____

c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

d. Can structures conceivably be constructed on the fill at any time in the future? ☐ Yes ☐ No

If Yes, attach certification of fill compaction (item 3c. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

Fill certification attached ☐ **Yes** ☐ **No**

4. Has fill been/will be placed in a V zone? ☐ Yes ☐ No

If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

☐ Yes ☐ No

If Yes, attach the Coastal Structures Form (Form 10).

Zone A - Floodplain Delineation of Watershed "PP"
Luke Wash F.C.D. Contract No. 99-03
Revised by Contract FCD 2002C033-1

FEMA Form 7: Bridge/Culvert

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Maricopa County

Flooding Source: T2N-R6W-S35

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S17 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information (Check the box if provided):

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ *Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport*

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Maricopa County

Flooding Source: Sub Basin Area 16

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1N-R6W-S11 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information (Check the box if provided):

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Maricopa County

Flooding Source: T2N-R6W-S36 AND T2N-R6W-S36W

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T2N-R6W-S36 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information (Check the box if provided):

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Maricopa County

Flooding Source: T2N-R5W-S31W

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R6W-S13 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ Yes ☐ No ☒ N/A

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

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- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information (Check the box if provided):

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

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Community Name: Maricopa County

Flooding Source: T2N-R5W-S31 and T2N-R5W-S32

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T2N-R5W-S31 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

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Community Name: Maricopa County

Flooding Source: Sub Basin Area 23

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1N-R5W-S10 at Interstate-10

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

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Community Name: Maricopa County

Flooding Source: T1S-R5W-S29E

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Southern Pacific Railroad

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S29E at Southern Pacific Railroad

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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- ☐ Wing Wall Angle
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- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate scour and/or deposition
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Community Name: Maricopa County

Flooding Source: T1S-R5W-S17

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Southern Pacific Railroad

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S17 at Southern Pacific Railroad

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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2. DRAWING CHECKLIST

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- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
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- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

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Community Name: Maricopa County

Flooding Source: T1S-R5W-S32

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Southern Pacific Railroad

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S32 at Southern Pacific Railroad

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

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Community Name: Maricopa County

Flooding Source: T1S-R5W-S08

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Southern Pacific Railroad

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S08 at Southern Pacific Railroad

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ Yes ☐ No ☒ N/A

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- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

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- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

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Community Name: Maricopa County

Flooding Source: T1S-R5W-S09 and T1S-R5W-S09W

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Southern Pacific Railroad

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T1S-R5W-S09 at Southern Pacific Railroad

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

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   Justification attached ☐ Yes ☐ No ☒ N/A

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Community Name: Maricopa County

Flooding Source: T2N-R5W-S33E

Project Name/Identifier: Luke Wash- Zone A floodplain Delineation of Watershed "PP"

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Interstate-10

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   T2N-R5W-S33E at Interstate-10

3. This revision reflects (check one of the following):

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   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HY8

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ **Yes** ☐ **No** ☒ **N/A**

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SECTION 3: MAPPING AND SURVEY INFORMATION

3.1 Field Survey Information

Field surveys were conducted for hydraulic structures in order to supplement aerial topographic mapping, establish Elevation Reference Markers (ERM's), and to verify the project's topographic mapping. The results of the field survey are documented in the *Luke Wash Area Survey Report* that is included in **Appendix C**.

Light Detection and Ranging (LIDAR) horizontal and vertical controls were obtained using GPS technology. The ellipsoid height was derived using the two National Geodetic Survey Buckeye Benchmarks, BXK A and BXK C. Copies of the benchmark information and ellipsoid projection are included in **Appendix C**.

3.2 Mapping

Two different sources of mapping were used to develop the Watershed and Floodplain Maps. For most of the downstream area (from Interstate-10 to the Southern Pacific Railroad), topographic information was obtained using LIDAR technology generated by EagleScan Inc. as part of this project. The LIDAR data consisted of a dense 3-dimensional point file representing the ground surface. Triangular Irregular Networks (TIN's) and grids were generated using this data. Two-foot contours were generated, as a reference, to be utilized in the floodplain maps. For areas not covered by the LIDAR mapping, the USGS 7.5 quadrangle maps and Digital Elevation Models (DEM's) provided by the District were used **(Reference 1)**.

3.2.1 Watershed Map

The watershed boundaries and hydrologic parameters were obtained primarily from the USGS 7.5 minutes quadrangle topographic maps **(Reference 14)** and the 2-foot contour interval map generated from the LIDAR data.

Additionally, aerial photography (1996) provided by the District (**Reference 2**) was compared with the watershed map to verify basin boundaries.

3.2.2 Floodplain Maps

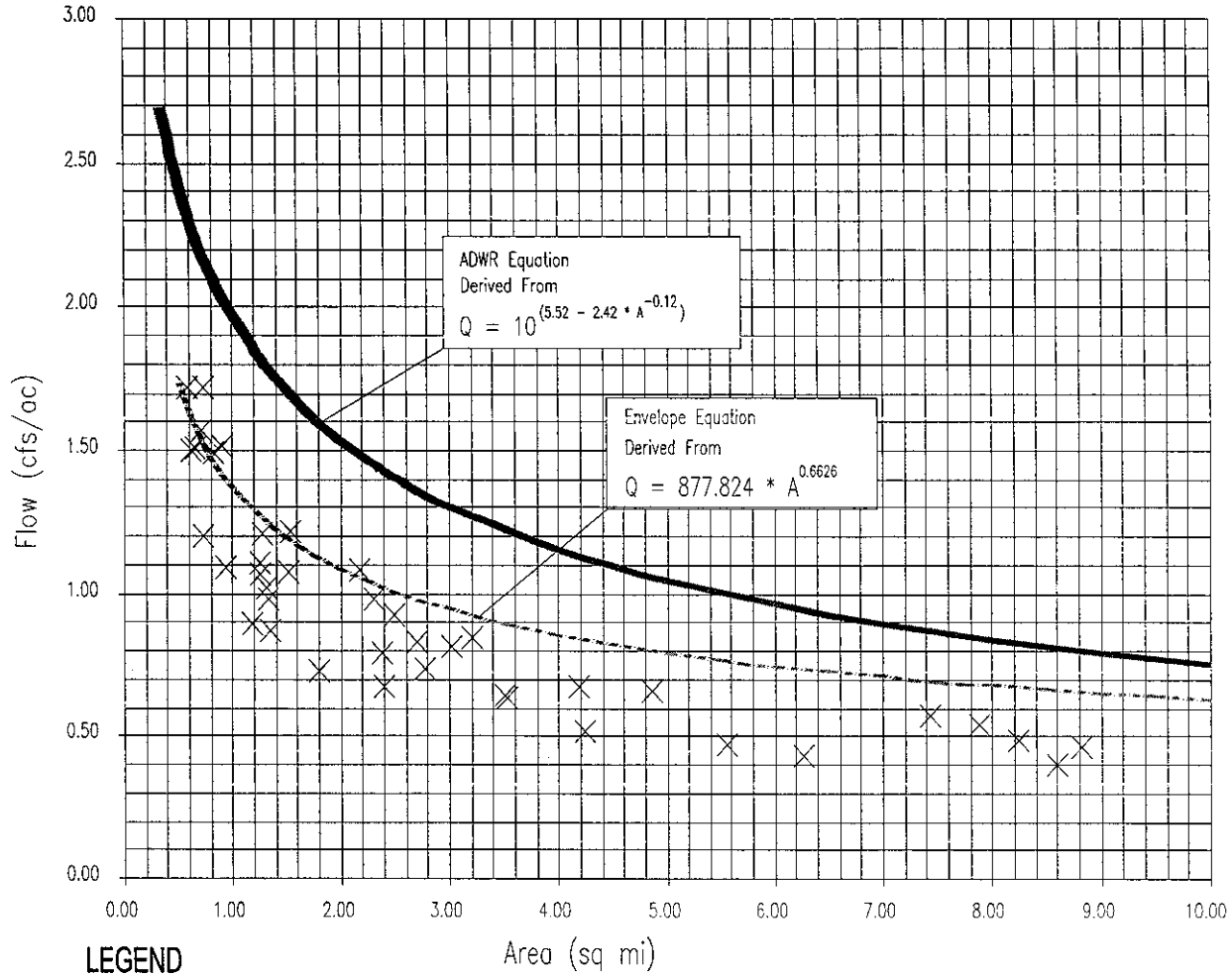
The same maps used to develop the hydrology were used to delineate the floodplain.

3.2.3 Soils Map

The methodology used to develop the hydrology for this project does not require any soil information; therefore no soil maps were developed for this project.

3.2.4 Land Use Map

The methodology used to develop the hydrology for this project does not require any land use information; therefore no land use maps were developed for this project.



LEGEND

- ADWR Region 13 Equation
- Best-Fit Equation for HEC-I Results
- × Results from Arlington ADMS
- A = Area (sq mi)
- Q = 100-yrt Peak Flow (cfs)

FIGURE 2A
Relationship Between Watershed Area and Peak Flow

The basins previously developed under the *Luke Wash Flood Insurance Study* (**Reference 3**) were not used in this study because they do not accurately depict the drainage conditions, in the upstream reaches of the watershed. The hydrology developed under the FIS focused on the lower portion of Luke Wash. Upstream boundaries, even though adequate for the FIS, were not accurate nor detailed enough for the purpose of this study.

4.2.2 Watershed Work Map

The watershed map was based on USGS 7.5 quadrangle topographic maps (**Reference 14**), 1996 aerial photography geo-registered on the State Plain Coordinates System (**Reference 2**), and the LIDAR mapping as described in **Section 3** of this report. The watershed maps are presented in **Plates 1 and 2** located in the pockets at the end of this report. Also half size versions are included at the end of **Section 4 – Hydrology.**

4.2.3 Gage Data

Most of the watercourses in this study are wide shallow streams that are not very well suited for gaging. No gaging stations are located within the study area and it is unlikely that watersheds similar to the study area are gaged.

4.2.4 Statistical Parameters

The Arizona Department of Water Resources (ADWR) developed regional regression equations for the area (**Reference 4**). However, these equations are very general and, as shown in **Figure 2A,** tend to significantly overestimate the peak runoff in the study area. ADWR regression equations were developed based on gage data across the entire region and is better representative of larger, better-defined watercourses.

SECTION 4: HYDROLOGY

4.1 Method Description

An area/runoff relationship was developed as a means of calculating the 100-year peak flows for this project. This relationship was based on the results of a HEC-1 model developed for the *Luke Wash Flood Insurance Study* prepared by Coe & Van Loo Consultants, Inc. in 1992 (**Reference 3**). The model developed by Coe & Van Loo covers most of the watershed contributing to the washes to be delineated. However, concentration point locations and level of detail encountered in the model are not adequate to develop peak flows for individual washes within the watershed. To obtain the level of detail desired for this project, the flow values obtained from the Luke Wash FIS study were plotted against the contributing area as shown in **Figure 2A**. It is apparent that most of the plotted values fall into a narrow band. A line falling at the upper limit of this band was considered to be a conservative estimate of the flow for this particular area. Based on this line, an equation was developed to estimate flows at desired concentration points. The only required parameter for this equation is the contributing area. This Flood Control District provided a more detailed area flow relationship specific for Phillips Wash (South) from Interstate-10 to its confluence with T1N-R5W-S30.

4.2 Parameter Estimation

4.2.1 Drainage Area Boundary

Based on the topographic mapping information and aerial photography, the watershed was divided into several sub-basins to obtain the contributing area for desired concentration points. The basin boundaries are shown in **Plates 1 and 2** located in the pockets at the end of this report and half size copies are included at the end of this section.

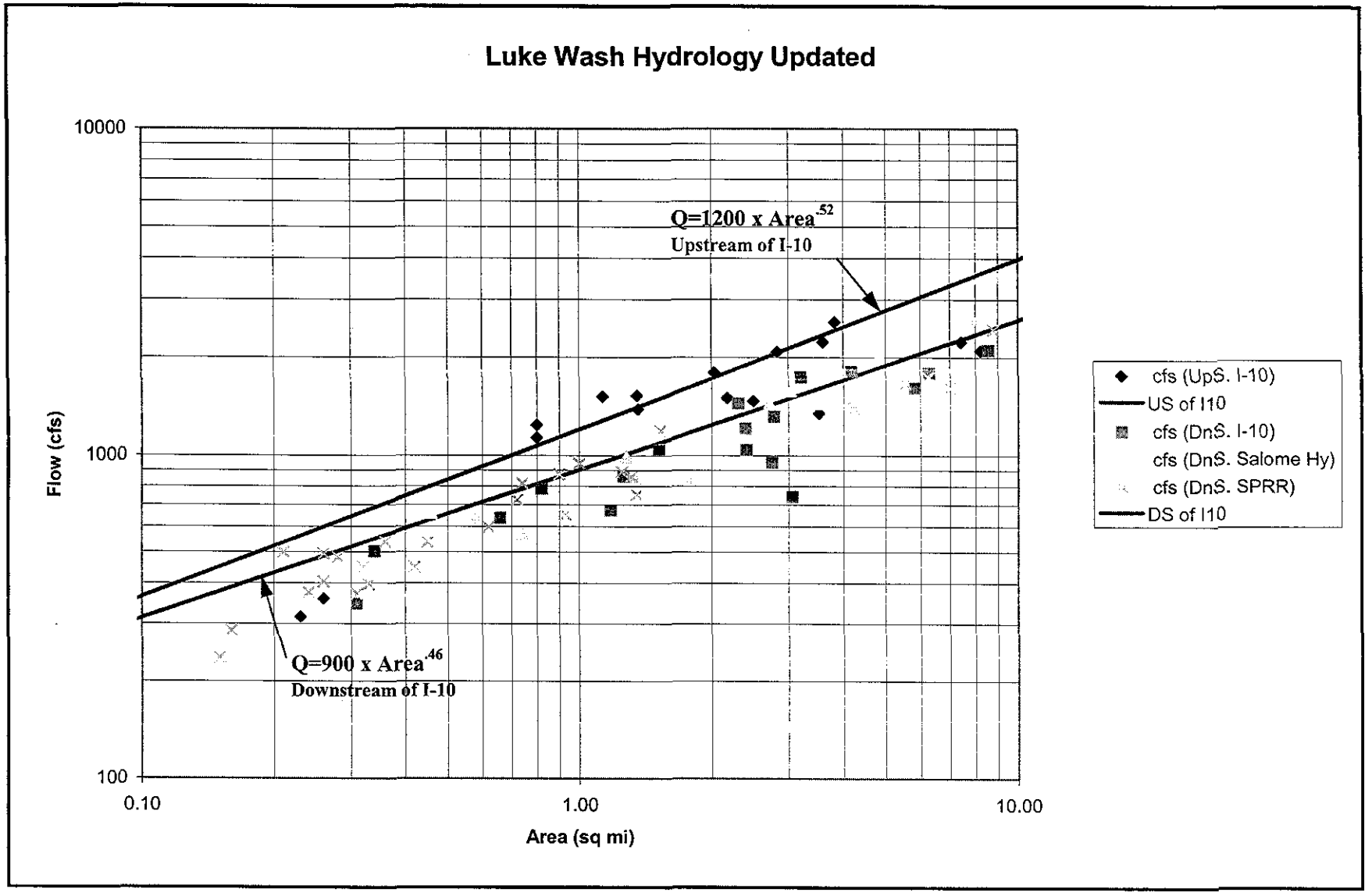


Figure 2B
Relationship Between Watershed Area and Flow
(Phillips Wash South Only)

4.2.5 Precipitation

The methodology used to develop the hydrology for this study does not require the use of precipitation values. The original *Luke Wash FIS* (**Reference 3**) contains precipitation Values that were use to generate the HEC-1 for the study area.

4.2.6 Physical Parameters

4.2.6.1 Watershed parameters

The only parameter required to develop the hydrology for this project is the drainage area. Drainage contributing areas were estimated from the project's work maps (See **Plates 1** and **2**).

4.2.6.2 Storage routing parameters

Storage does not appear to play a large part in reducing peak flows within the study area. However, both Interstate-10 and the Southern Pacific Railroad could provide some storage. According to the *Luke Wash FIS* (**Reference 3**) the railroad will be overtopped by flows much less than the 100-year event and most likely will be breached by the time the 100-year runoff reaches the railroad. The same study shows that the reduction of flow at Interstate-10 is not significant due to many culvert crossings (see **Appendix E-4**) and limited storage volume available. The methodology used in developing the flows for this project does not consider storage directly. However, since the original study used to develop the peak flow equation includes storage upstream of Interstate-10, this parameter is factored in the calculation of the peak flows. For more details see **Section 4.3**

4.3 *Problems Encountered During the Study*

4.3.1 Special Problems and Solutions

4.3.1.1 CAP Overchute

There is an overchute crossing the CAP Canal on the northern boundary of the study. The design flow for this structure was not available, and since the area is outside the Luke Wash watershed, it was not included in the FIS model. Developing the hydrology upstream from this structure was outside the scope of work for this project. However, in order to obtain an approximate flow in Wash T3N-R5W-S28N, an analysis was performed to estimate this flow. It was assumed that during a 100-year event, the overchute would be flowing at maximum capacity. The capacity of the structure was estimated assuming critical depth at the drop on the downstream end of the overchute. To be consistent with the rest of the study, this flow was converted to an equivalent drainage area that can be added to the downstream contributing areas to obtain the total downstream flows. For detailed calculations see **Appendix D**.

4.3.1.2 Storage reduction

Storage reduction was not included for this study. However, the hydrological equation developed for this study was based on the flows obtained from the *Luke Wash FIS*, which accounts for storage at Interstate-10. Therefore, the equation reflects some of the effects of storage at Interstate-10 as estimated in the *Luke Wash FIS*.

The flow/area points plotted in **Figure 2A** include both areas upstream and downstream from Interstate-10 that do not include storage. However, for the larger areas encountered as flows

combine and move downstream crossing Interstate-10, storage effects are included in the plotted points.

4.4 Calibration

Flows estimated for this project are based on the *Luke Wash FIS* hydrology model previously approved by FEMA. In addition, the results obtained during this study were plotted and compared with gage data collected for the Flood Control District of Maricopa County **(Reference 5)** to insure that the results were reasonable as shown on **Figure 3**.

4.5 Final Results

4.5.1 Hydrologic Analysis

The final results of the hydrologic analysis are presented in **Table D-2** and **Table D-3**.

4.5.2 Verification of Results

The results of the hydrologic analysis were compared with the original set of data obtained from the *Luke Wash FIS* and the original equation line. All of the results fall within the expected region. Additionally, comparison with the Flood Control District gage data shows the results are within the lower portion of the data envelope. This is expected considering the physical characteristics of the watershed.

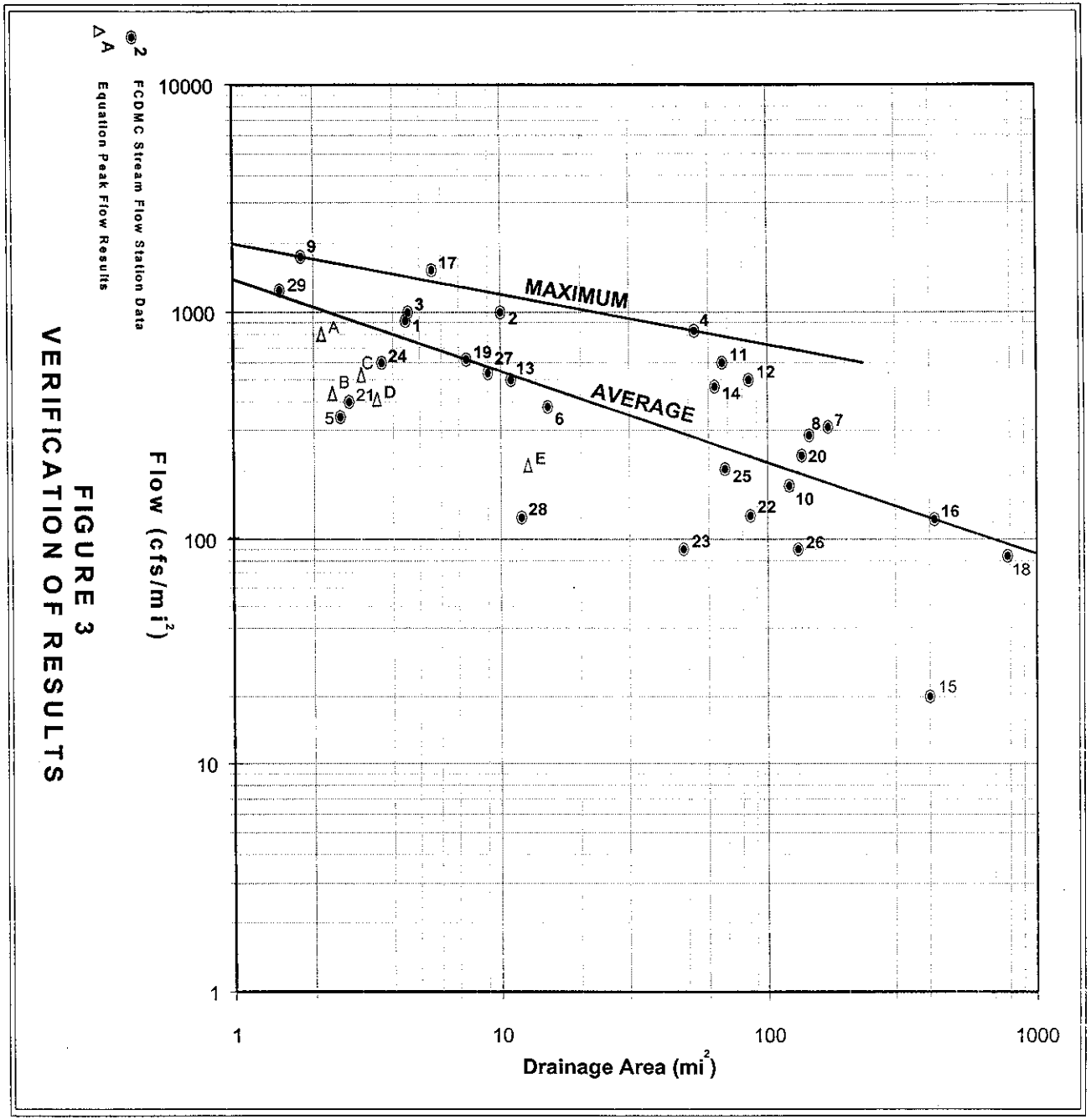
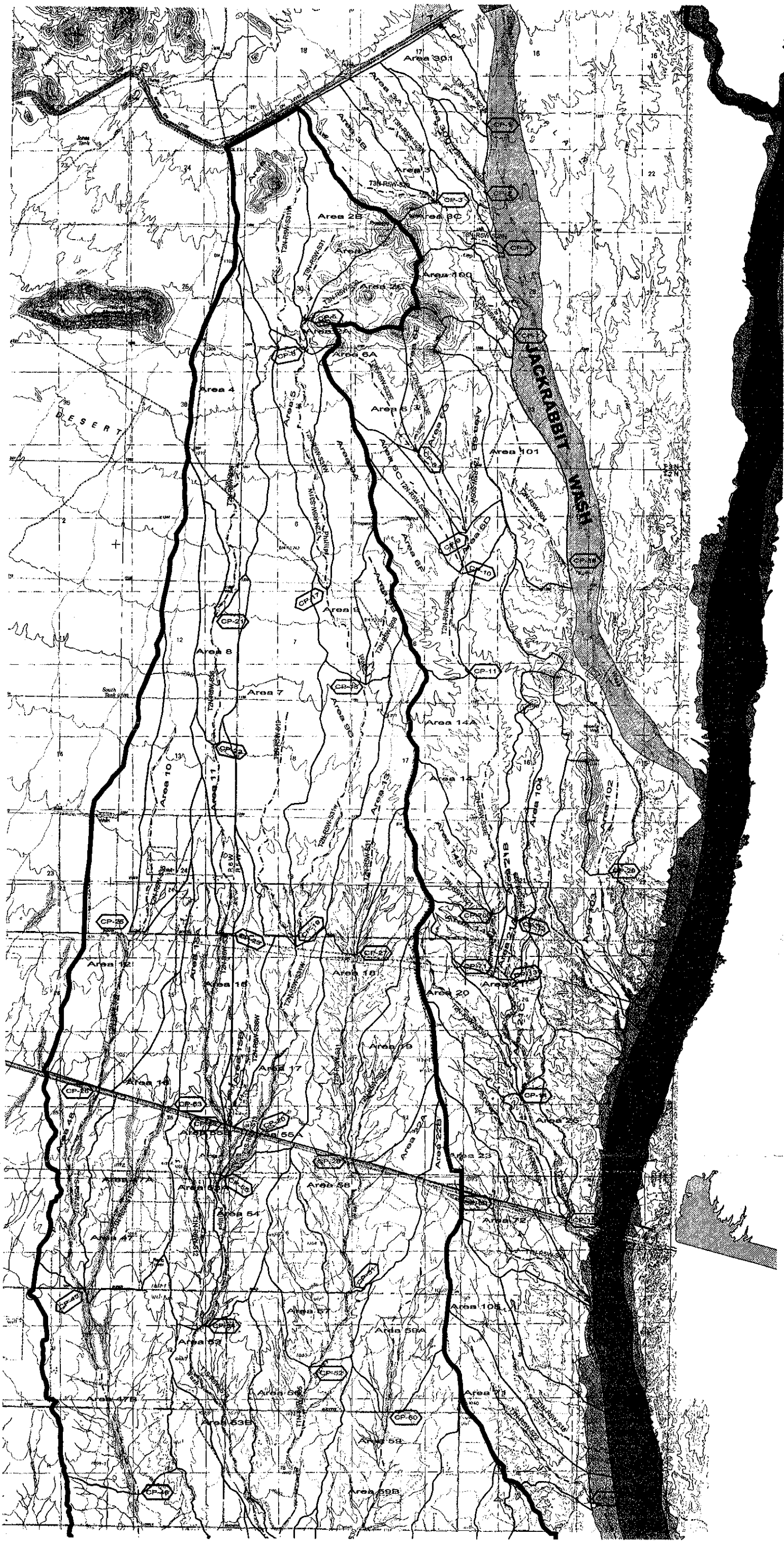


FIGURE 3
VERIFICATION OF RESULTS



LEGEND

- WASH BASELINE
- T2N-R5W-S04 WASH I.D. LABEL
- PROJECT LIMITS
- BASIN BOUNDARIES
- Area 100 BASIN NUMBER
- CP-1 CONCENTRATION POINTS
- EXISTING FLOODPLAIN
- EXISTING FLOODWAY
- EXISTING ZONE A

Zone - A floodplain Delineation of Watershed "PP" Luke Wash	Luke Wash FIS Approximated Equivalent Concentration Points
CP-17	S5
CP-25	S10
CP-23	S40
CP-19	C20
CP-26	C245
CP-63	S225
CP-24	C55
CP-20	C95
CP-55	C49
CP-28	C90
CP-60	S135
Others	N/I

2,000 0 2,000 4,000

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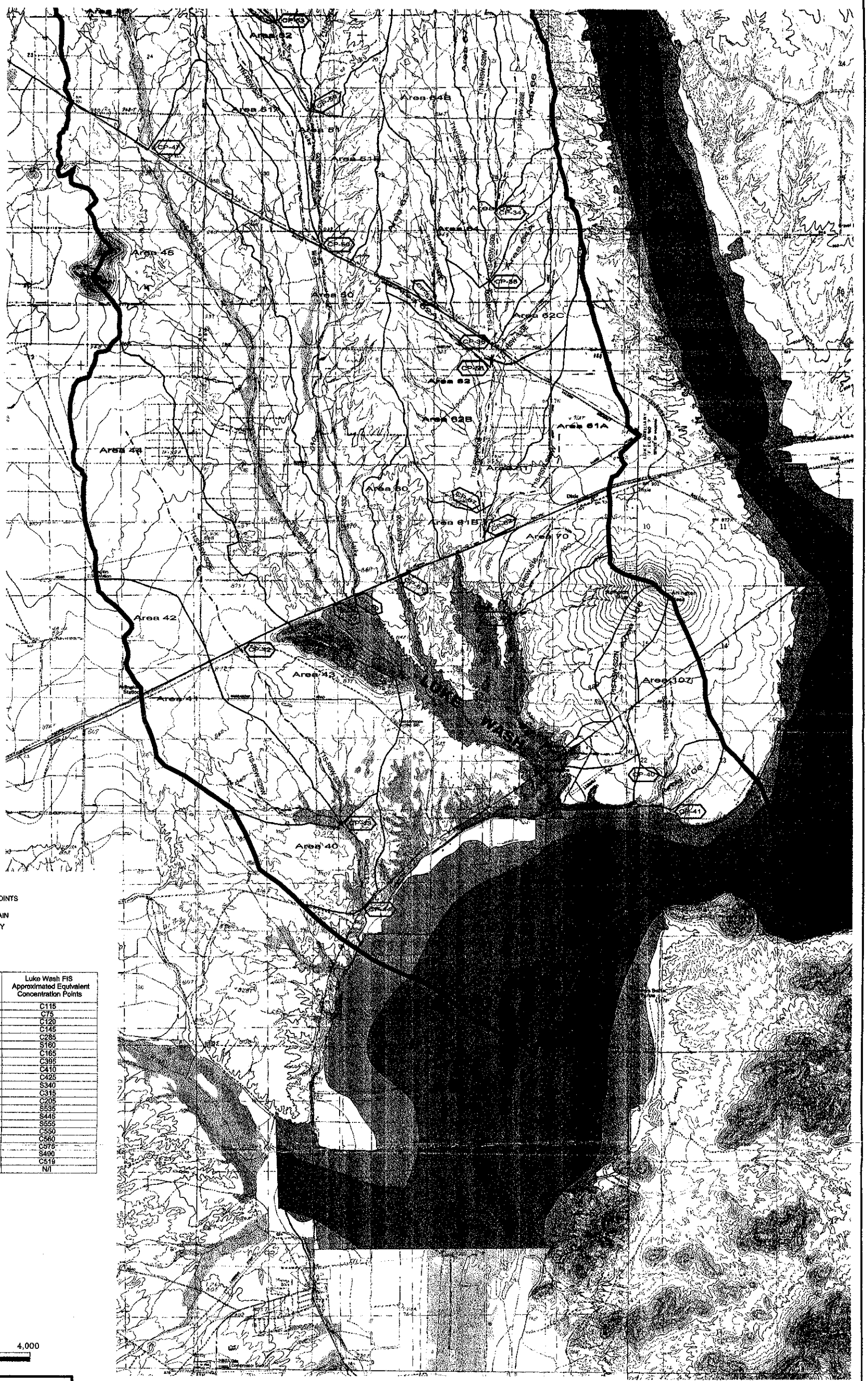
PLATE 1

HYDROLOGY MAP

File: plate_1_2.dwg Date: 10/05/2000



LEGEND

- WASH BASELINE
- T2N-R5W-S04 WASH I.D. LABEL
- PROJECT LIMITS
- BASIN BOUNDARIES
- Area 100 BASIN NUMBER
- CP-1 CONCENTRATION POINTS
- EXISTING FLOODPLAIN
- EXISTING FLOODWAY
- EXISTING ZONE A

Zone - A floodplain Delineation of Watershed "PP" Luke Wash	Luke Wash FIS Approximated Equivalent Concentration Points
CP-53R	C115
CP-53L	C75
CP-53C	C120
CP-59	C145
CP-47	C285
CP-50L	S160
CP-50C	C165
CP-36	C395
CP-56	C410
CP-62	C425
CP-61	S340
CP-48	C315
CP-49	C205
CP-42	S535
CP-38	S445
CP-43L	S555
CP-43R	C550
CP-43C	C560
CP-44	C575
CP39	S490
CP-41	C519
Others	N/I

2,000 0 2,000 4,000

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FLOOD CONTROL DISTRICT
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PLATE 2

HYDROLOGY MAP

File: plate_1_2.dwg Date: 10/05/2000

SECTION 5: HYDRAULICS

5.1 Method Description

The floodplain limits were estimated using approximate methods. Cross-sections were obtained using Boss RMS software (**Reference 6**). Using these cross-sections along with the general slope of the wash and estimated n-values, a normal depth was calculated using Manning's formula. The resulting water surface elevation was then inputted into RMS as a known water surface. The inundation limits were plotted automatically by RMS and adjusted manually in areas where RMS had problems.

5.2 Work Study Maps

The work study maps consisted of TIN's developed from the DEM's and 10-foot grids developed from LIDAR.

5.3 Parameter Estimation

5.3.1 Roughness Coefficient

The roughness coefficients were estimated from field observations and using the methodology described in *Manning's Roughness Coefficient for Stream Channels and Flood Plains in Arizona* (**Reference 7**). Detailed information and field photographs are included in **Appendix E.** A summary of n values used is included as **Figure 4.**

5.3.2 Expansion and Contraction Coefficients

Since this is an approximate method study using normal depth calculations, the use of expansion and contraction coefficients is not required.

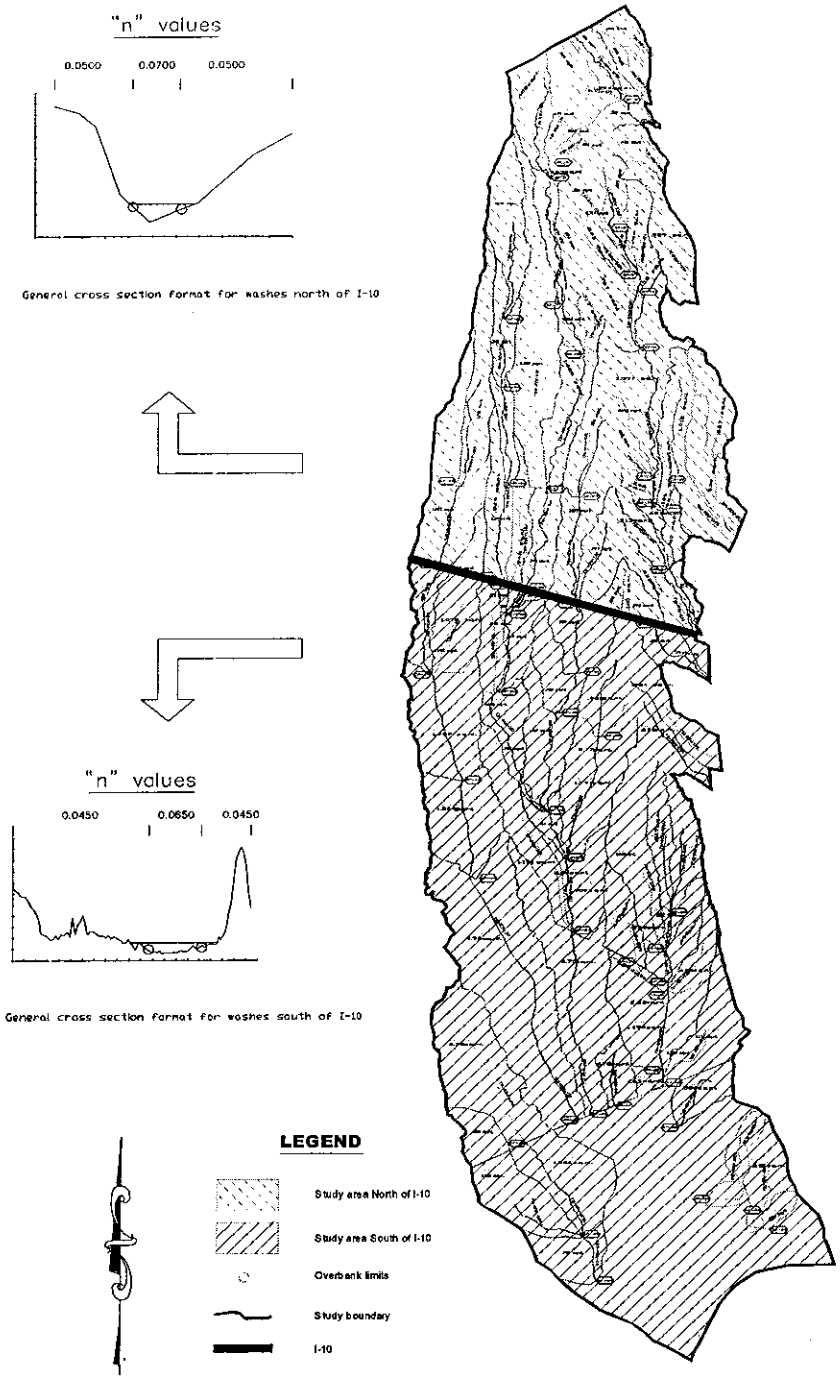


FIGURE 4
Manning's Roughness Coefficient

5.3.3 Riverine Stations

Riverine stations were not developed for this approximate method study. Since there is no base flood elevations associated with the approximate method, this stationing is not required.

5.4 Cross Section Description

Cross-sections for this study were obtained from the project's work map. Plots of the cross-sections used for the hydraulic analysis are included in **Appendix E.2.**

5.5 Modeling Considerations

5.5.1 Hydraulic Jumps and Drop Analysis

There are no obvious hydraulic jumps or drops within the study area and further analysis is not required for approximate methodology.

5.5.2 Bridges and Culverts

There are several culverts within the study area along Interstate-10 and the Southern Pacific Railroad. These are the only locations where the capacity of the culverts may have any significant effect on the water surface. Therefore, all other culverts were ignored and all flow was assumed to overtop the roadways. The culverts under Interstate-10 and the railroad tracks were analyzed using the Federal Highway Administration (FHA) nomograms. Where the culverts produced enough backwater to overtop the roadway or railroad tracks, a weir equation was used along with the nomograms. Detailed backwater calculations are included in **Appendix E.4.**

At several locations, the flows from more than one wash combined, this creates a ponding area where there are several culvert crossings. These locations were analyzed assuming that the adjoining washes function as one

system. Hence, the combined flows and culvert capacities were used for the ponding analysis.

It is expected that a portion of the Southern Pacific Railroad will be washed out before the 100-year peak flow reaches this location. However, the ponding analysis upstream of the culvert assumes that the railroad does not fail.

5.5.3 Levees and Dikes

There are no significant levees or dikes affecting the delineated area other than the embankment of Interstate-10 and the railroad tracks. These are discussed in **Section 5.5.2.**

5.5.4 Islands and Flow Splits

Approximate methodology is usually not detailed enough to accurately depict the effect of flow splits. However, where obvious splits occurred, the inundation area was interpolated along both branches.

5.5.5 Ineffective Flow Areas

After the preliminary flooding boundaries were plotted, the wash cross-sections were checked to insure that each reflected the actual flow area. Several cross-sections were modified to exclude tributaries and non-effective areas.

5.5.6 Supercritical Flow

All of the washes analyzed in this study appear to be in the sub-critical regime. However, the approximate methodology is not detailed enough to discern reaches of possible super-critical flow.

5.6 Floodway Modeling

Floodway modeling is not required for approximate methodology.

5.7 Problems Encountered During Modeling

5.7.1 Special Problems and Solutions

Several problems were encountered while generating the cross-sections and plotting the limits of inundation. The following paragraphs describe these problems and how they were solved.

5.7.1.1 USGS Mapping Accuracy

For the northern portion of the study and in areas where topographic information was obtained from the USGS DEM, the contour interval was either 10 or 20 feet. The average depth of flow was around four feet. This is well below the level of accuracy of the mapping. However, the shape of the contours in combination with aerial photography provided enough information to estimate the inundation limits.

5.7.1.2 DEM Accuracy

The DEM provided by the District (**Reference 1**) consisted of a 100-foot grid. The grid was usually accurate near the contour lines but between the contour lines tended to inaccurately show a completely flat surface. This appears to be caused by a lack of break lines in the DEM generation process. In areas where this problem was found, break lines generated by Entellus replaced the DEM grid. Connecting ridges and valleys between the adjacent contours generated the break lines. To increase the accuracy, the alignment of ridges and valleys between cross-sections were estimated using aerial photographs provided by the District.

5.7.1.3 Inundation upstream of Interstate-10 and the railroad tracks

The inundation limits upstream from both Interstate-10 and the railroad tracks were estimated using the FHA nomograms and weir flow equation over the roadway. However, at several locations the

flow from two or more culverts join before crossing these structures. The combined effect of all culverts was used in developing the upstream water surface. At the railroad it was assumed that the railroad embankment was not breached. This is a conservative estimate since the embankment most likely will be breached during a 100-year event.

5.7.1.4 Adjacent Washes

In many areas within the study limits, adjacent washes were found to merge during the 100-year storm event. Each wash was first analyzed separately. After discovering that the flow was not contained within each wash, a new analysis was performed. This analysis used the combined flows from each wash. In some cases, each wash would overflow into one larger wash, and then eventually become separated again downstream. This effect created islands at several locations within the study area. However, unless the size and elevation of the islands were significant, the entire area was assumed to be within the floodplain.

5.7.1.5 Flow Splits

The topography of the study area is very flat and for this reason flow splits are very common. Most of the flow splits either merge with another wash or return to the original wash further downstream creating islands. Merging washes were discussed in the previous section. Splits within the same wash were modeled using a single cross-section containing both branches. For most cases this was considered adequate since the elevations of both branches were usually very similar. However, in a few cases the elevations were significantly different and one of the branches may show very little or no flow. In these cases the inundation boundary along the high split was estimated by interpolating between the bounding cross-sections.

In most cases the islands between splits were removed, creating conditions where the flow inundation limits in one side of the wash were higher than in the other.

5.7.1.6 Wash T2N-R5W-S27S

Based on aerials and additional topographic information it is apparent that the ground east of the wash is unlikely to be flooded during a 100-year storm event. It appears that the wash has migrated southerly and under extreme events flow may break into some of the old channels creating the islands as shown in the exhibits (at the end of this section).

5.7.2 Modeling Warning and Errors

This section does not apply to approximate methodology

5.8 Calibration

This section does not apply to approximate methodology

5.9 Final Results

5.9.1 Hydraulic Analysis Results

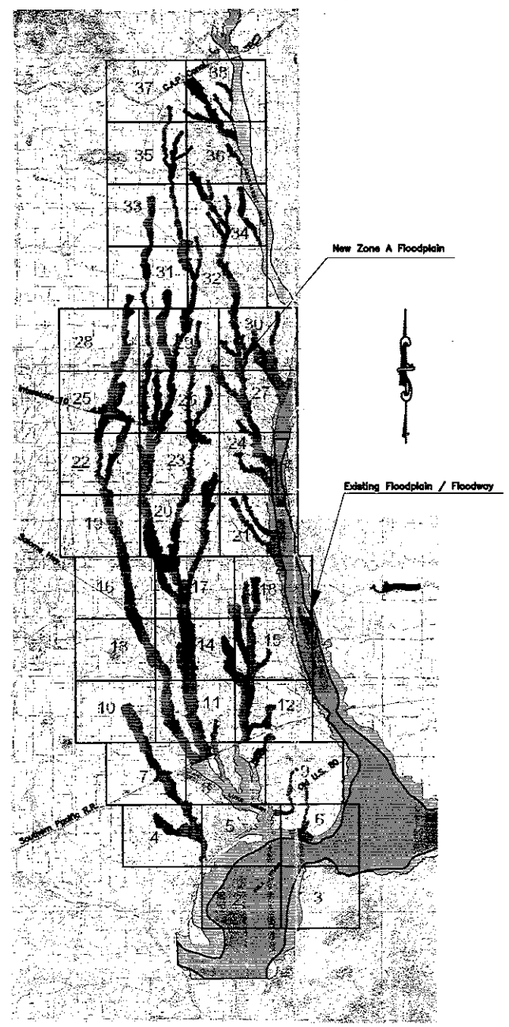
The results of the normal depth hydraulic analysis are included in **Appendix E-2** and the flooding limits are shown in **Exhibits 1-38.** Full size exhibits are located in the pockets under separate cover and half sizes are at the end of this section. A digital copy of the exhibits and hydraulic calculations are also included on a CD.

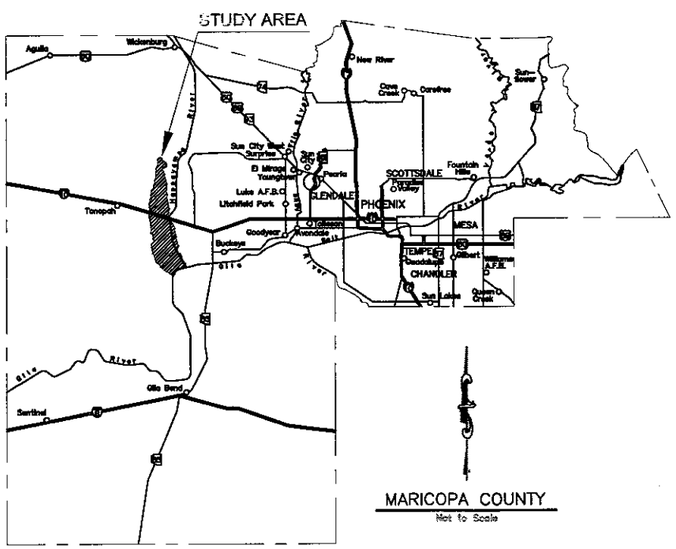
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH

F.C.D. CONTRACT NO. 99-03

REVISED BY:F.C.D. CONTRACT NO. 2002C033-1





LOCATION MAP

AERIAL MAPPING

USGS 7.5 Minute Quadrangle Topographic Mapping Supplements with LIDAR Mapping
EagleScan
1770 Ranger Street, Suite B
Boulder, Colorado 80301

GROUND CONTROL

Project Engineering Consultants, Ltd.
2310 W. Mission Ln.
Phoenix, Az. 85021

HYDROLOGY

Entellus, Inc.
2255 North 44th Street, Suite 125
Phoenix, Az. 85008-3279

HYDRAULICS

Entellus, Inc.
2255 North 44th Street, Suite 125
Phoenix, Az. 85008-3279

Entellus

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DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

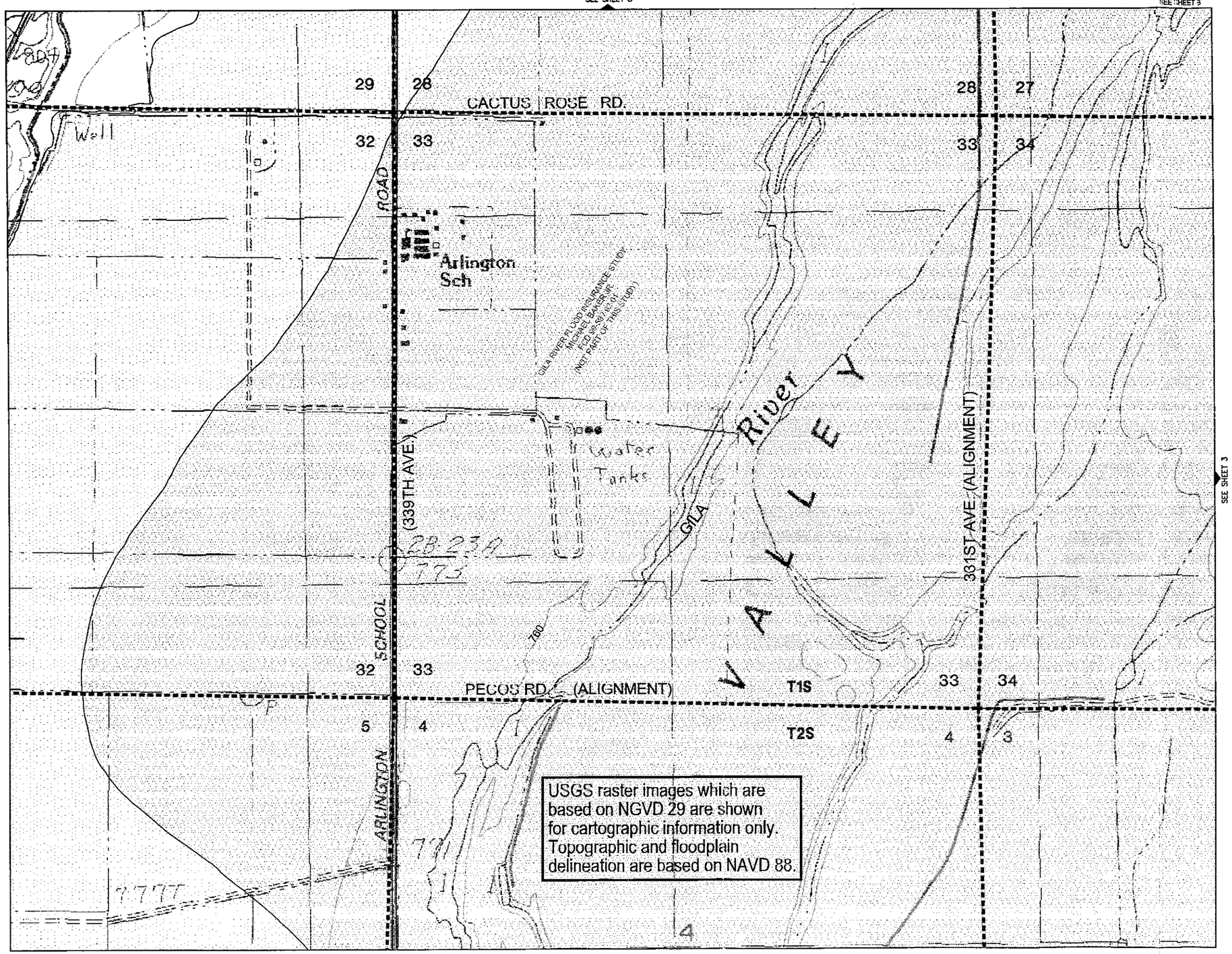
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 1 OF 38



USGS raster images which are based on NGVD 29 are shown for cartographic information only. Topographic and floodplain delineation are based on NAVD 88.

FILE: 310\31001Gis\Arcw\000_Plan_02.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

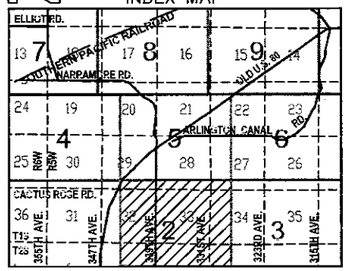
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap, +/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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Fax 602.344.2917
E-mail www.entellus.com

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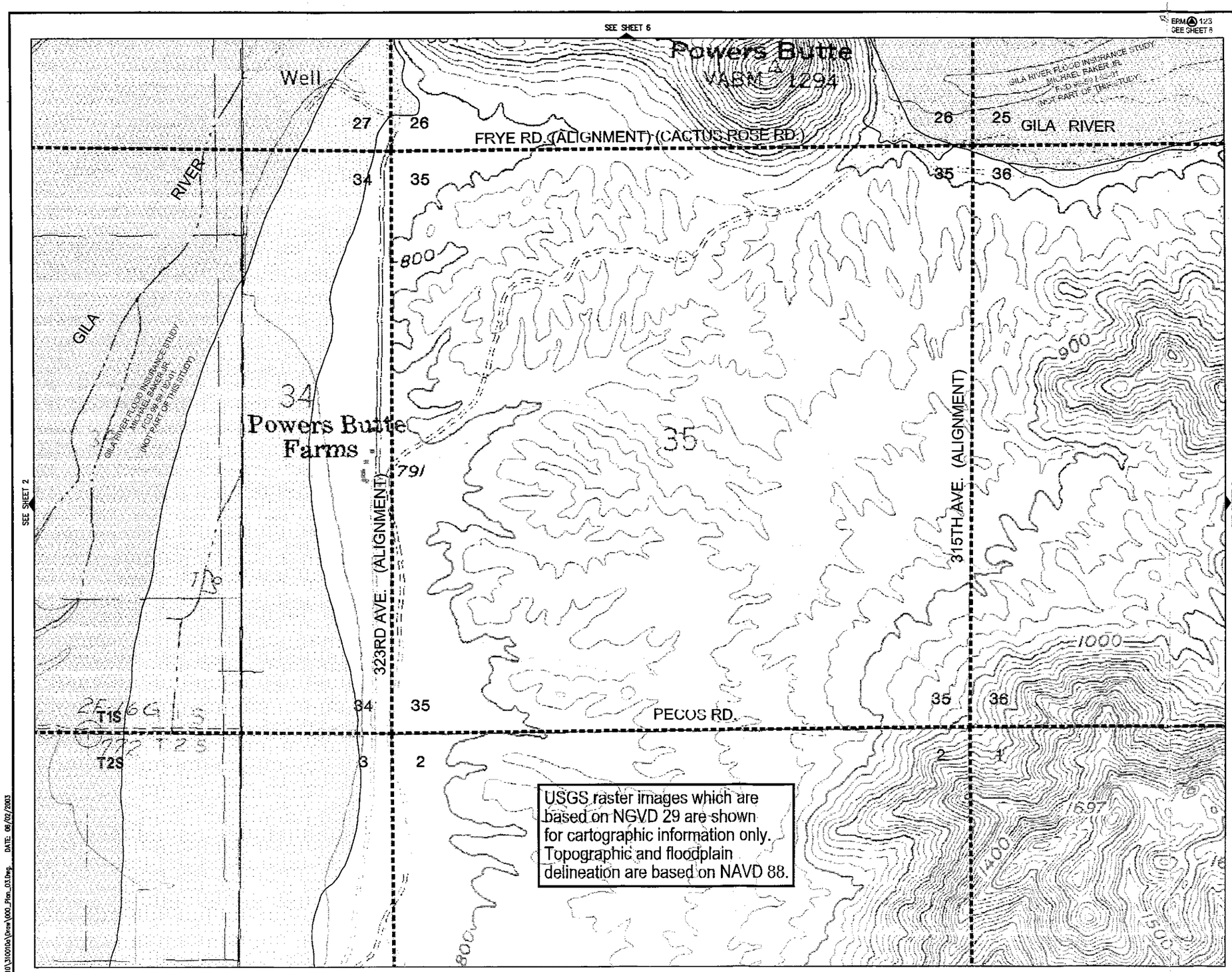
DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

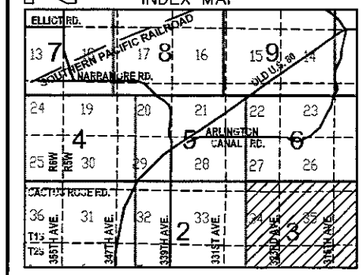
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap,+/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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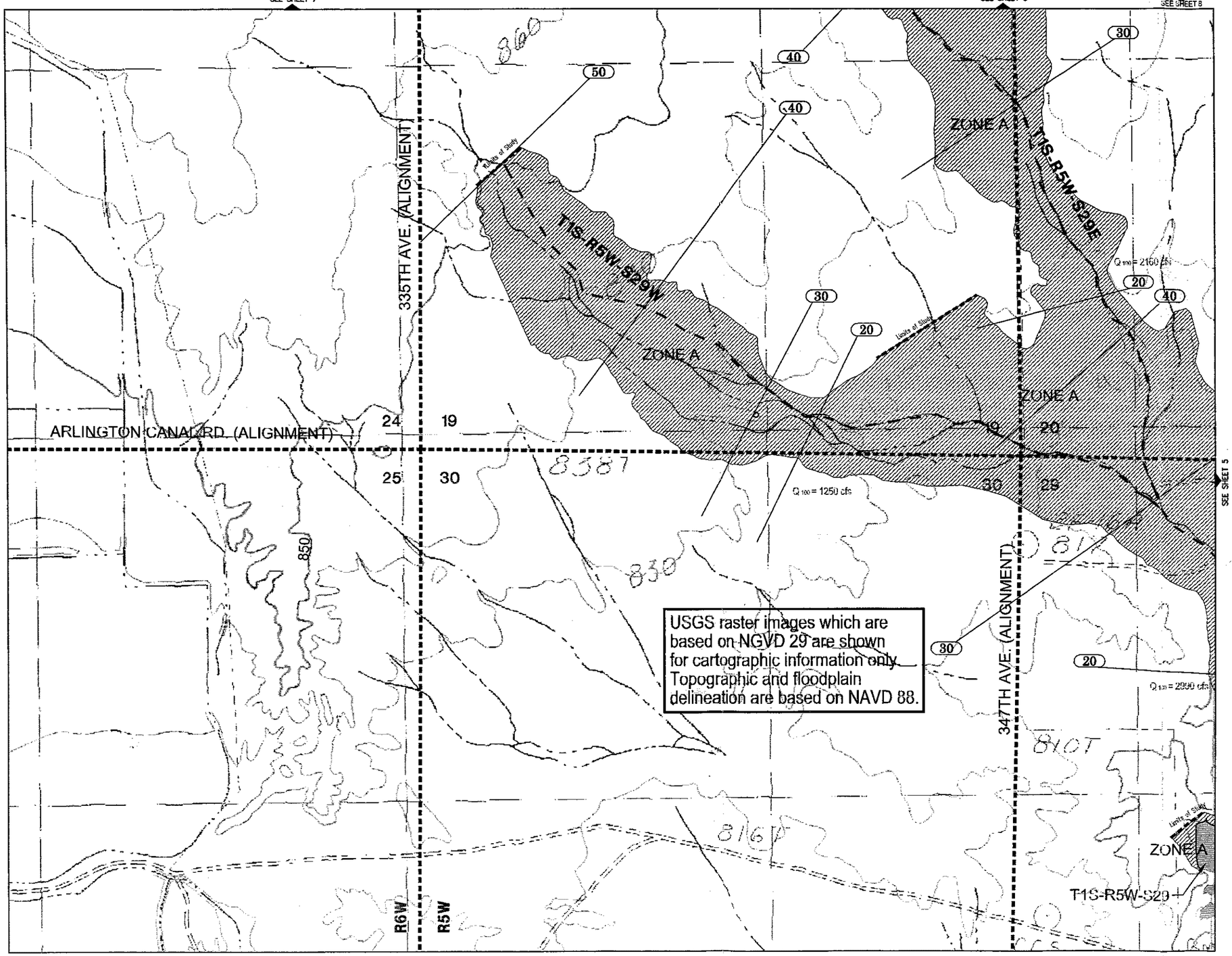
E-mail www.entellus.com

	BY	DATE
DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
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EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

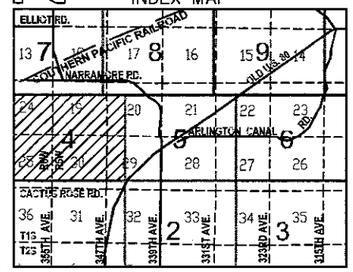
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Survey Brass Cap,+/- 100' South of Southern Pacific Railroad Tracks +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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2555 N. 44th Street Suite 125
Phoenix, AZ 85008-3279
Tel 602.344.2555
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DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

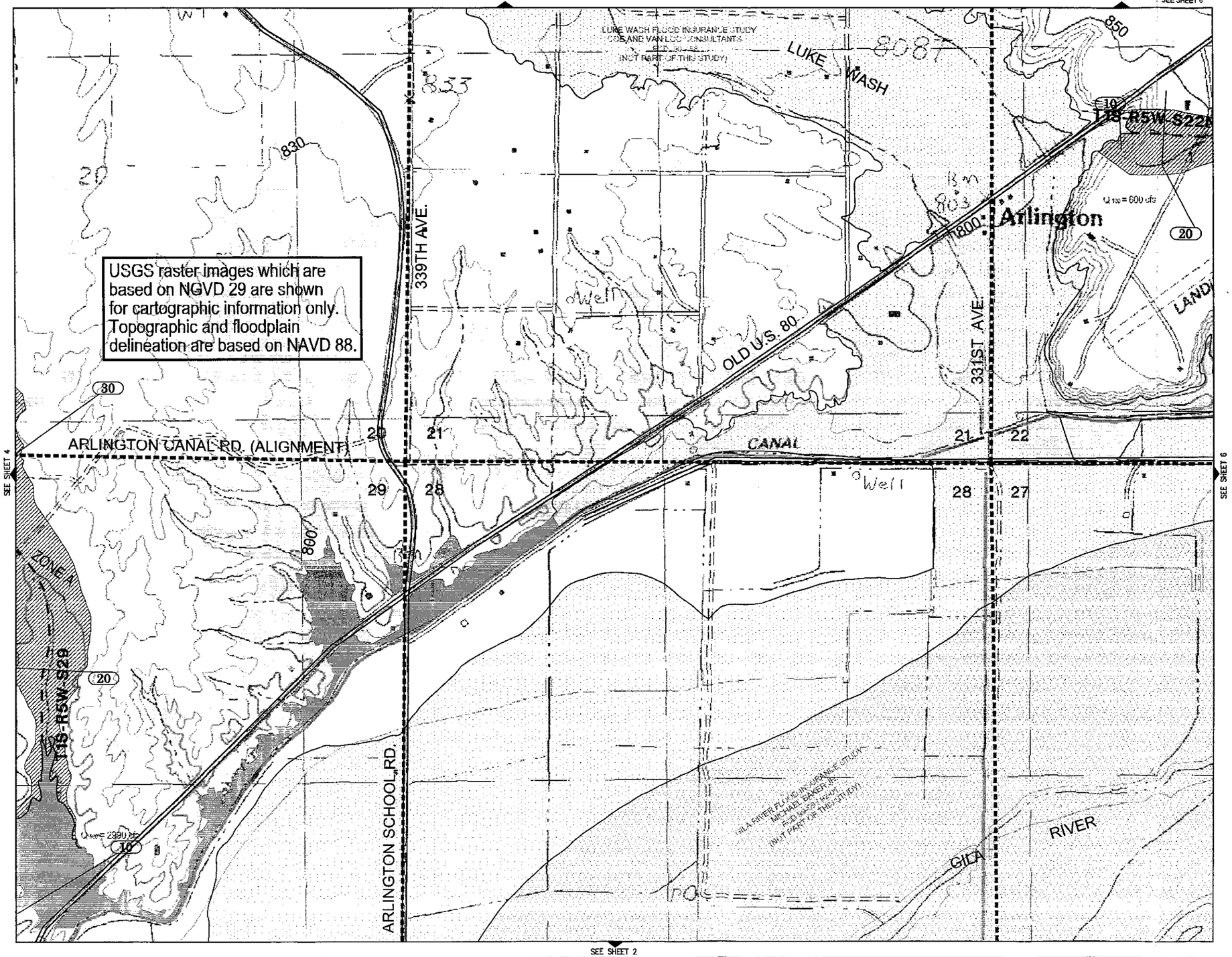
SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310010a\Draw\000_Plan_04.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FILE: 3101\3101010a\Draw\000_Plan_05.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

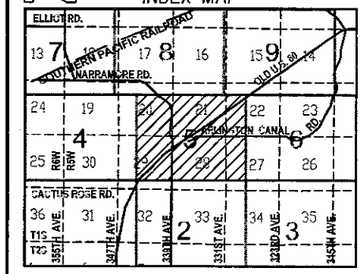
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap,+/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" See Sheet 8.

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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2355 N. 44th Street Suite 125
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DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

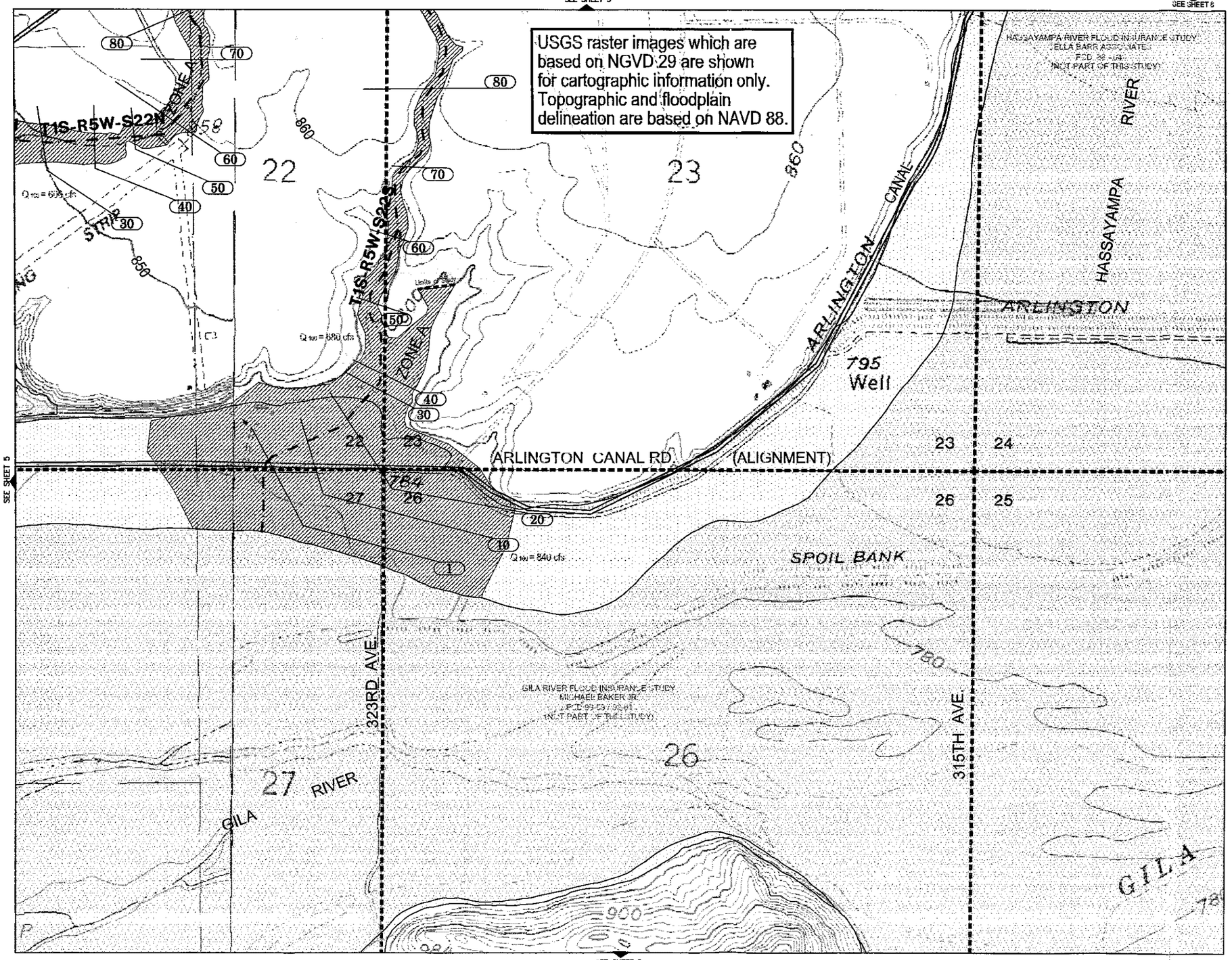
SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

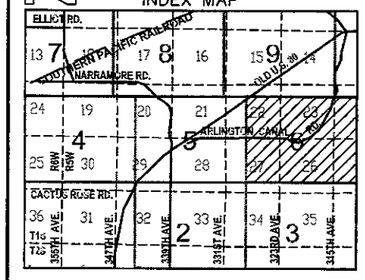
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap,+/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



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SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 – 20 FEET

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2355 N. 44th Street Suite 135
Phoenix, AZ 85008-2279
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DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

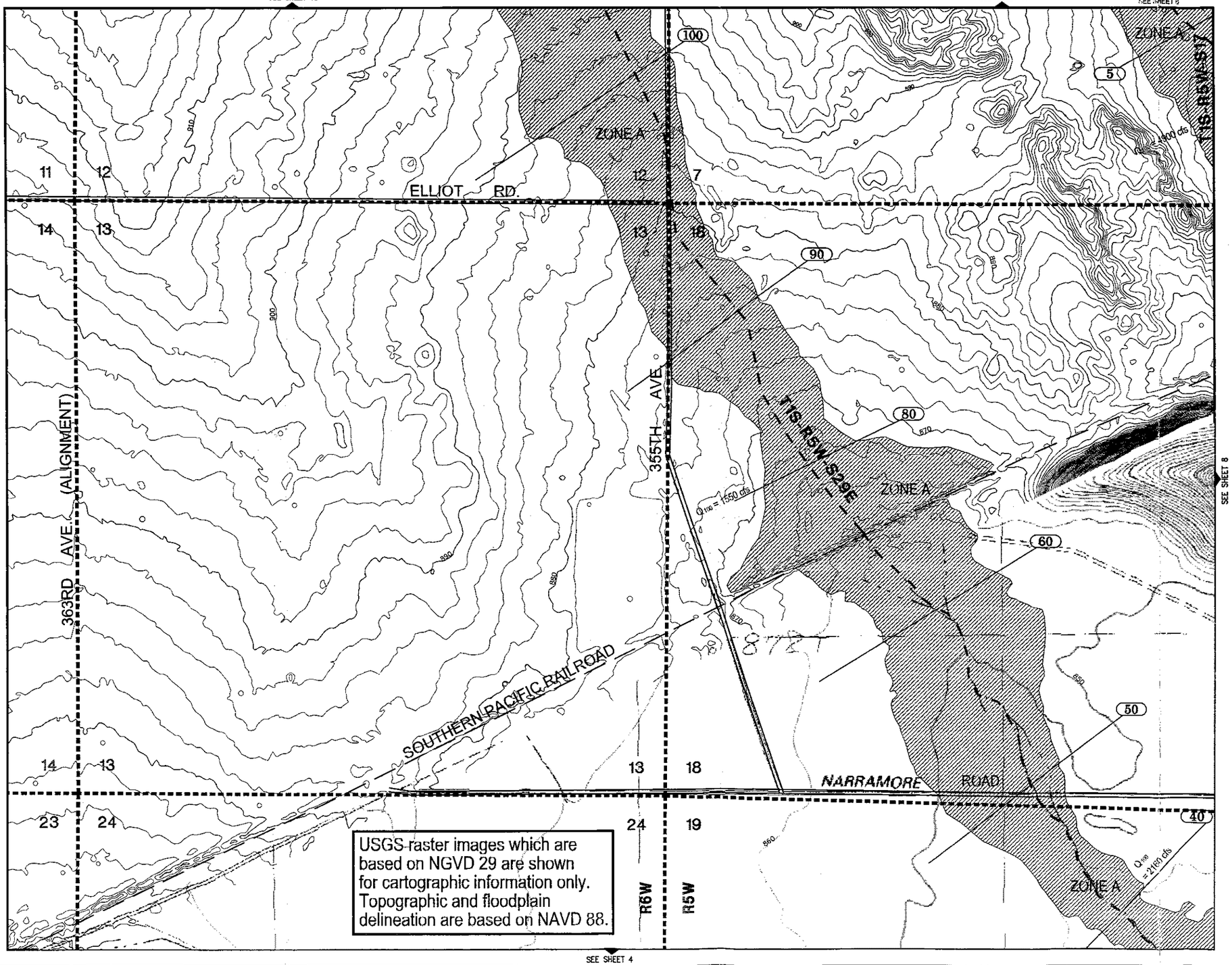
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310010a\Draw\000_Plan_06.Dwg DATE: 06/29/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

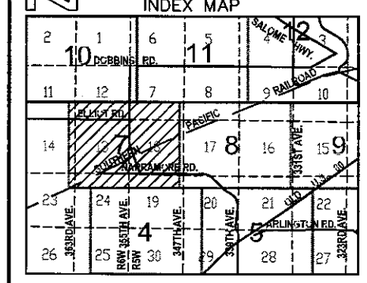
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap, +/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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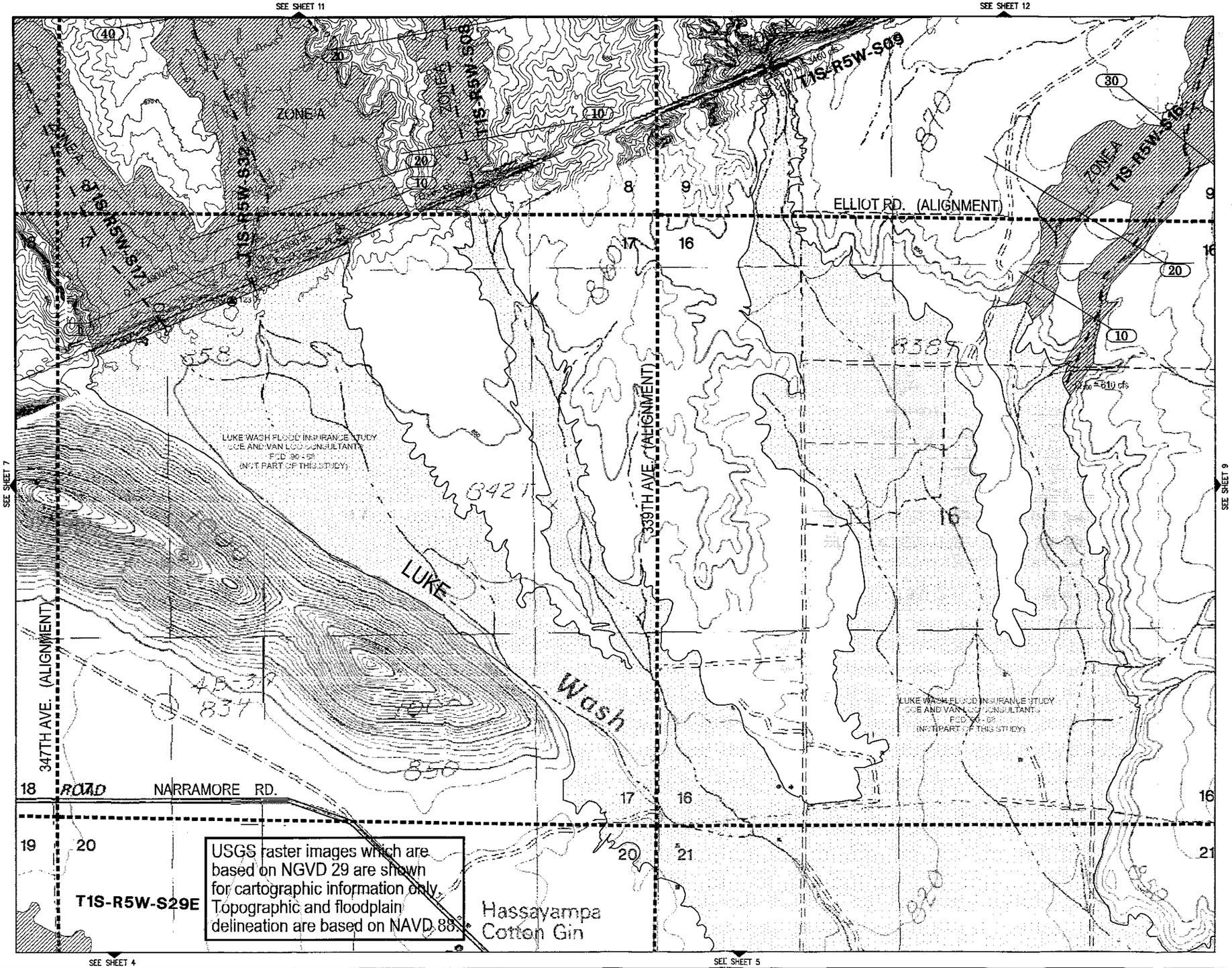
DESIGN	HAA/AMG	06/2003	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	HAA	06/2003	RECOMMENDED BY: DATE
PLANS	KBA/RJR	06/2003	APPROVED BY: DATE
PLANS CHK.	HAA	06/2003	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY:		DATE:	SHEET 7 OF 38

FILE: 310\310010a\Draw\000_Plan_07.Dwg DATE: 06/09/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING – EAGLE SCAN NOVEMBER 1999

FILE: J:\0_3100100\Draw\000_Plan_08.Dwg DATE: 06/02/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 5
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

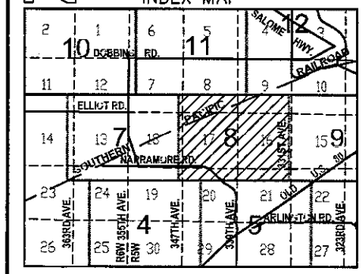
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.88	United States Geological Survey Brass Cap,+/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped " M 10" (See this sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'

SCALE: 1"= 400'
CONTOUR INTERVAL = 10 – 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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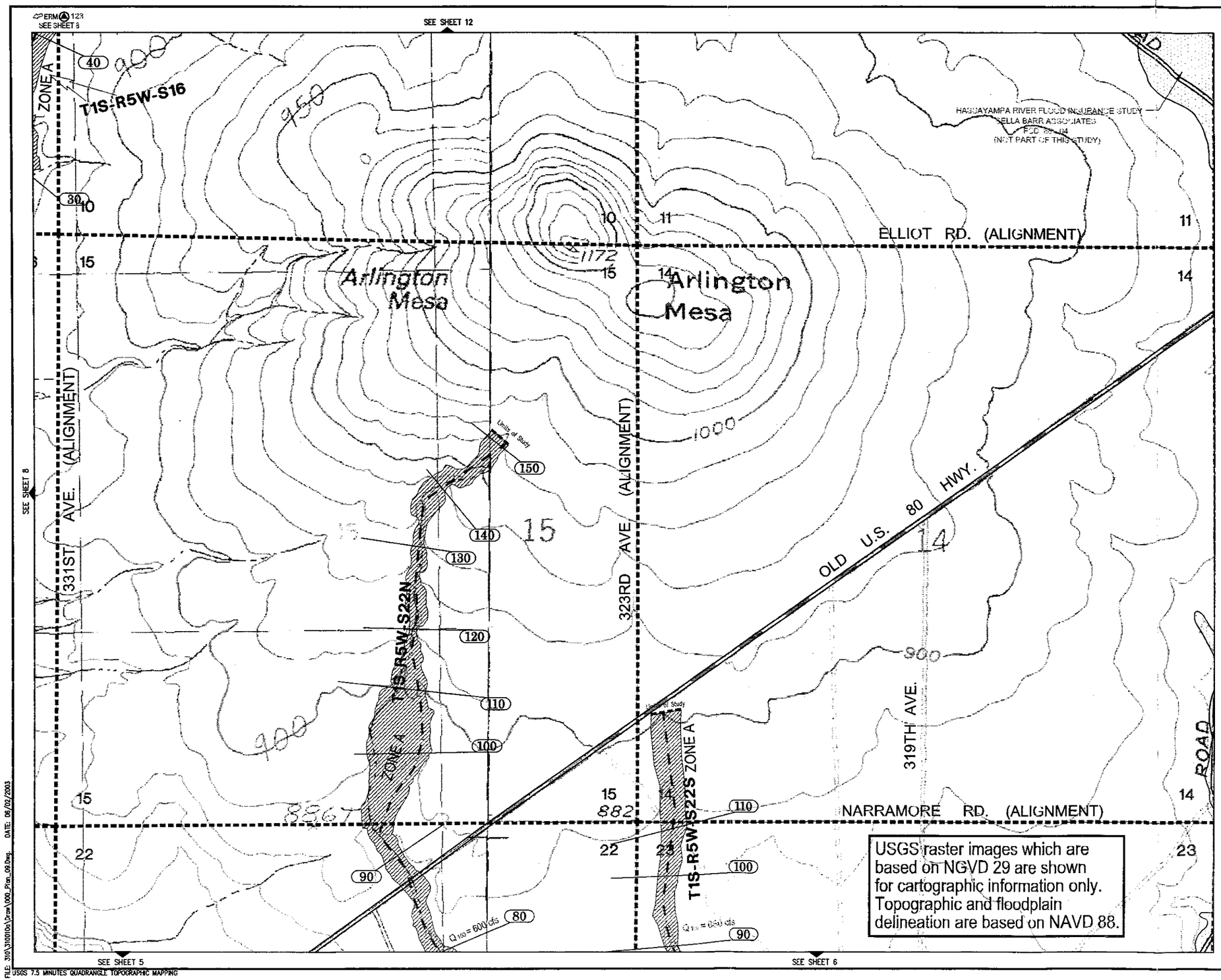
DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 8 OF 38



USGS raster images which are based on NGVD 29 are shown for cartographic information only. Topographic and floodplain delineation are based on NAVD 88.

FILE: 310\3100\Dcs\Dcm\000_Pcm_09.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

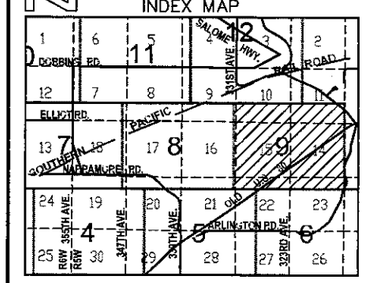
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
123	859.68	United States Geological Survey Brass Cap, +/- 100' south of Southern Pacific Railroad tracks, +/- 3 miles southwesterly of Salome Highway, stamped "M 10" (See Sheet 8)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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2255 N. 44th Street Suite 125
Phoenix, AZ 85008-3279
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E-mail www.entellus.com

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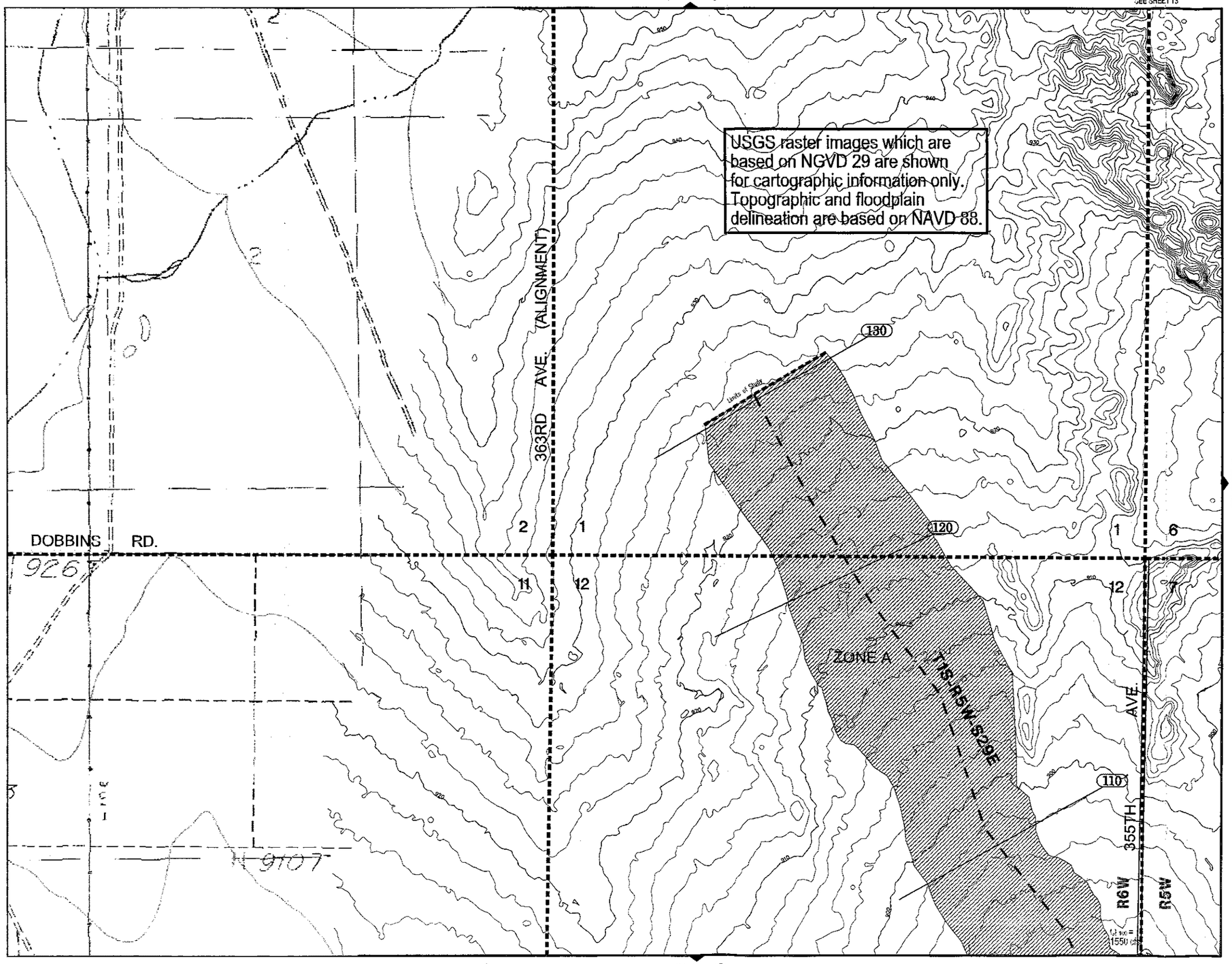
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 9 OF 38



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

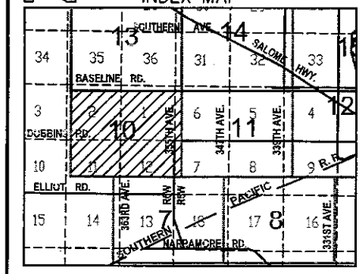
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
110	959.53	Brass Cap In Handhole @ Intersection of 355th Avenue and Salome Highway (See Sheet 13)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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3255 N. 44th Street Suite 125
Phoenix, AZ 85018-8279
Tel 602.344.3505
Fax 602.344.8047
E-mail www.entellus.com

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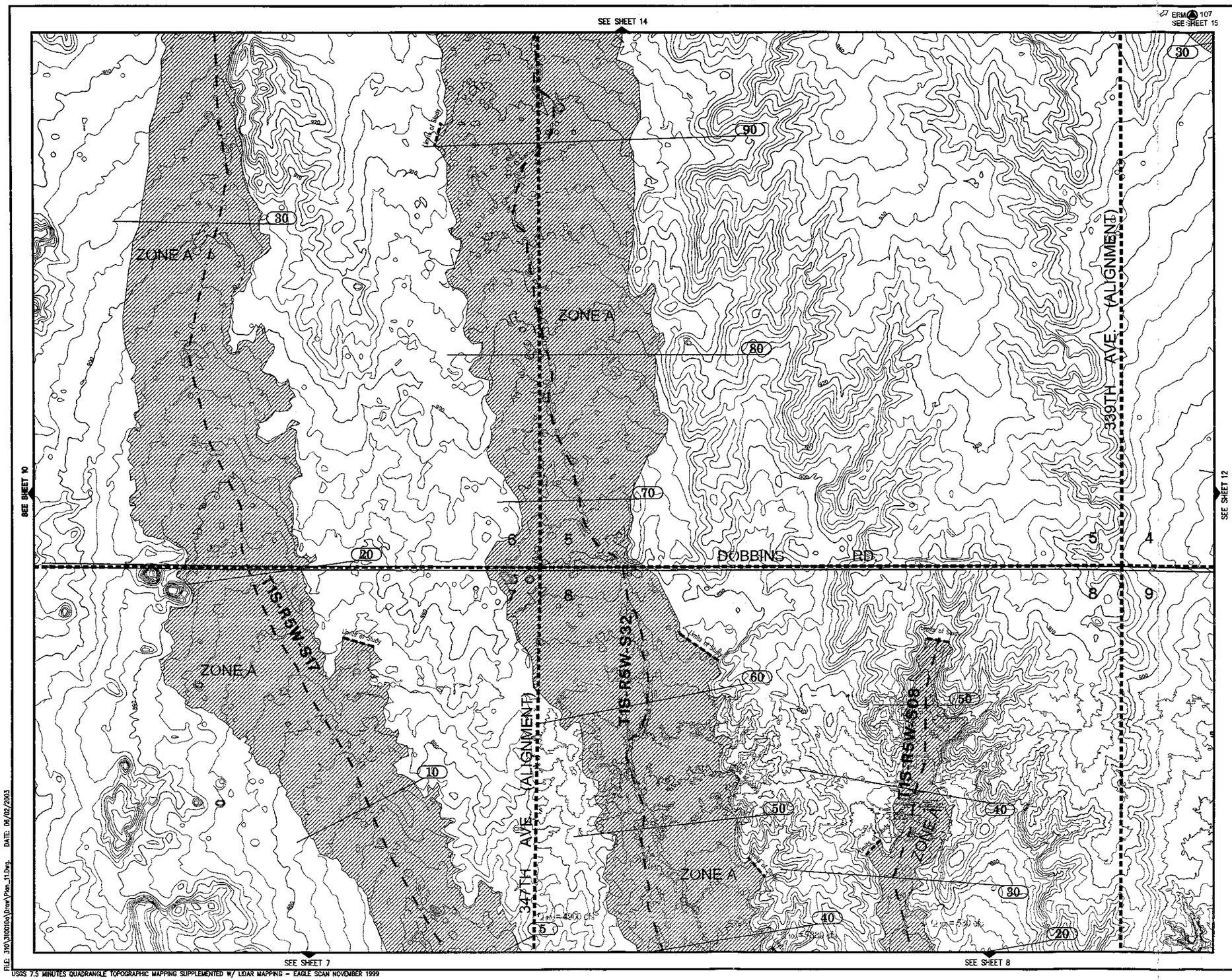
DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310010a\Draw\Plan_10.Dwg. DATE: 06/08/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

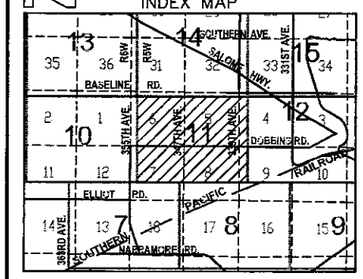
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
107	910.88	Maricopa County Highway Department Brass Cap Flush W/ Pavement @ Intersection of Baseline Rd. and Salome Hwy. (See Sheet 15)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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Phoenix, AZ 85008-3279
Tel 602.344.2605
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PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

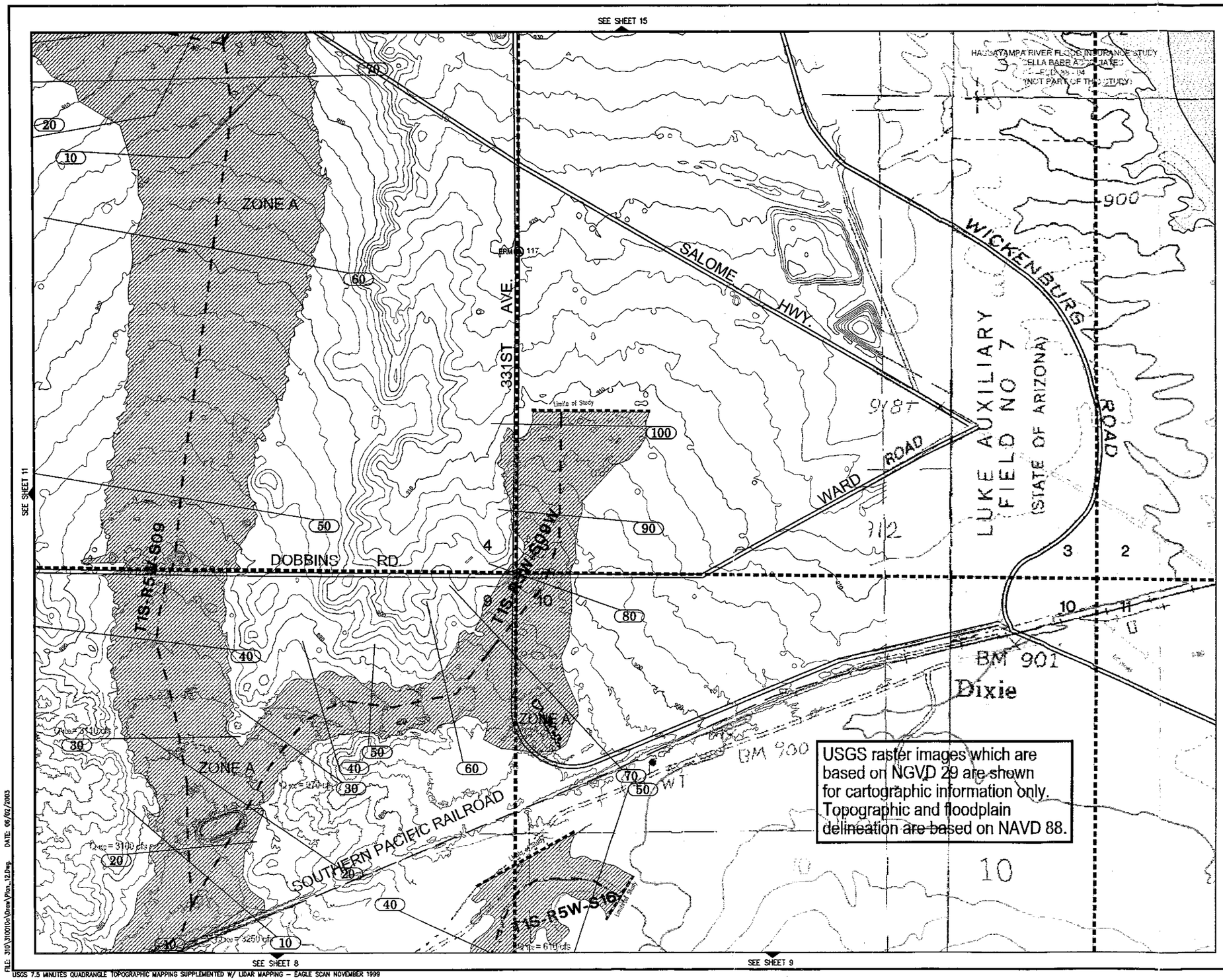
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 11 OF 38

FILE: 310\310010a\Dwg\Plan_11.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING – EAGLE SCAN NOVEMBER 1999

FILE: 310\310010a\Draw\Plan_12.Dwg DATE: 06/02/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

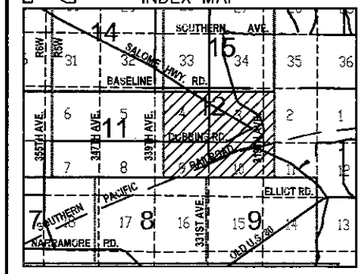
I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
117	919.74	United States Geological Survey Brass Cap, +/- 850' South of Salome Hwy., +/- 3300' Southeasterly of Baseline Rd; Stamped "H322" (This Sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

N

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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Phoenix, AZ 85008-2279
Tel 602.344.3566
Fax 602.344.3047
E-mail www.entellus.com

	BY	DATE
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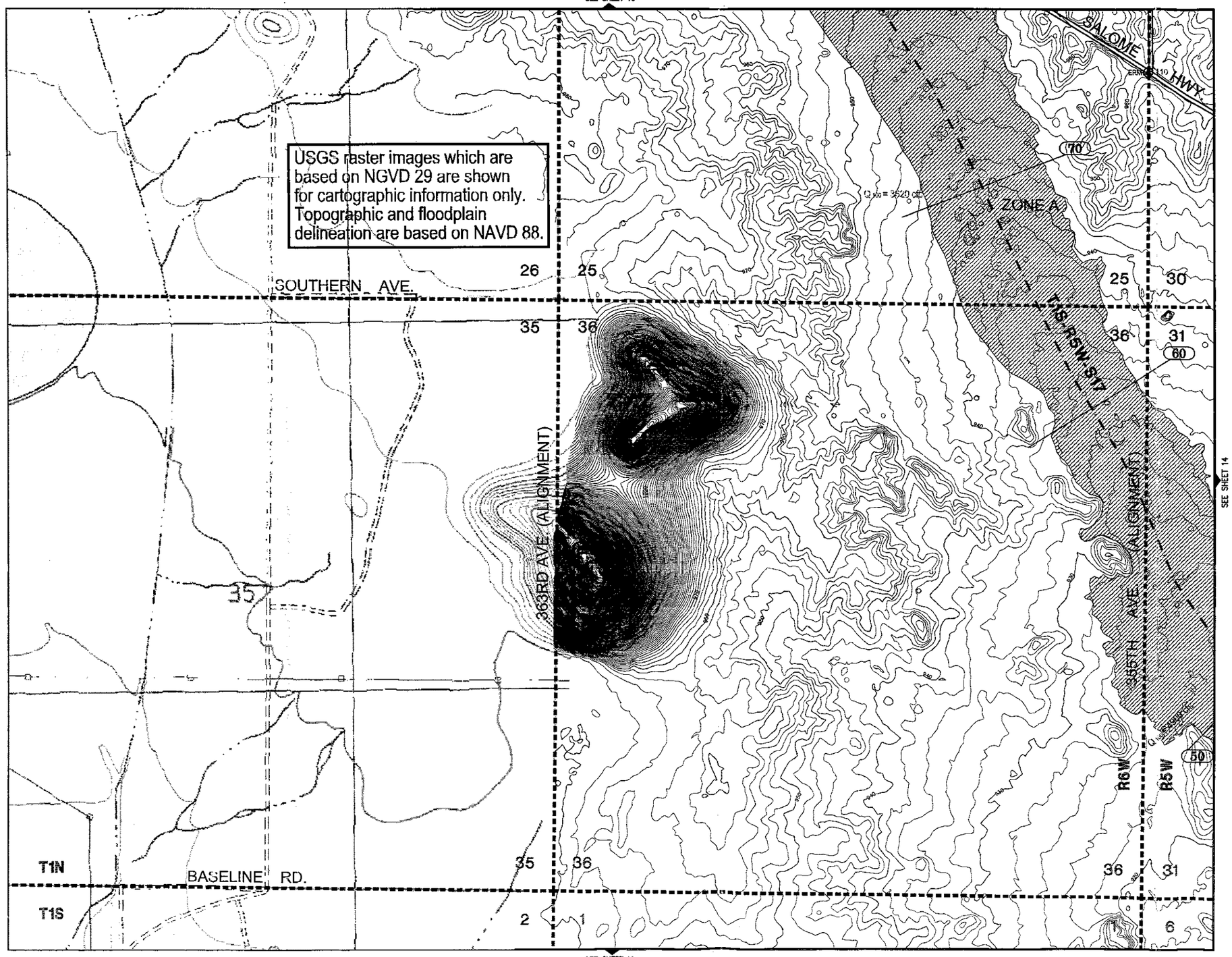
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

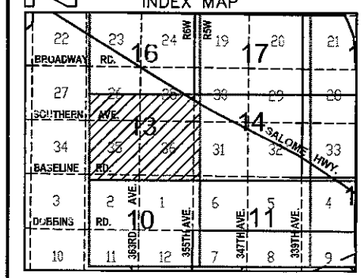
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
110	959.53	Brass Cap in Handhole @ Intersection of 355th Ave. and Salome Hwy. (This Sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'

SCALE: 1" = 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

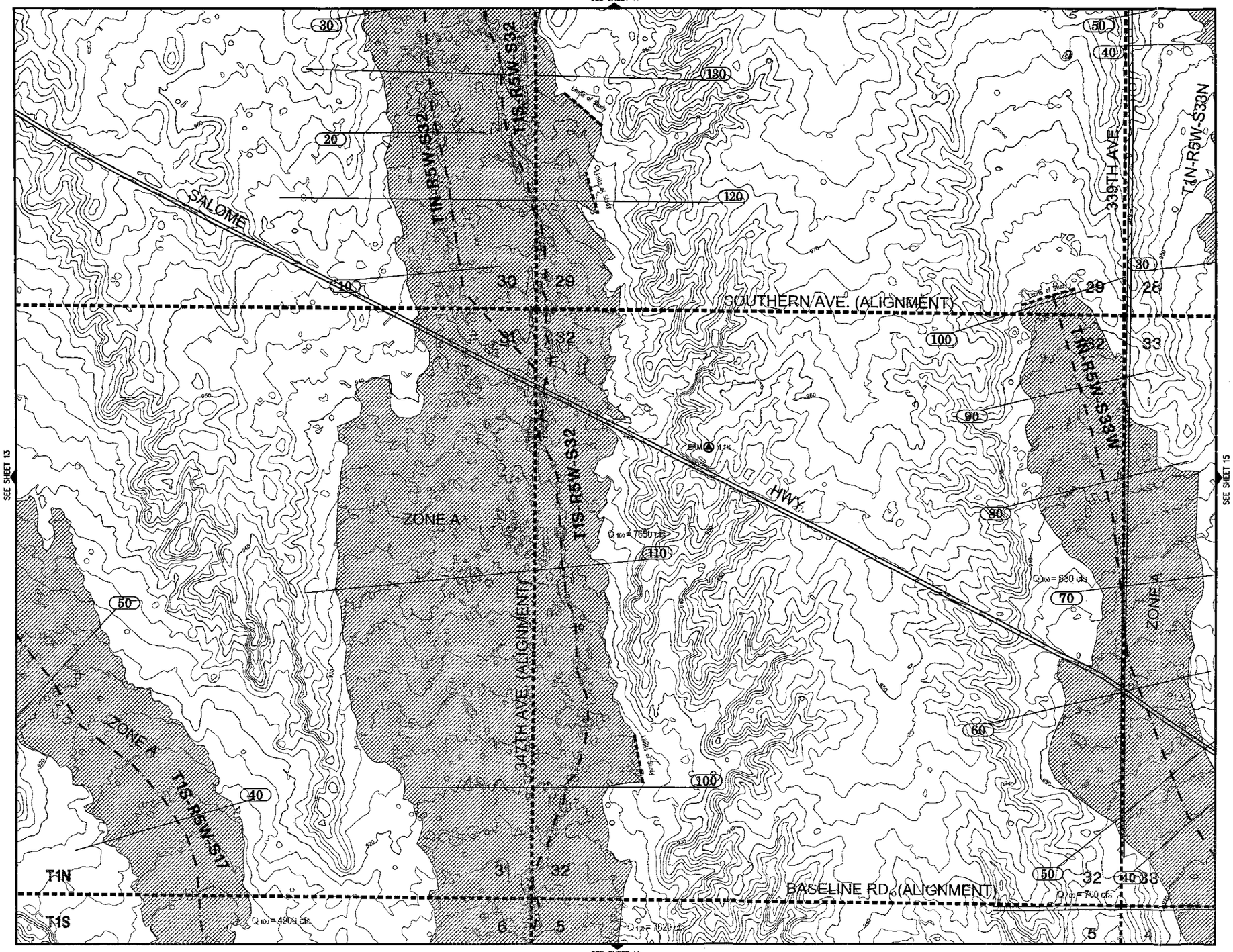
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 13 OF 38

FILE: 310\310010a\Draw\Plan_13.Dwg DATE: 06/03/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

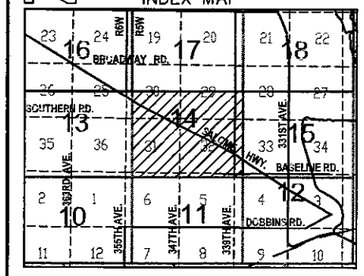
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
116	957.82	United States Geological Survey Brass Cap,+/- 200' North of Salome Hwy., +/- 1.45 Miles Northwesterly of Baseline Rd. Stamped "J13" (This Sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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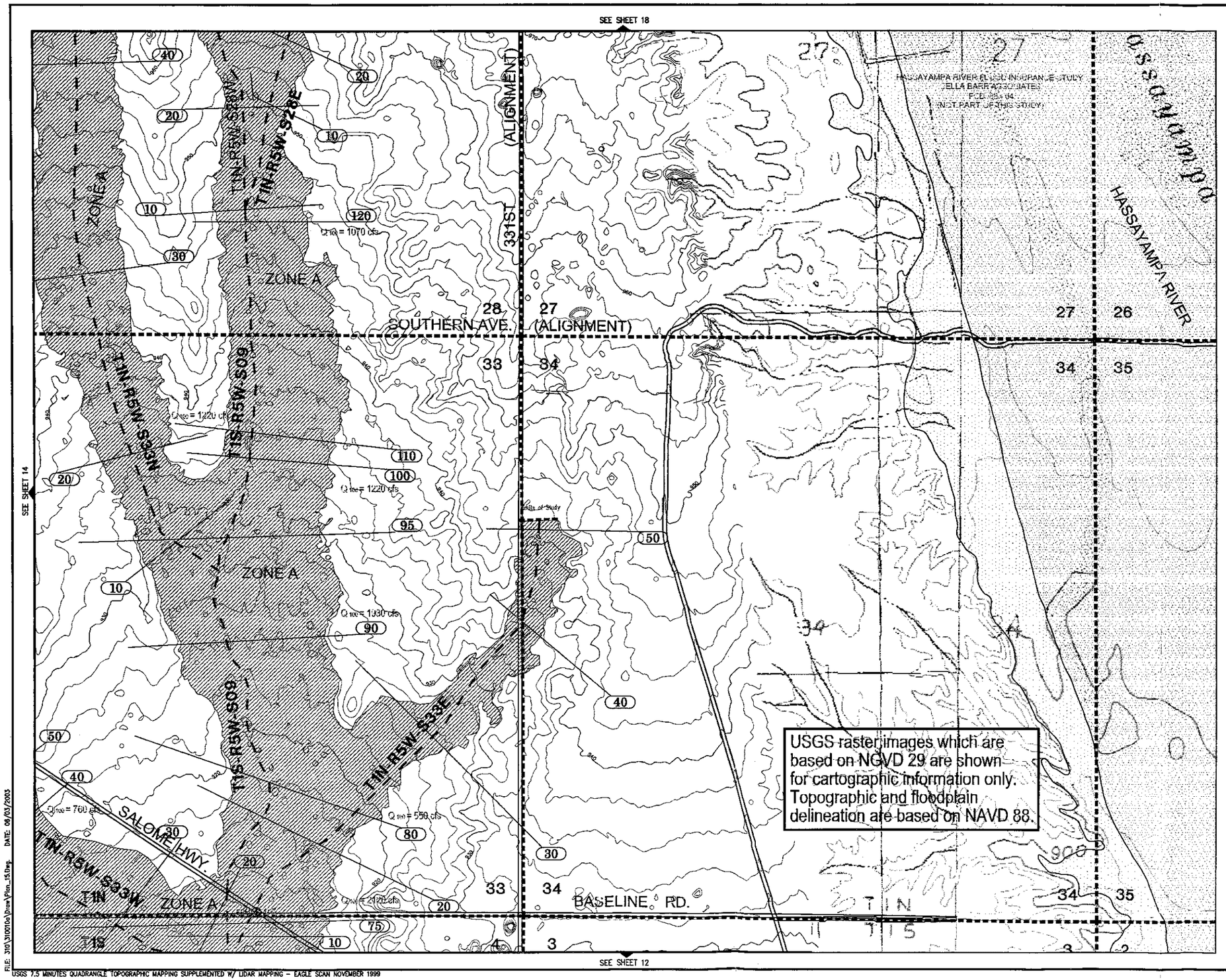
	BY	DATE	
DESIGN	HAA/AMG	06/2003	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DESIGN CHK.	HAA	06/2003	
PLANS	KBA/RJR	06/2003	RECOMMENDED BY: DATE
PLANS CHK.	HAA	06/2003	APPROVED BY: DATE
SUBMITTED BY: DATE:			CHIEF ENGINEER AND GENERAL MANAGER

SHEET 14 OF 38

FILE: 310\310010\Draw\Plan_14.Dwg DATE: 06/03/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING – EAGLE SCAN NOVEMBER 1999

FILE: 3101\3101D0\DrawPlan_15.Dwg DATE: 06/03/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 5
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

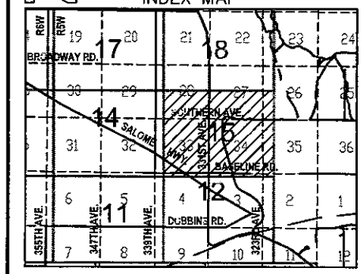
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
107	910.88	Maricopa County Highway Department Brass Cap Flush W/ Pavement @ Intersection of Baseline Rd. and Salome Hwy. (This Sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 – 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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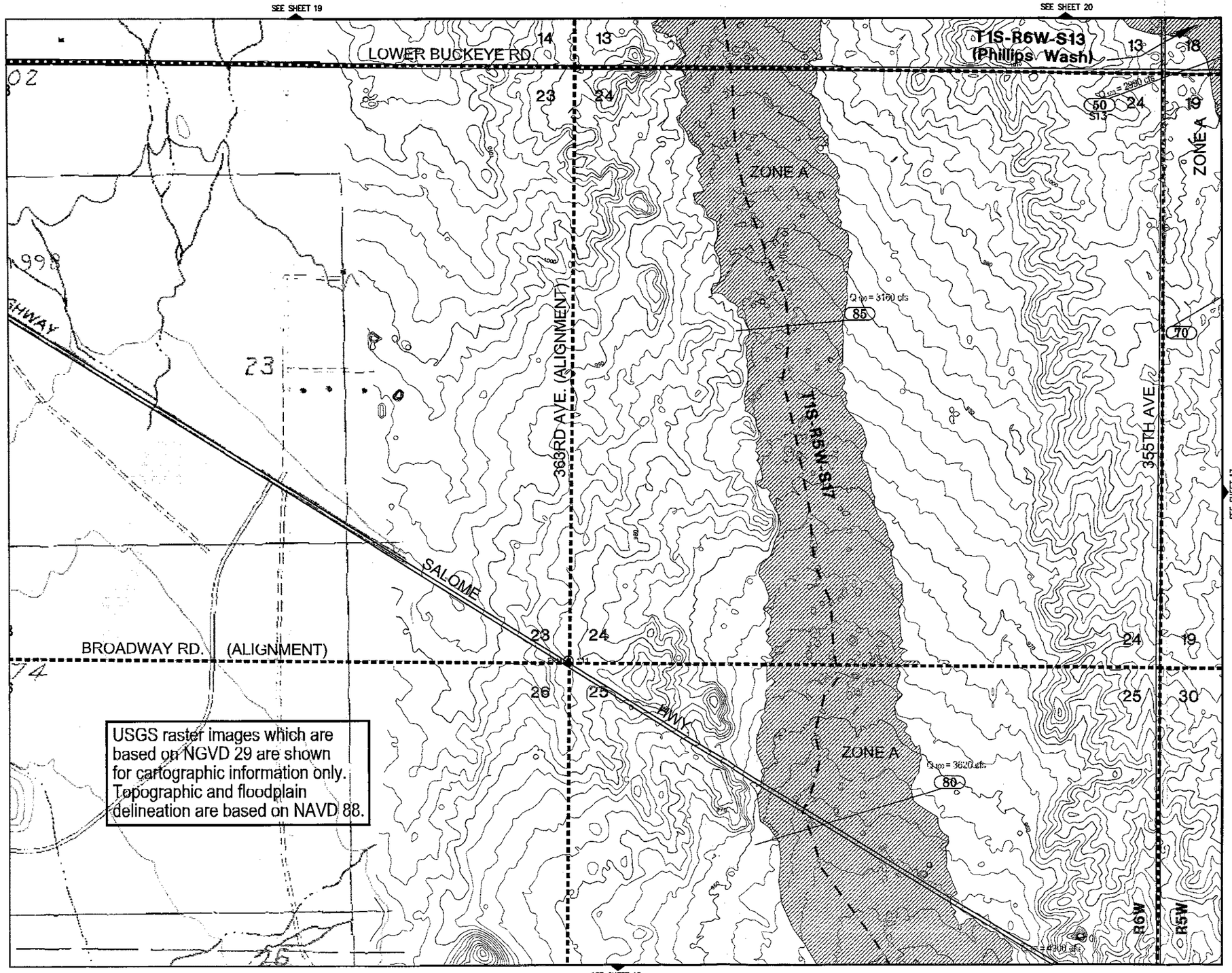
DESIGN	HAA/AMG	06/2003
DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING – EAGLE SCAN NOVEMBER 1999

FILE: 310\310371\Draw\Plan_10-18.Dwg DATE: 05/21/03

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

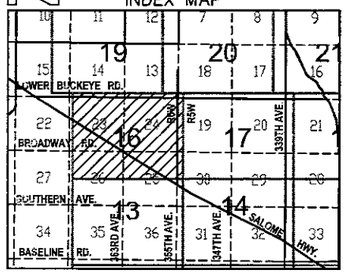
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in center of Salome Highway +/- 2.35 miles southeasterly of Wintersburg Road, +/-5.3' northwesterly of center of dirt road (This sheet)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'

SCALE: 1" = 400'
CONTOUR INTERVAL = 10 – 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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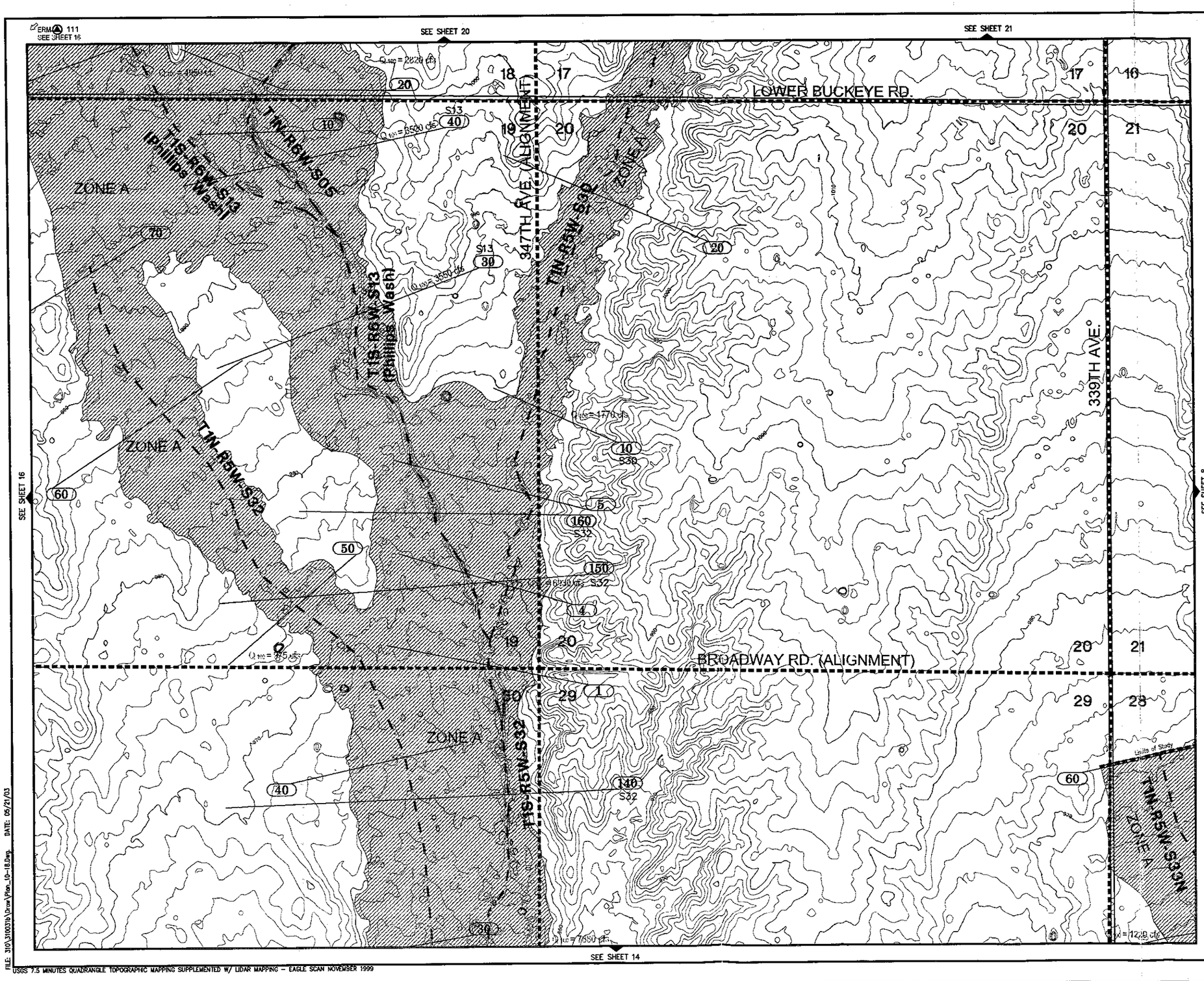
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 16 OF 38



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

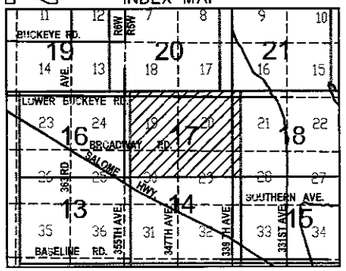
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in Center of Salome Hwy. +/- 2.35 Miles Southeasterly of Wintersburg Rd. +/- 5.3' Northwesterly of Center of Dirt Road. (See Sheet 16.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



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SCALE: 1" = 400'
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PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

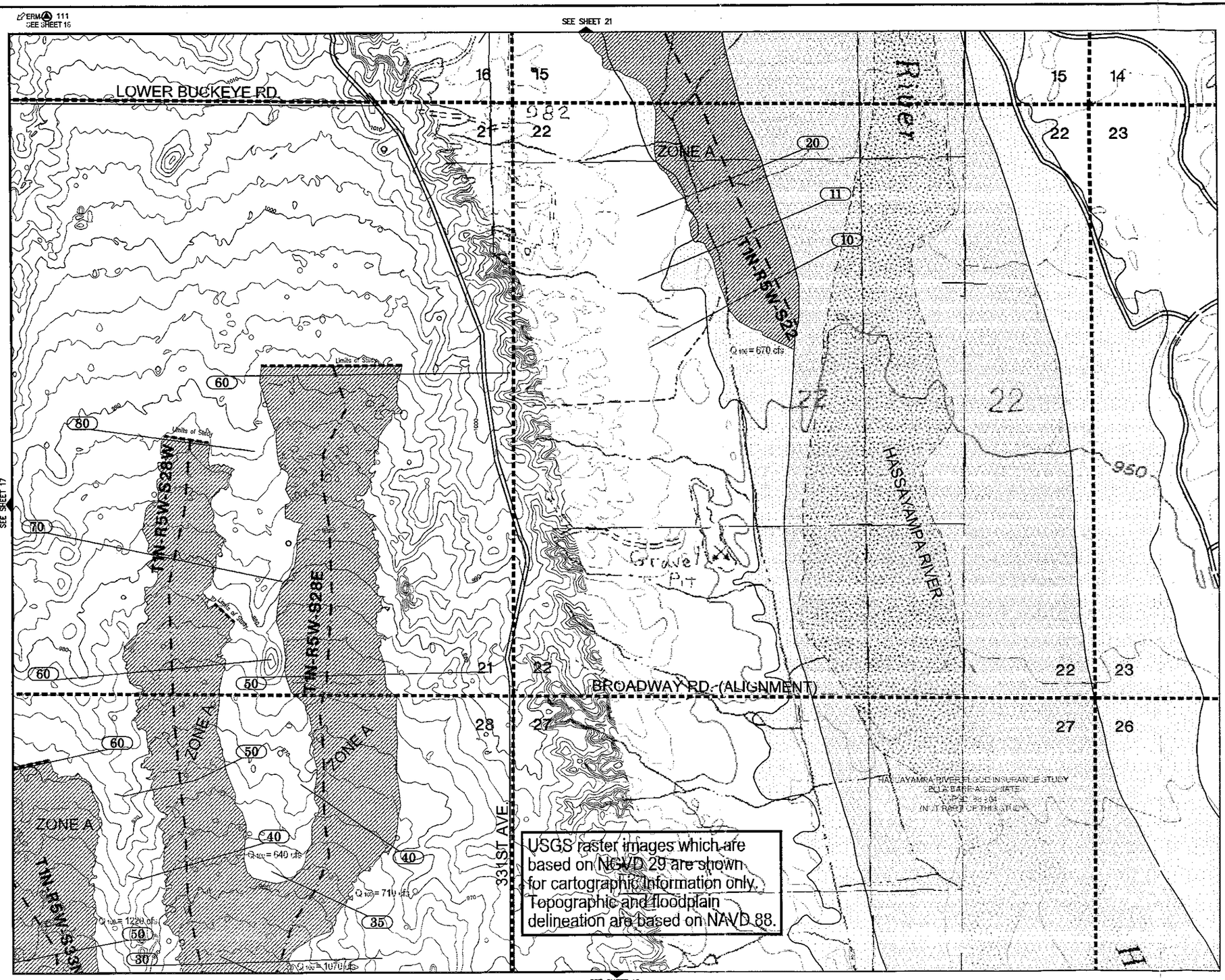
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 17 OF 38

FILE: 310\310031b\Draw\Plan_10-18.dwg DATE: 06/21/03

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING – EAGLE SCAN NOVEMBER 1999

FILE: 310\310010a\Draw\000_Plan_18.Dwg DATE: 08/02/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

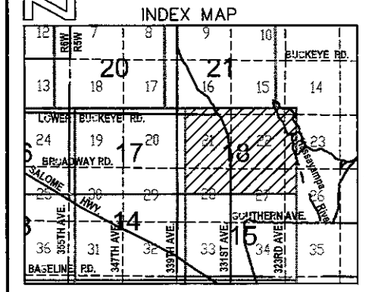
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in Center of Salome Hwy. +/- 2.35 Miles Southeasterly of Wintersburg Rd. +/- 5.3' Northwesterly of Center of Dirt Road. (See Sheet 16.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 – 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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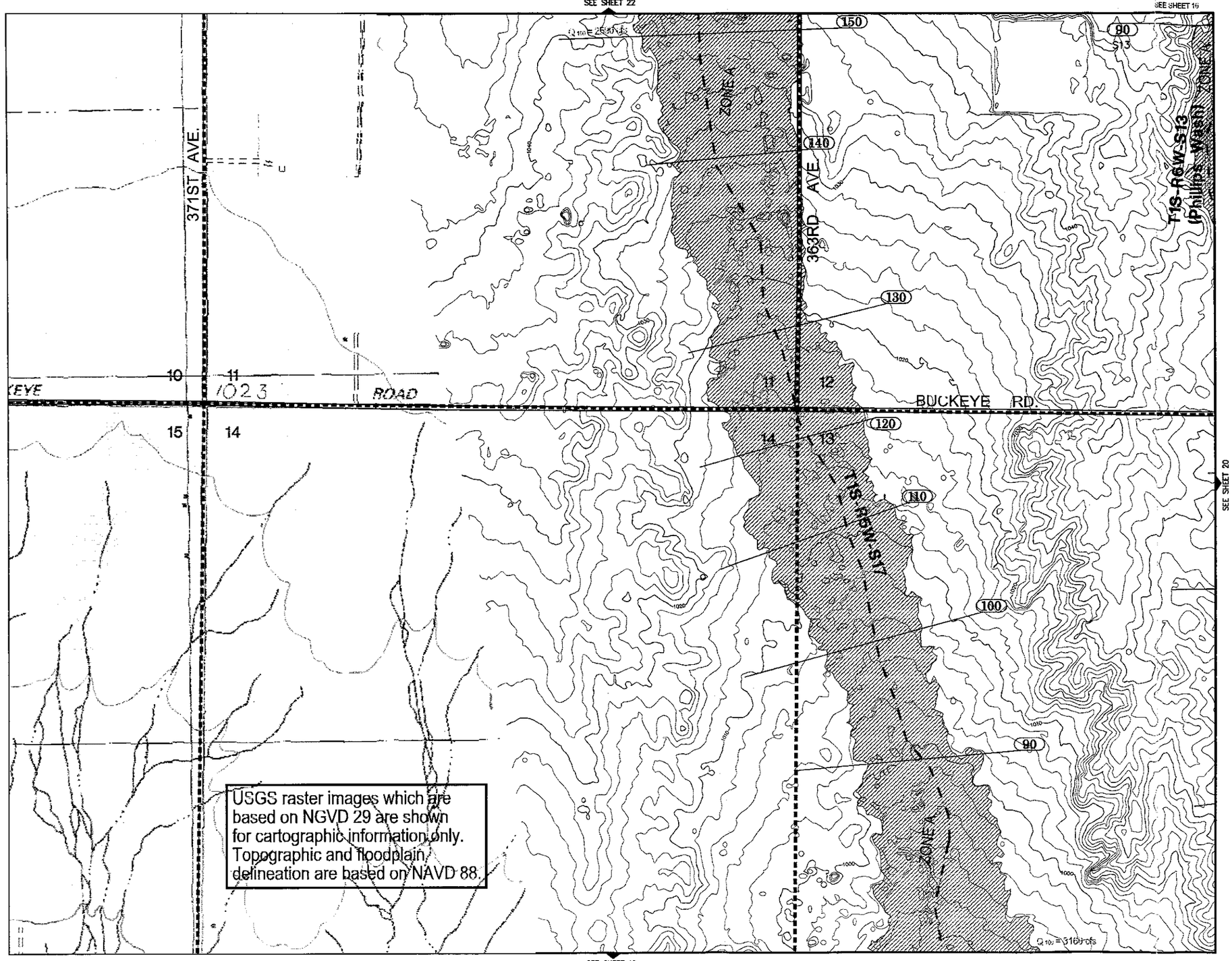
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

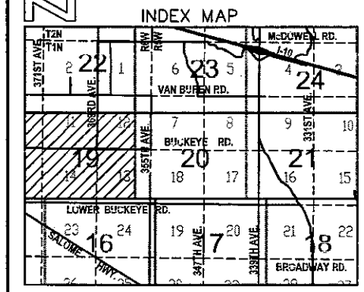
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in Center of Salome Hwy. Approximately 2.35 miles Southwesterly of Wintersburg Rd. (See sheet 16.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

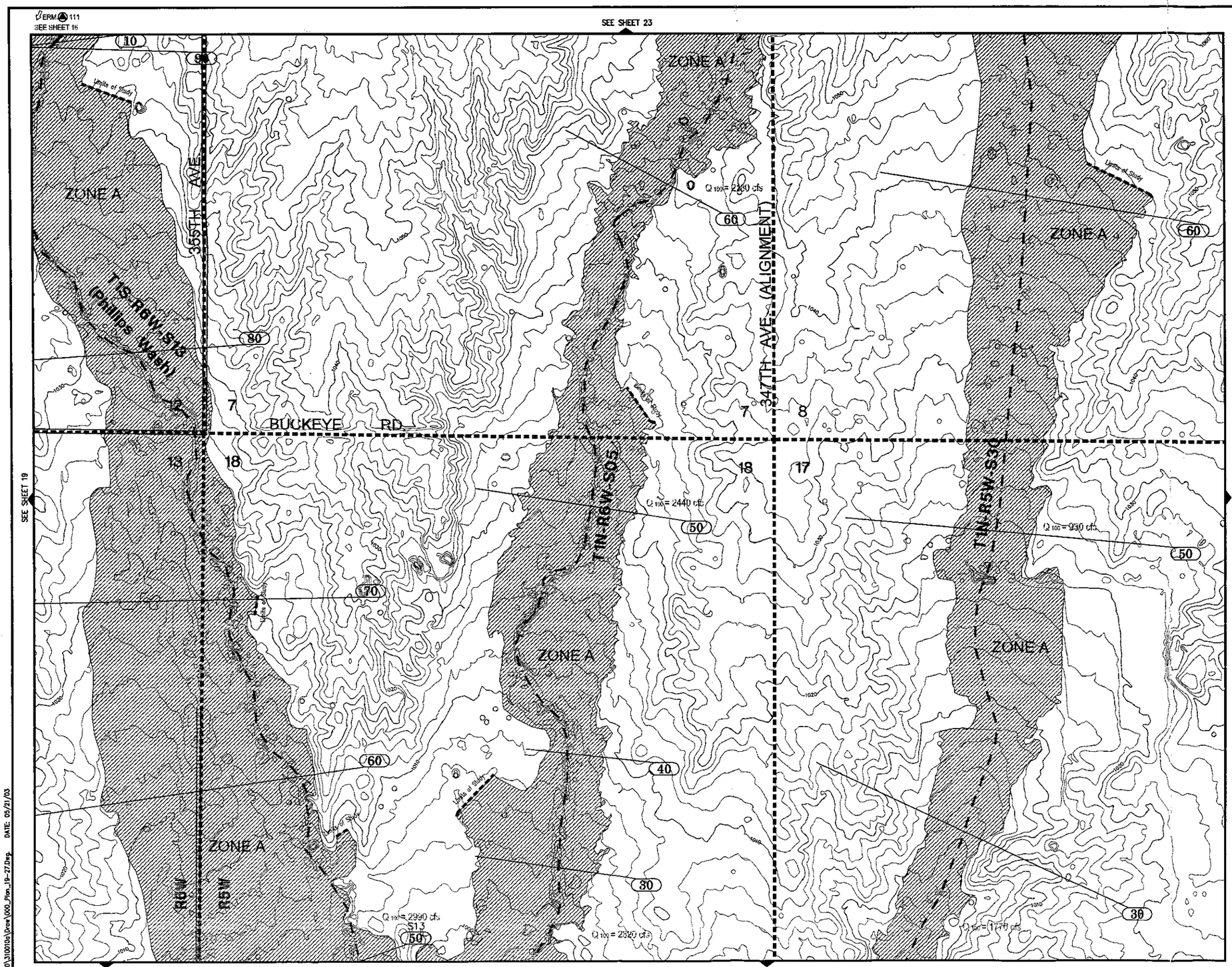
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 19 OF 38

FILE: 310\310010a\Draw\000_Plan_19-27.Dwg DATE: 05/21/03

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

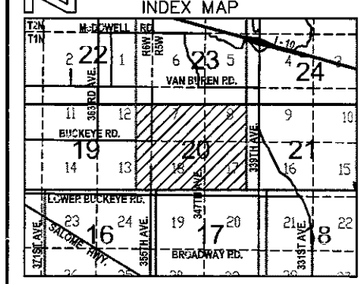
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in Center of Salome Hwy. Approximately 2.35 miles Southwesterly of Wintersburg Rd. (See sheet 16.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'

SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

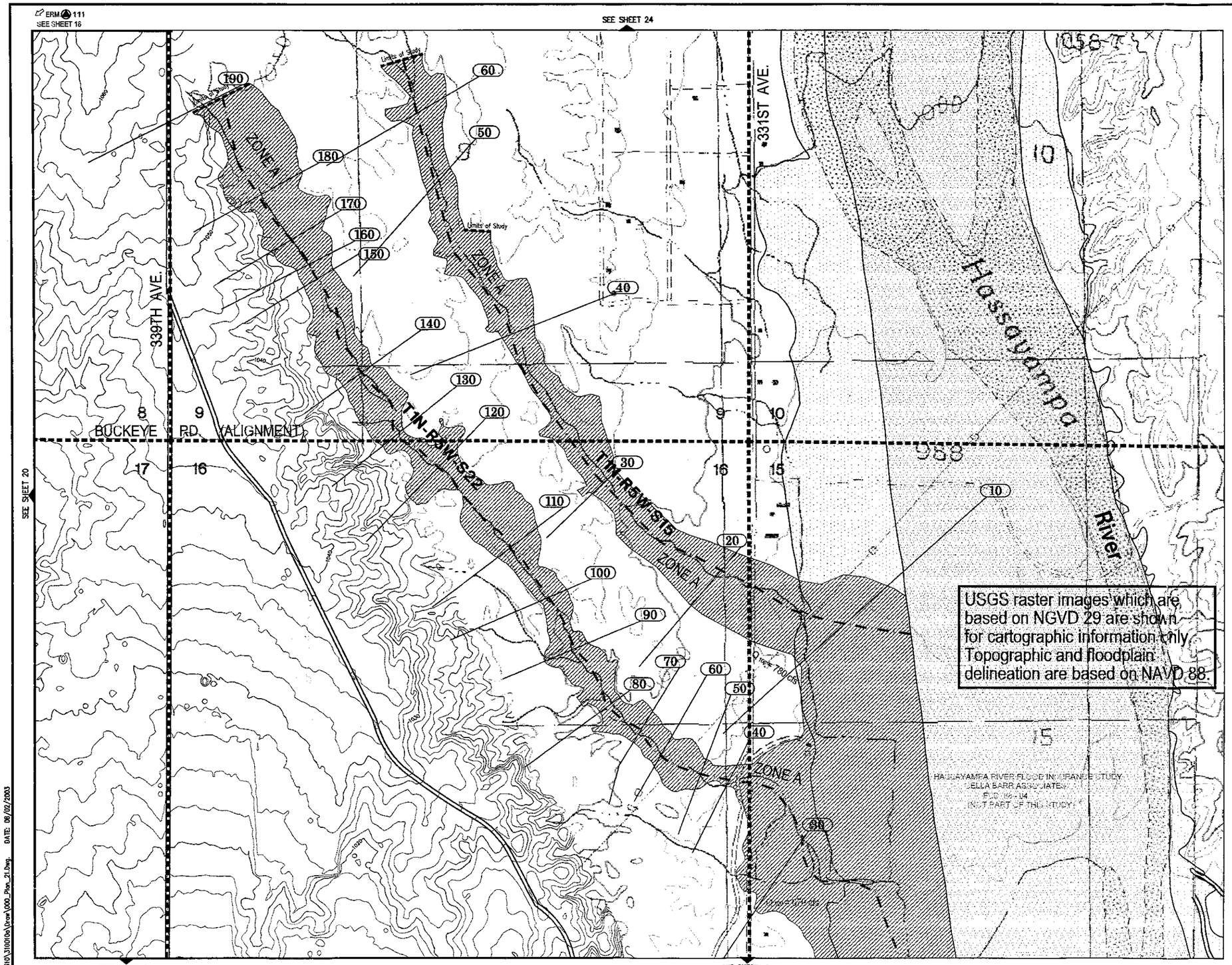
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 20 OF 38

FILE: 310\310010a\Drw\000_Plan_19-27.Dwg DATE: 05/21/03

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
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WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
111	981.39	Brass Cap in Handhole in Center of Salome Hwy. Approximately 2.35 miles Southwesterly of Wintersburg Rd. (See sheet 16.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP

400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

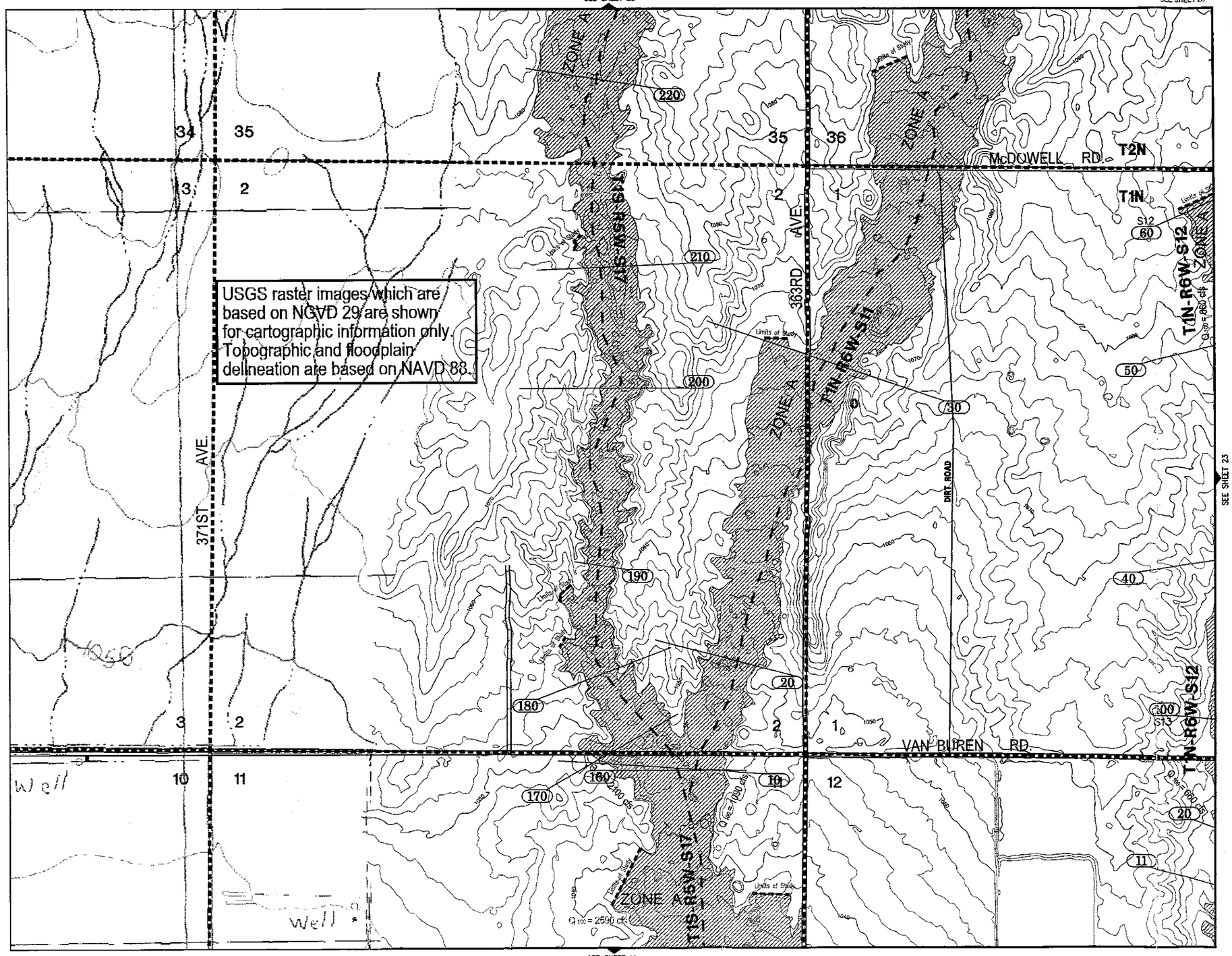
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 21 OF 38

FILE: J:\0J\3100\0a\Dwg\000_Plan_21.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

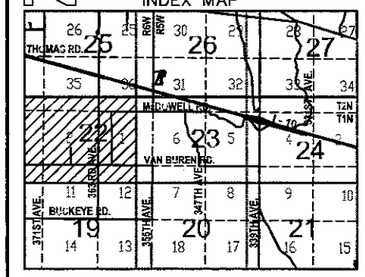
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
54	1094.57	Fd Brass Cap in top of concrete box culvert headwall on the southside of Interstate 10 , 230 ft west of 355th Ave alignment stamped "S345+62.25 ELEV 1092.81 Wash-4" (See Sheet 26.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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DESIGN CHK.	HAA	06/2003
PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
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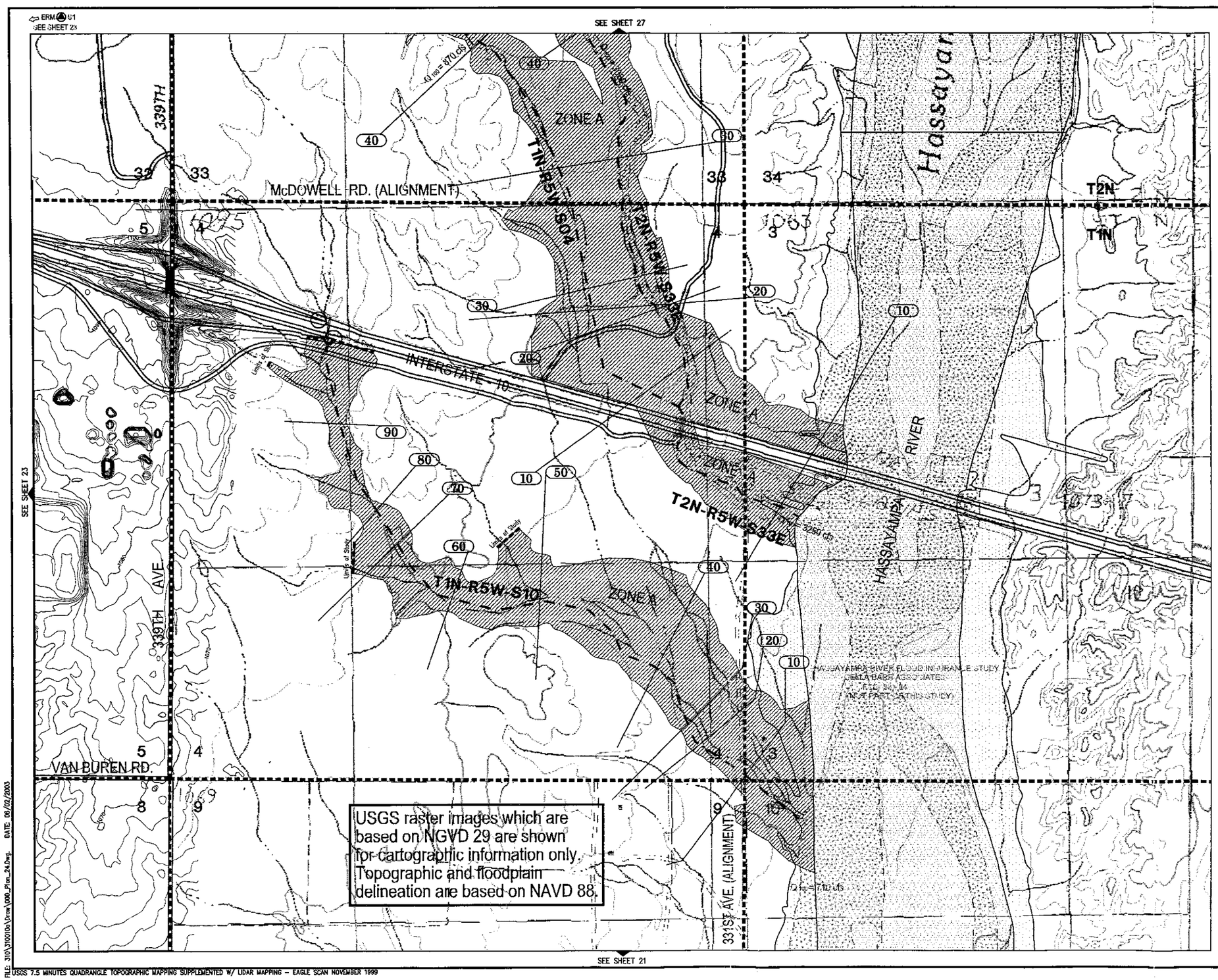
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 22 OF 38

FILE: 310\310010a\Draw\000_Plan_19-27.Dwg DATE: 05/21/03

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

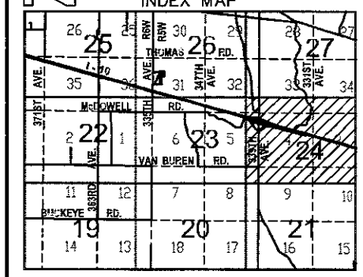
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
61	1076.83	Fd Brass Cap in top of concrete headwall on southside of Interstate 10, 5300' east of 355th Ave. Stamped "ELEV 1076.02 Wash-2" (See sheet 23.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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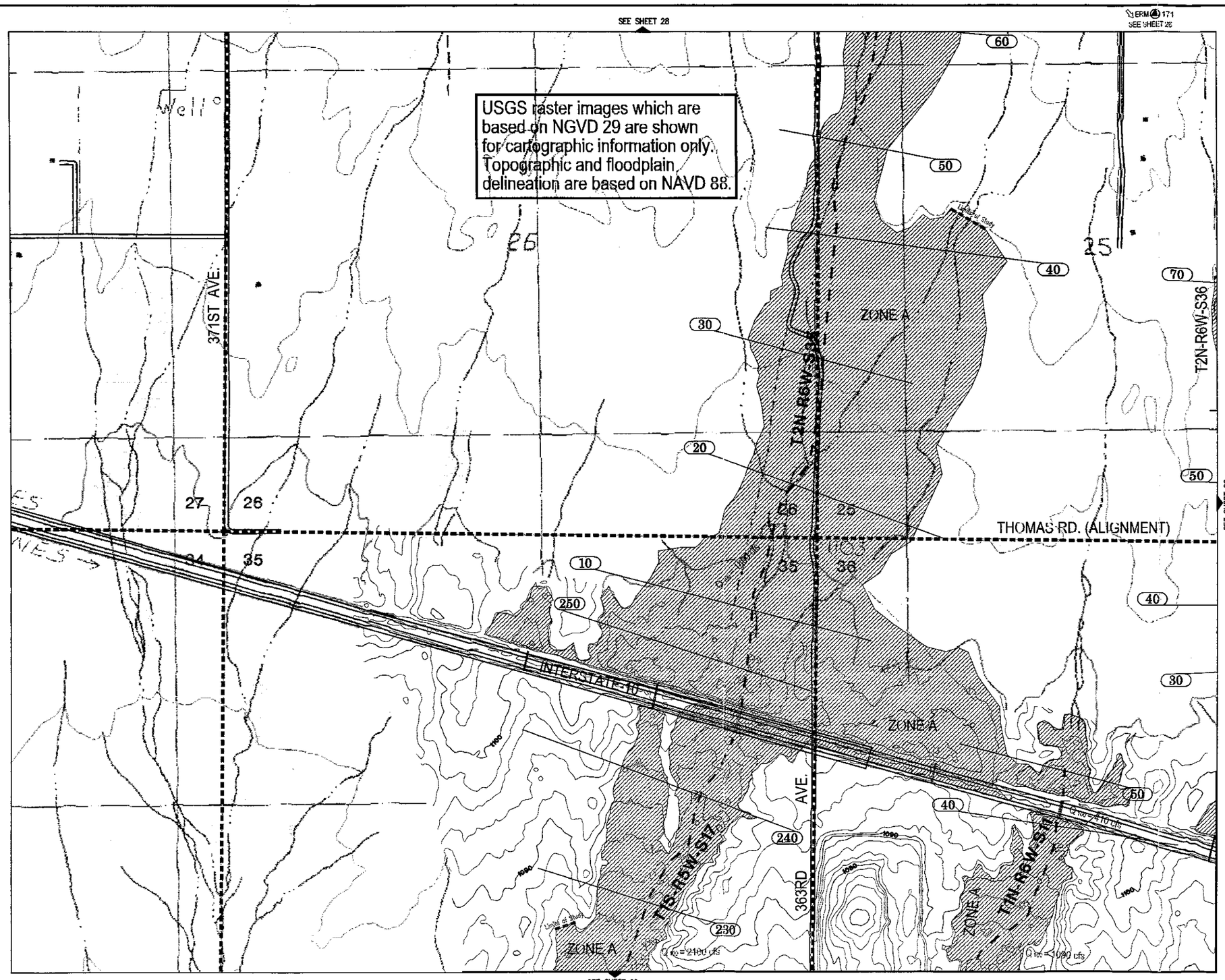
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\370010a\Draw\000_Plan_24.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

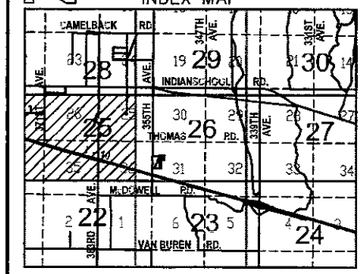
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	MACDOT Brass Cap in handhole in center of 355th Avenue 1 mile north of Interstate-10 (See sheet 26.)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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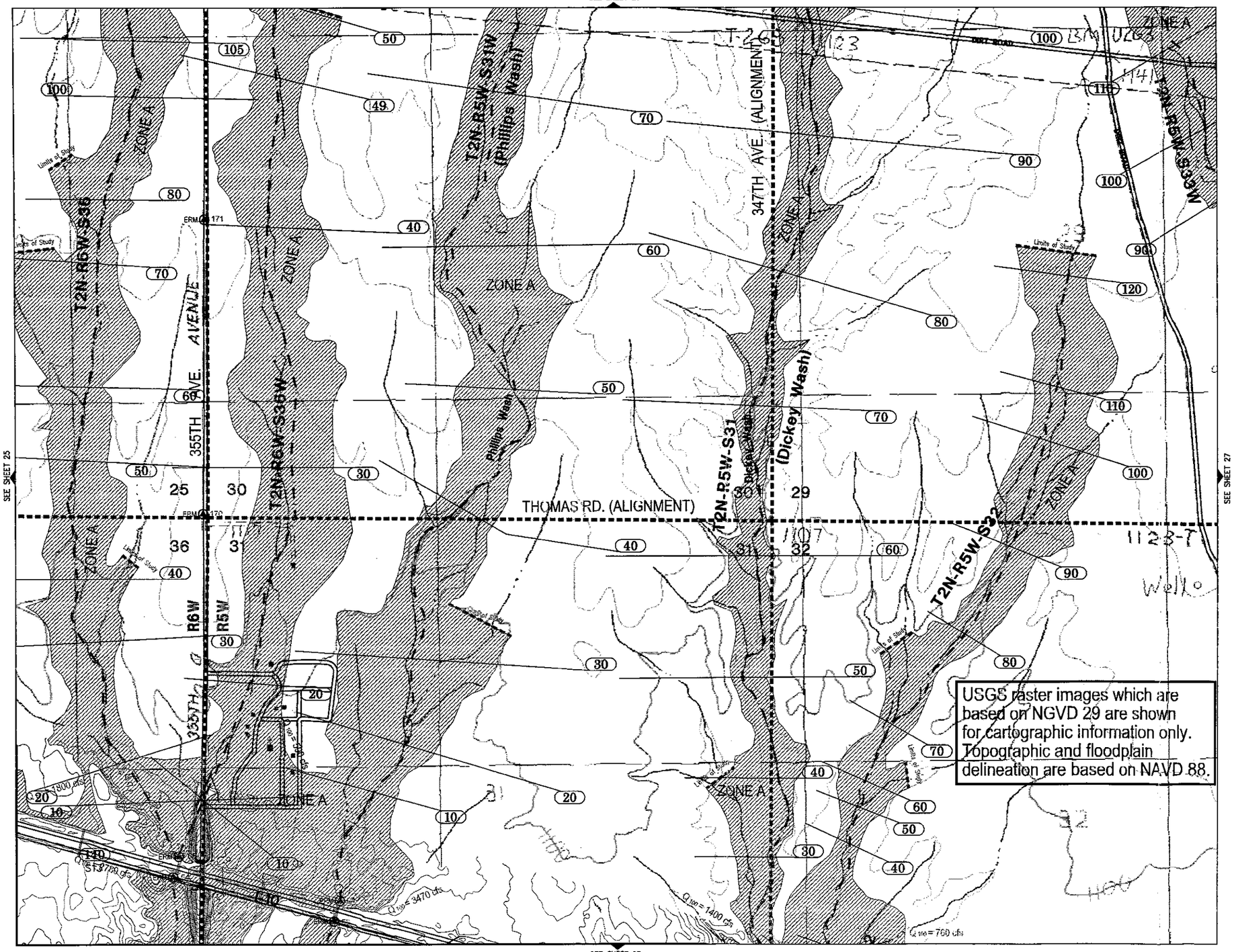
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310010a\Dwg\000_Plan_25.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

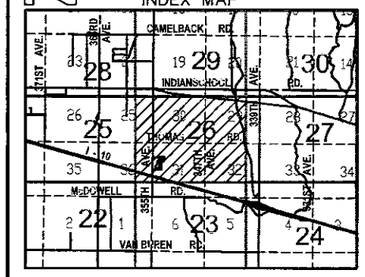
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
54	1094.57	Fd Brass Cap in top of concrete box culvert headwall, 250 ft east of 355th Ave alignment stamped "EL1094.57 ELEV 1095.86 Wash-F"
56	1092.85	Fd Brass Cap in top of concrete box culvert 1250 ft east of 355th Ave alignment stamped "EL1092.85 ELEV 1091.16 Wash-F"
64	1093.53	Fd Brass Cap in top of concrete box culvert headwall 1250 ft east of 355th Ave alignment
65	1095.57	Fd Brass Cap in top of concrete box culvert headwall, 250 ft east of 355th Ave alignment
171	1125.42	Maricopa County Department of Transportation Brass Cap in Roadway in center of 355th Avenue, 1 mile north of Interstate 10

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
CONTOUR INTERVAL = 10 - 20 FEET
SUPPLEMENTAL LIDAR MAPPING CI. = 2 FEET

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PLANS CHK.	HAA	06/2003
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
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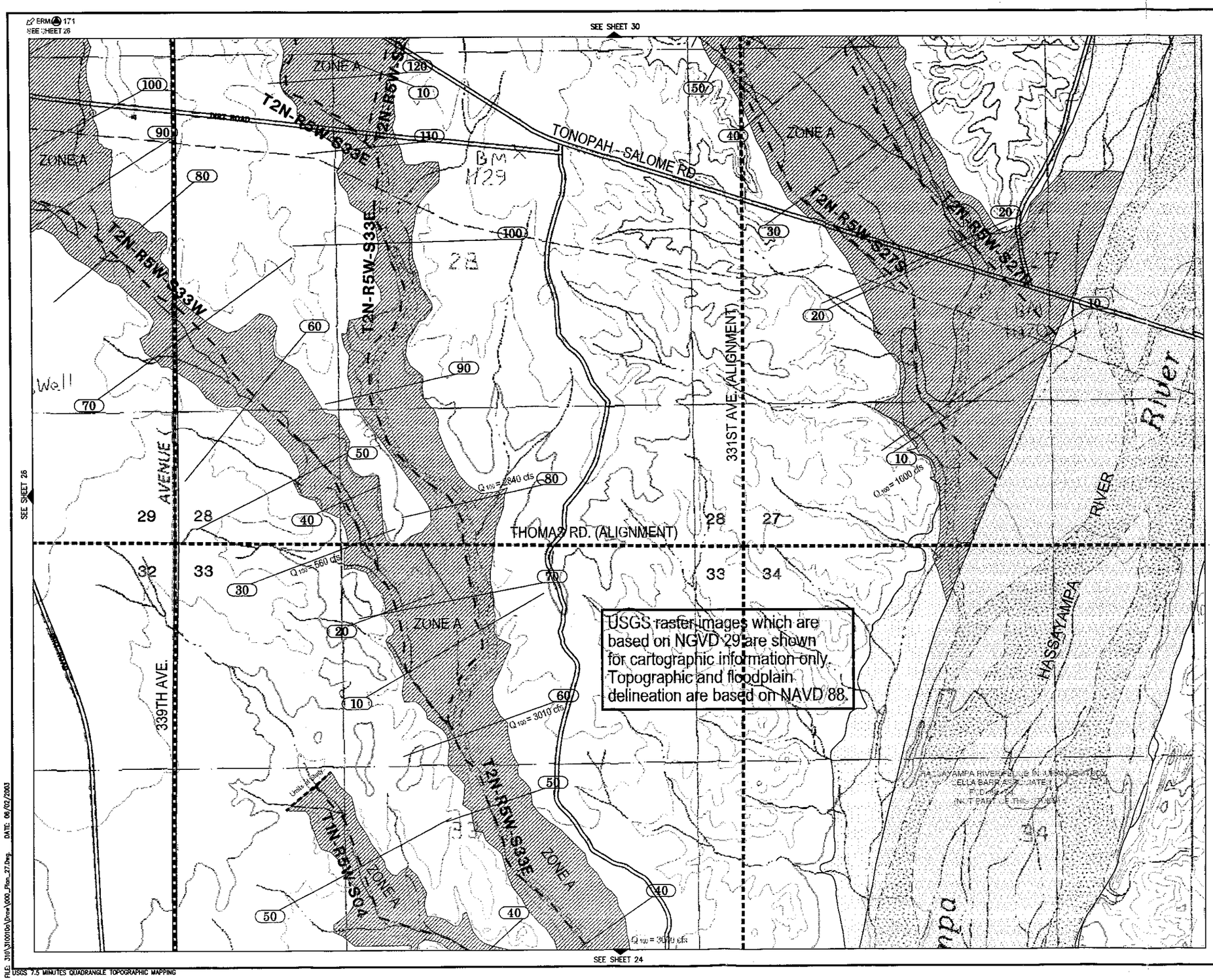
SHEET 26 OF 38

FILE: 310\310010A\Draw\000_Plan_19-27.Dwg DATE: 05/21/03

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING SUPPLEMENTED W/ LIDAR MAPPING - EAGLE SCAN NOVEMBER 1999



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FILE: 310\310010a\Draw\000_Plan_27.Dwg DATE: 06/02/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH

F.C.D. CONTRACT NO. 99-03

REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

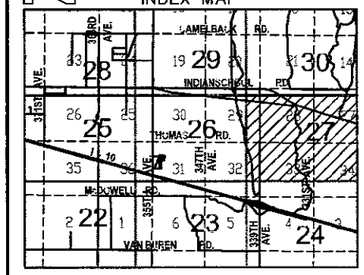
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	Maricopa County Department of Transportation Brass Cap in Handhole in center of 355th Ave., 1 Mile North of Interstate 10 (See sheet 25)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'

SCALE: 1" = 400'

USGS CONTOUR INTERVAL = 10 - 20 FEET

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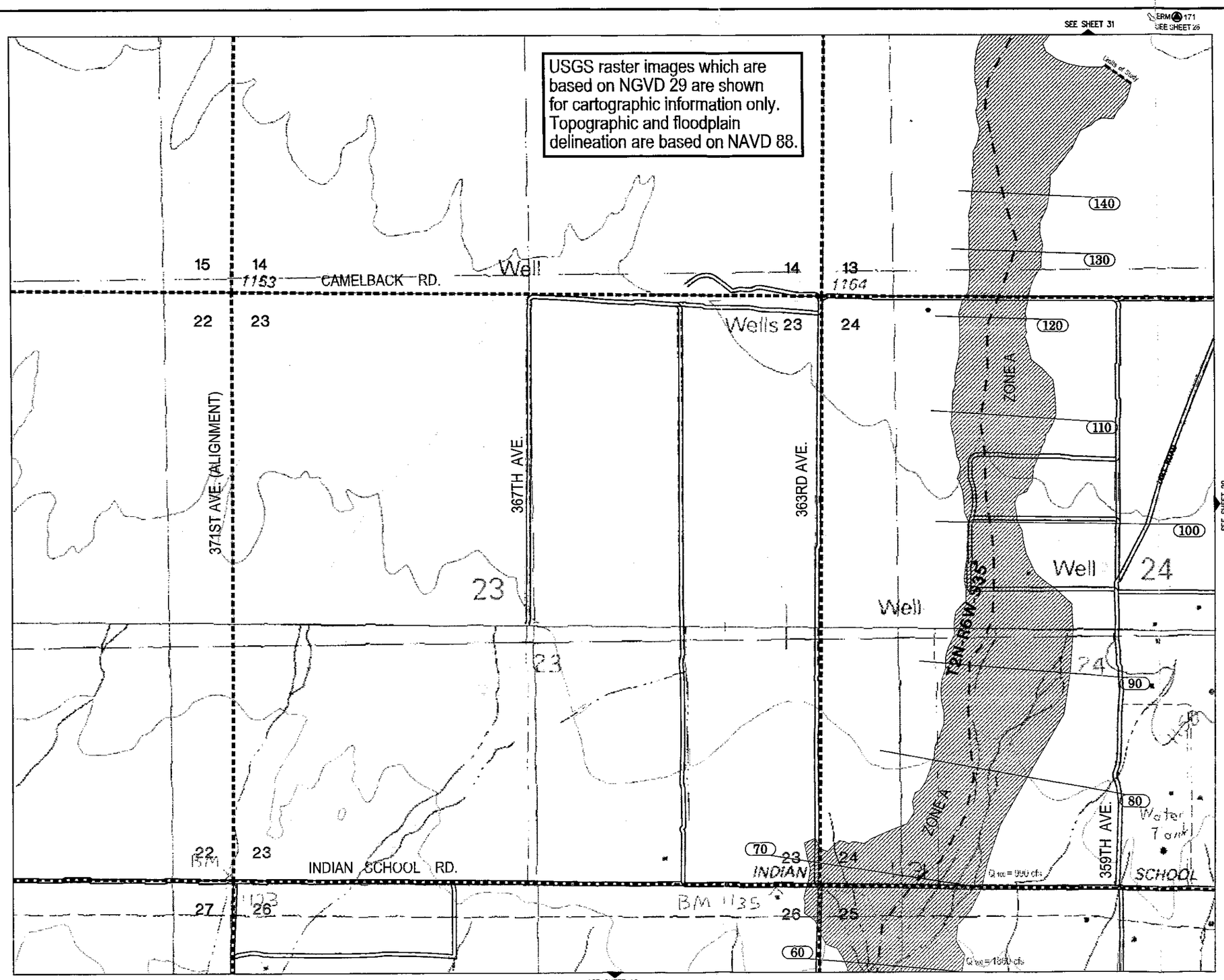
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 27 OF 38



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

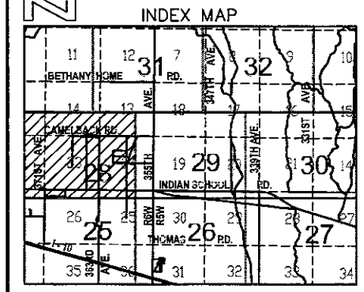
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	MCDOT Brass Cap in Handhole in center of 355th Ave., approx 1 mile north of I-10. (See sheet 29)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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PLANS CHK.	HAA	06/2003
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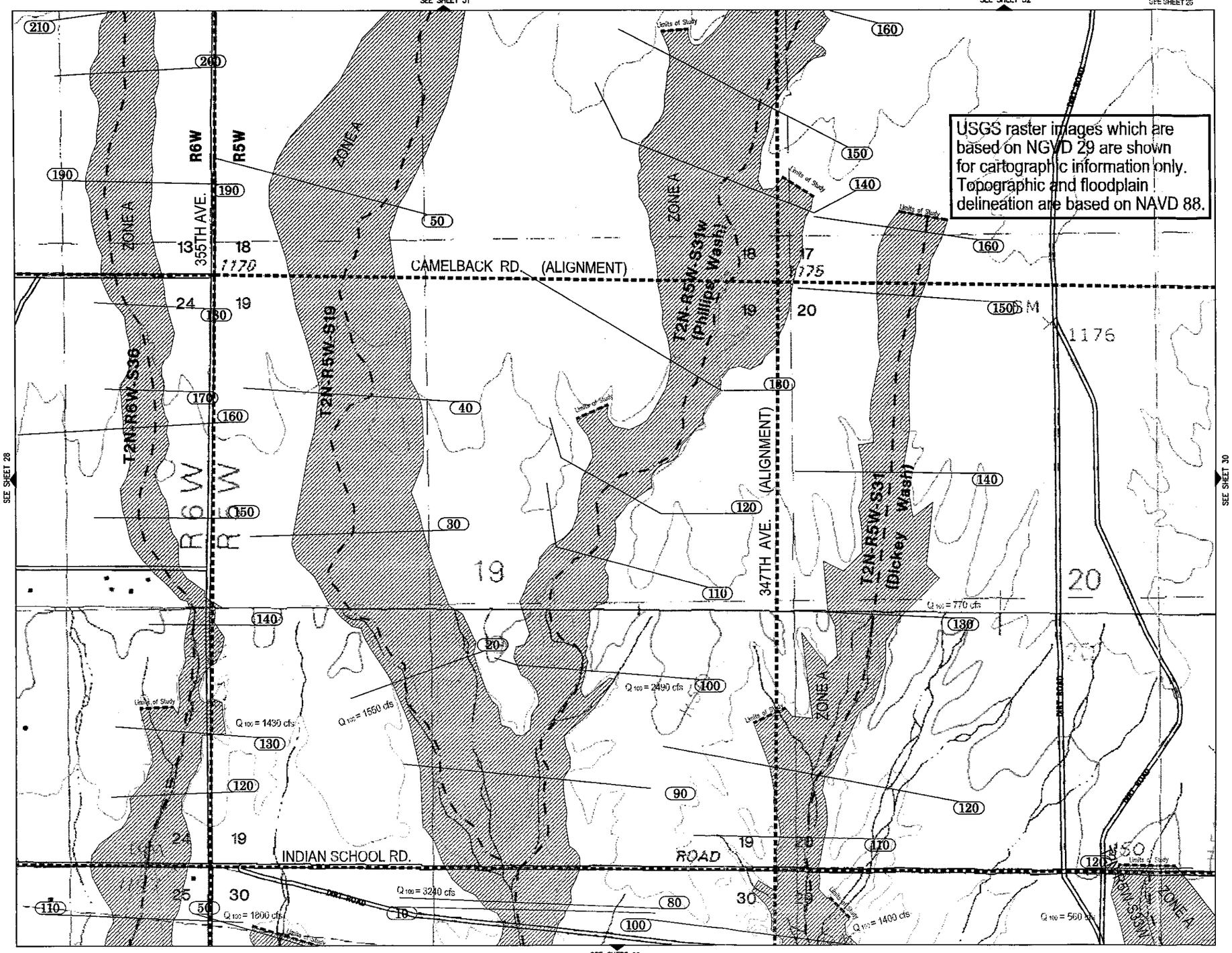
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310100\Draw\000_Plan_28.Dwg DATE:06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

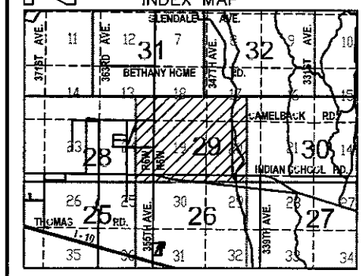
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	MCDOT Brass Cap in Handhole in center of 355th Ave., approx. 1 mile north of I-10. (See sheet 26)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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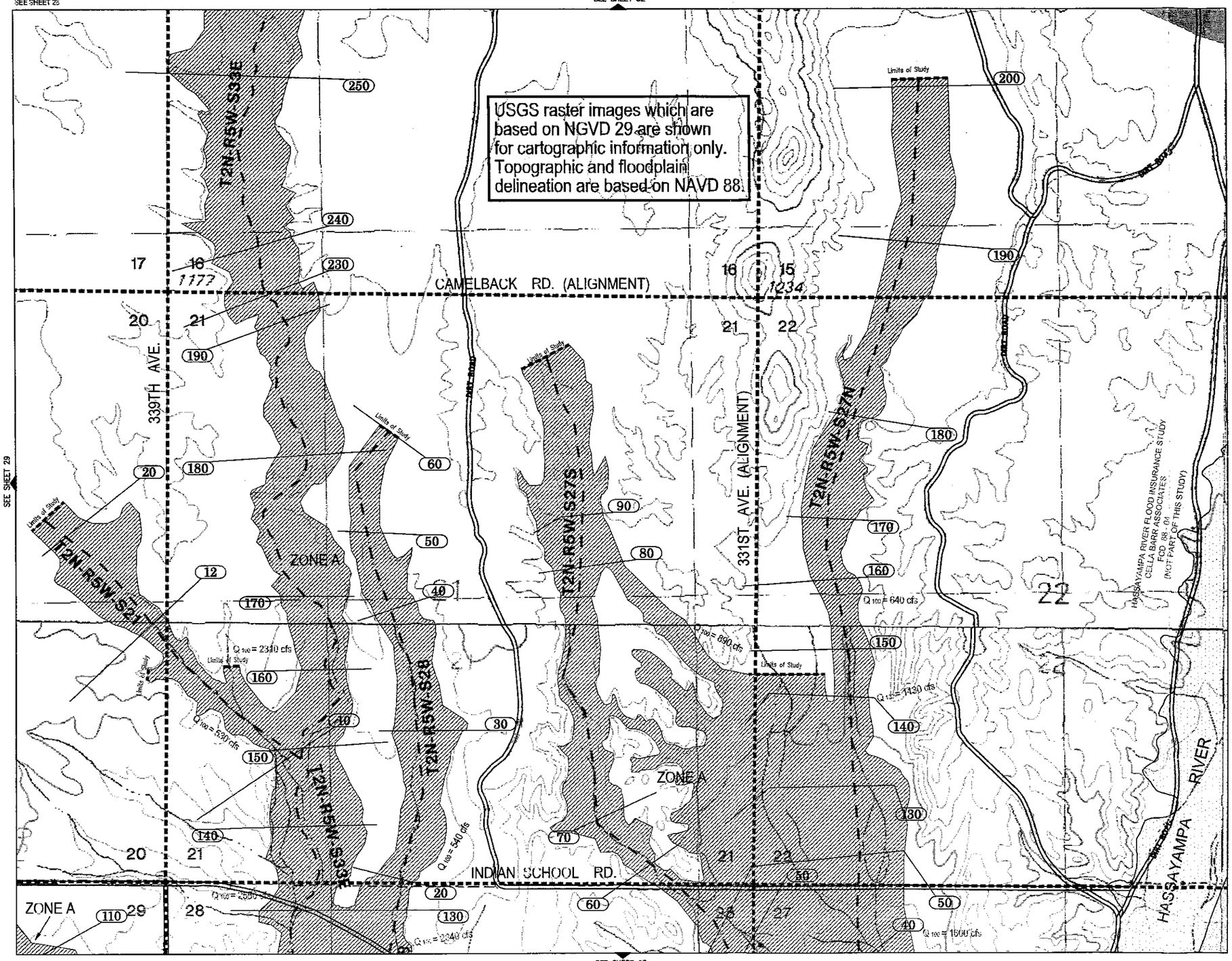
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

FILE: 310\310010a\Dwg\000_Plan_09.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

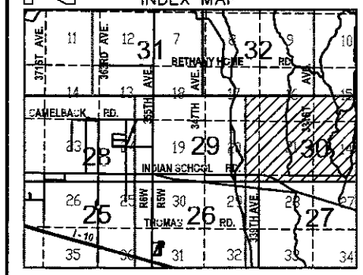
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	MCDOT Brass Cap in Handhole in center of 355th Ave., approx 1 mile north of I-10. (See sheet 26)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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PLANS	KBA/RJR	06/2003
PLANS CHK.	HAA	06/2003
SUBMITTED BY:		DATE:

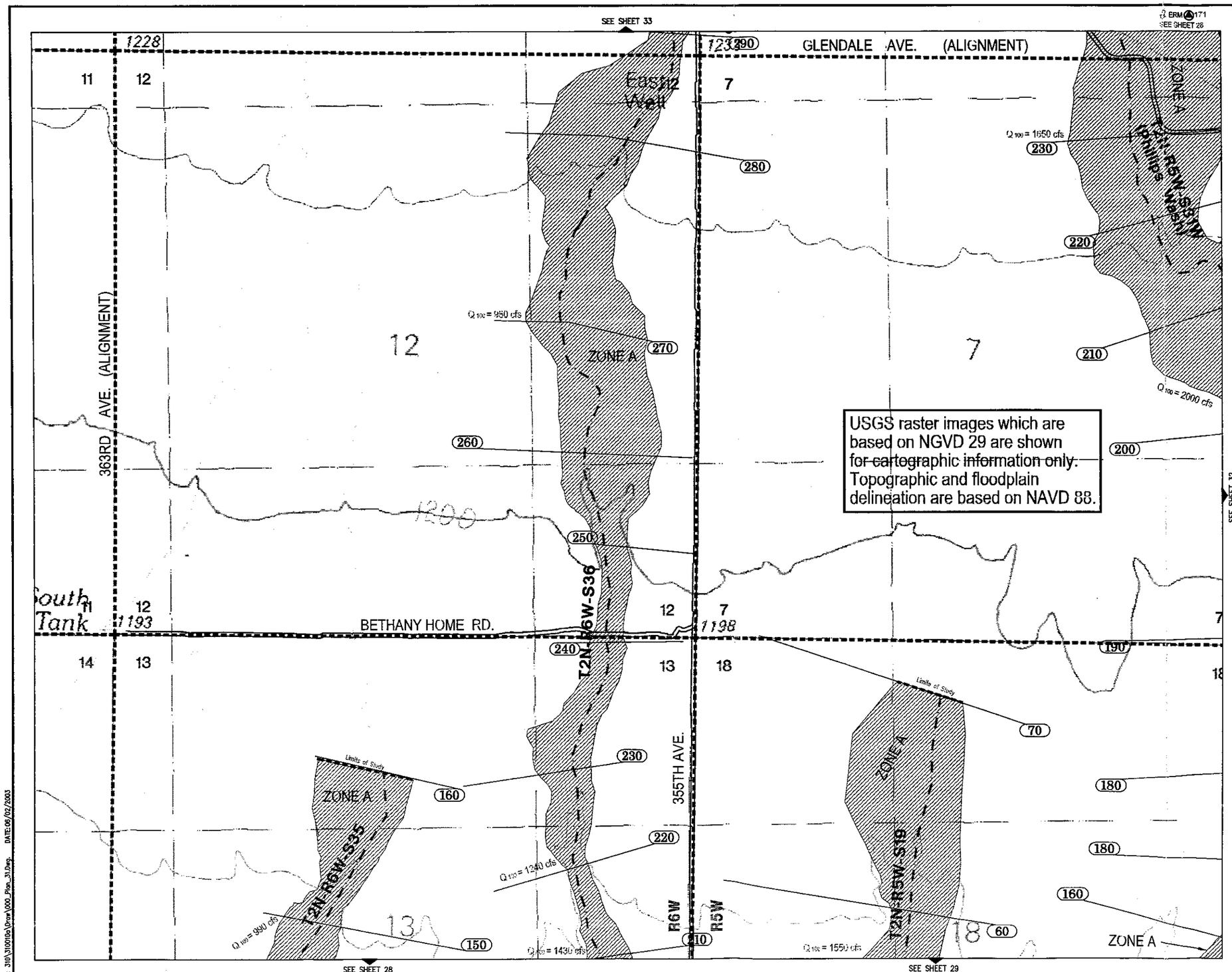
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE
APPROVED BY: DATE
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 30 OF 38

FILE: 310\3100\Gis\Draw\000_Plan_30.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



USGS raster images which are based on NGVD 29 are shown ~~for cartographic information only.~~ Topographic and floodplain delineation are based on NAVD 88.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

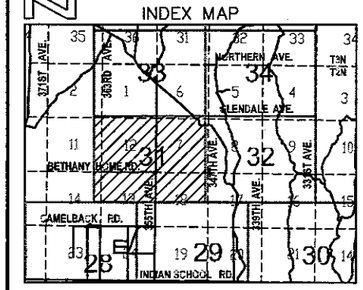
NOTE: ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

I.D. NUMBER	ELEV. (FT)	DESCRIPTION/LOCATION
171	1125.42	MCDOT Brass Cap in Handhole in center of 355th Ave., approx 1 mile north of I-10. (See sheet 28)

NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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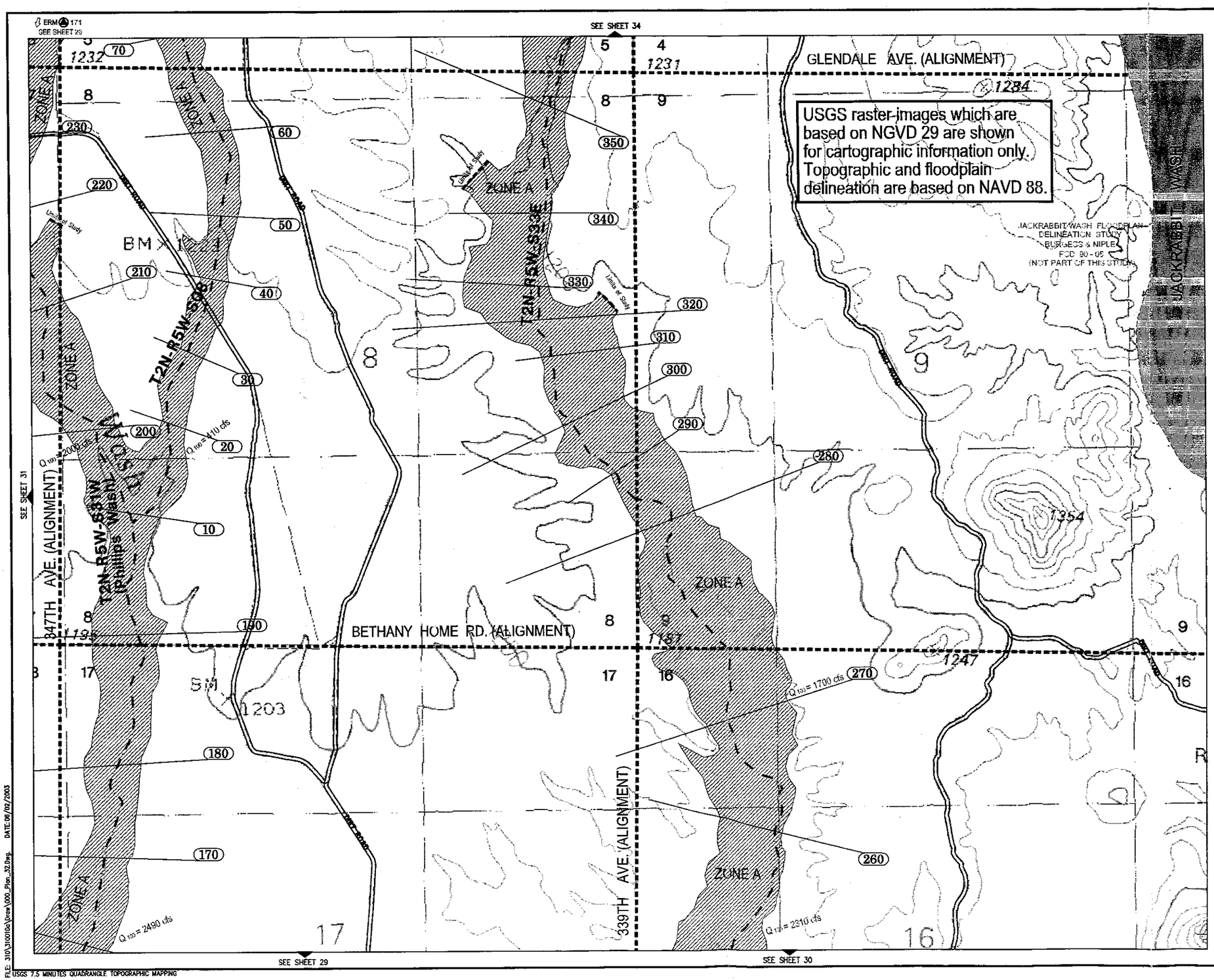
SHEET 31 OF 38

FILE: 310\310010a\Draw\000_Plan_31.Dwg DATE:06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FILE: 310\310010a\Draw\000_Plan_32.Dwg DATE: 06/02/2003

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
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CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

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NOTES

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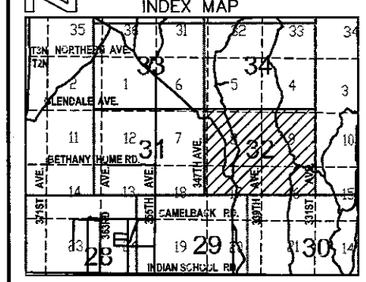
INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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PLANS CHK.	HAA	06/2003
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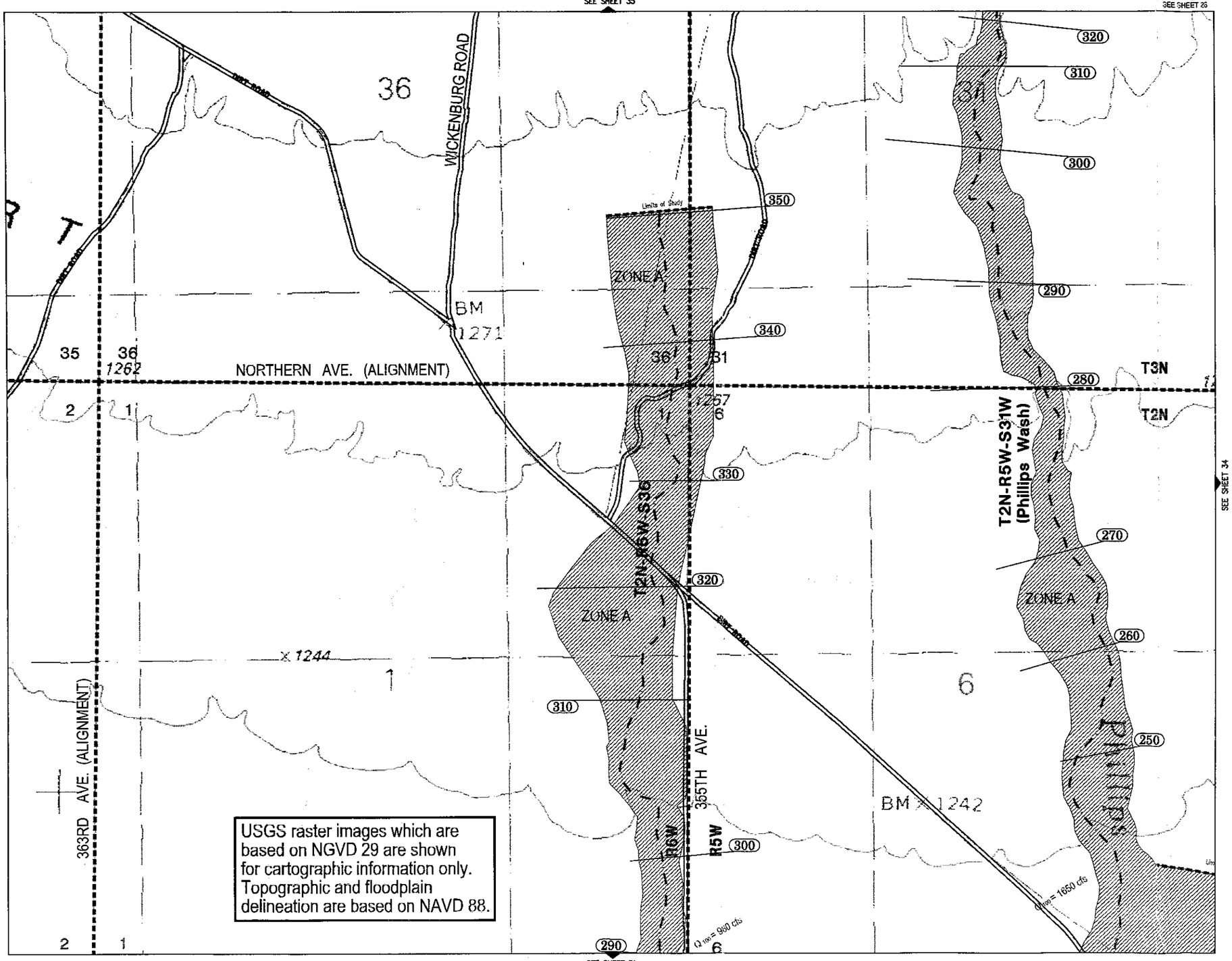
SHEET 32 OF 38



USGS raster images which are based on NGVD 29 are shown for cartographic information only. Topographic and floodplain delineation are based on NAVD 88.

FILE: 310\3100\Ok\Draw\000_Plan_33.Dwg DATE:06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

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SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
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ELEVATION REFERENCE MARKS

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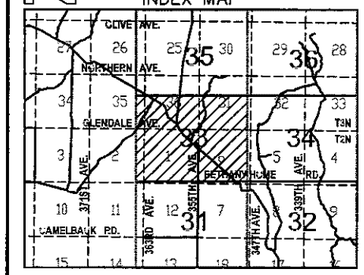
NOTES

NGVD 29 + 1.97 FEET = NAVD 88

INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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PLANS CHK.	HAA	06/2003

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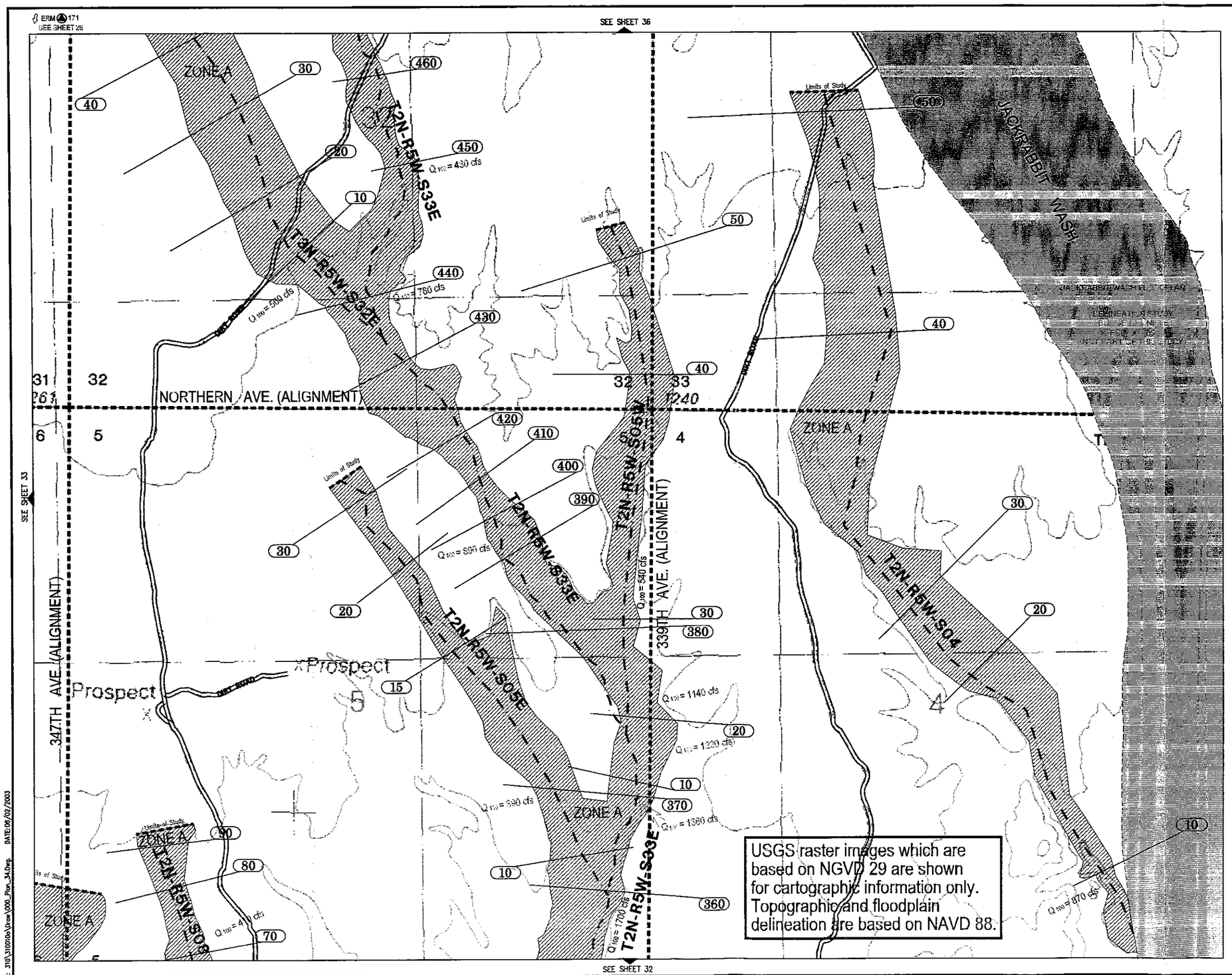
SHEET 33 OF 38



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
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LEGEND

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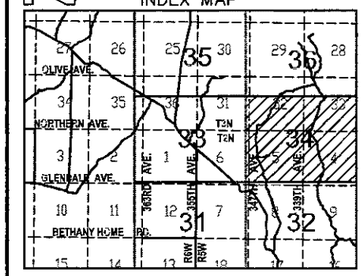

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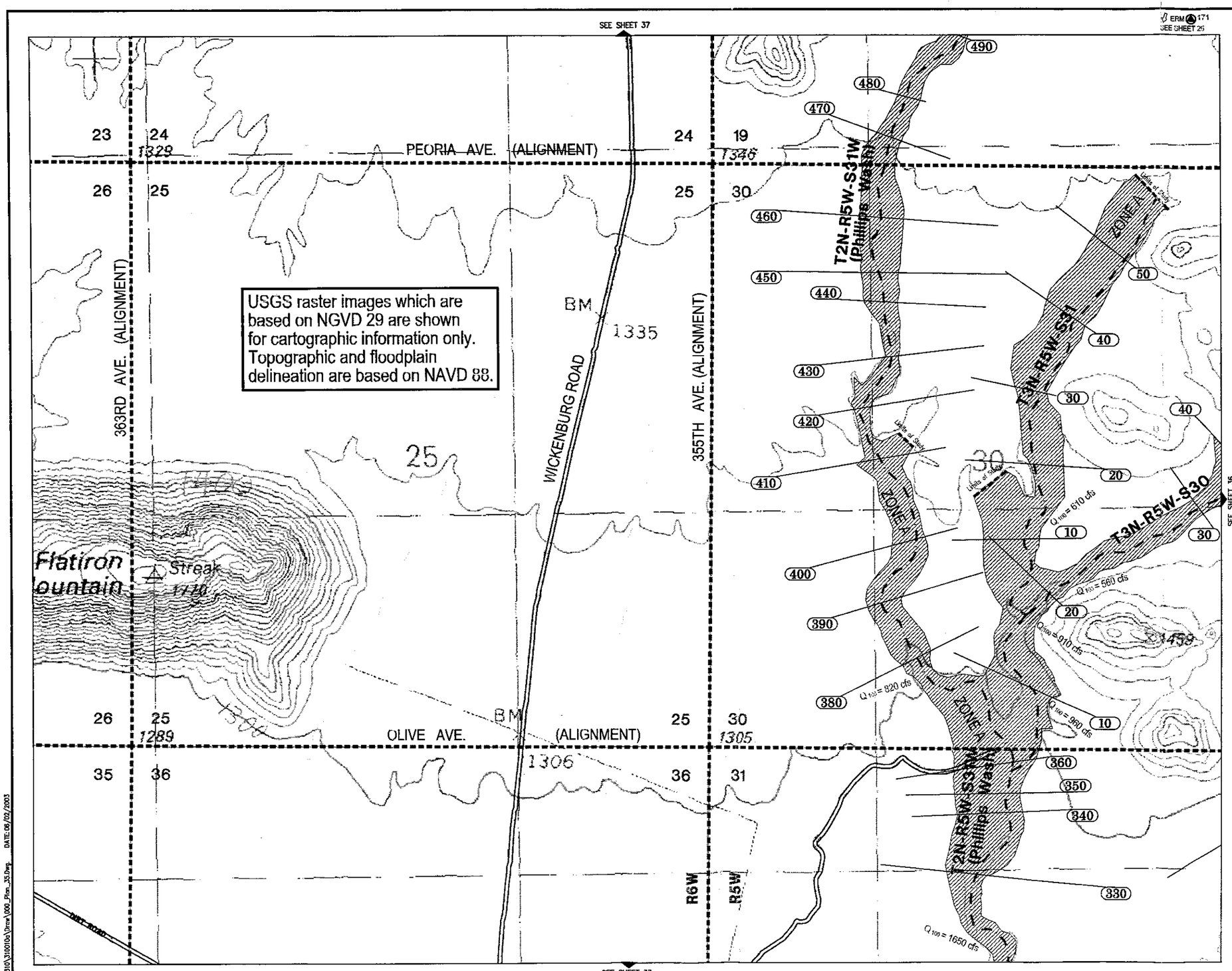
SHEET 34 OF 38

FILE: 310\31001\0a\Draw\000_Plan_34.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
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CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
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WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
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ELEVATION REFERENCE MARKS

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NOTES

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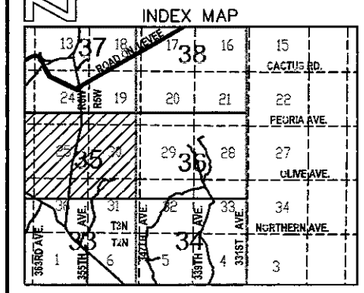
N

INDEX MAP



400' 0' 400' 800'
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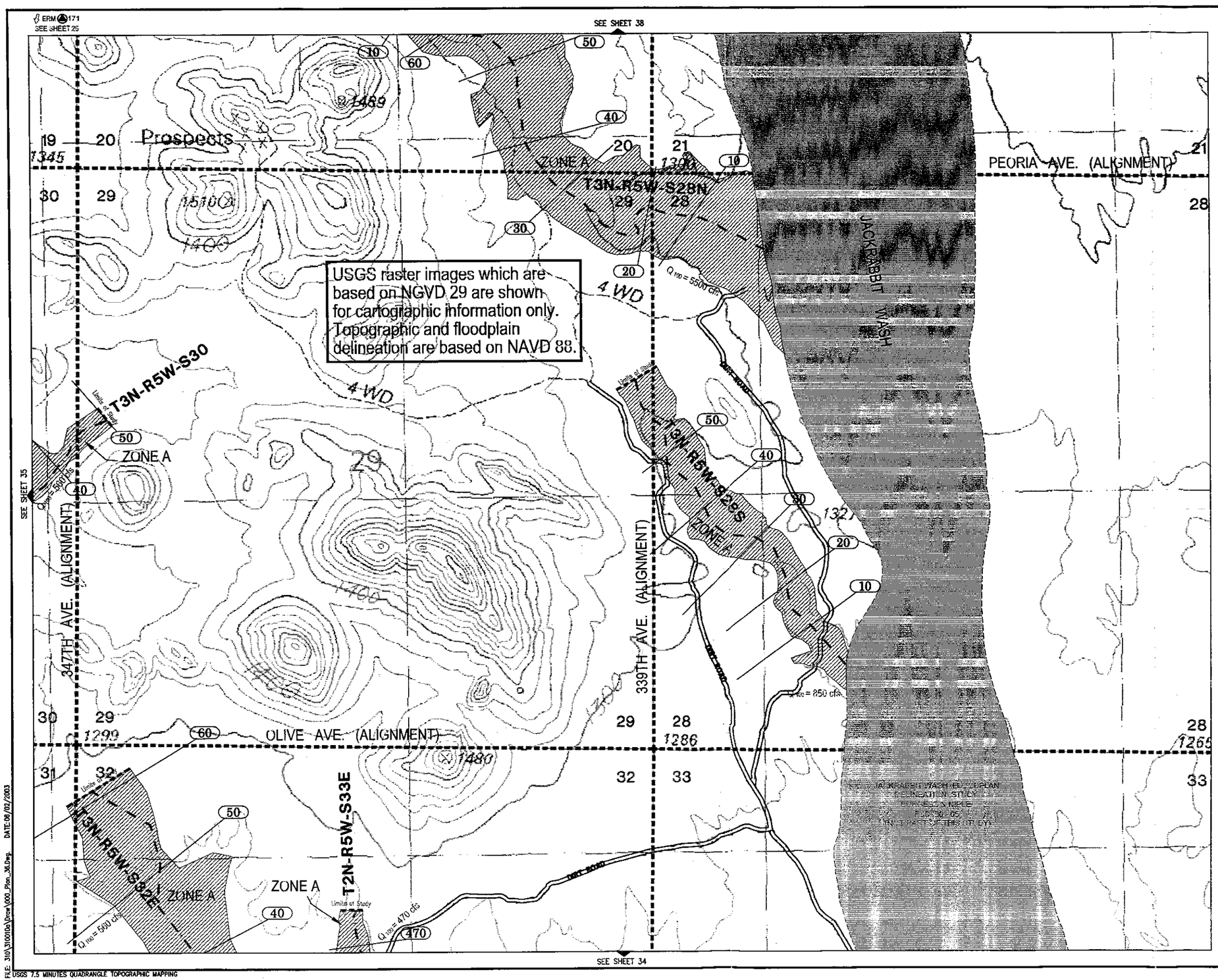
SHEET 35 OF 38

FILE: 310\310010a\Draw\800_Plan_35.Dwg DATE: 06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
CORPORATE LIMITS	Corporate Limits
LIMITS OF STUDY	Limits of Study
SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
EXISTING ZONE A	
EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

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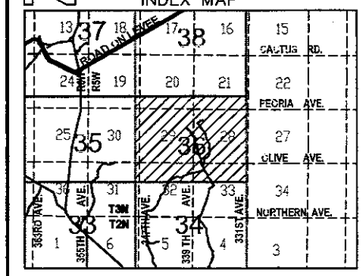
INDEX MAP



400' 0' 400' 800'
SCALE: 1" = 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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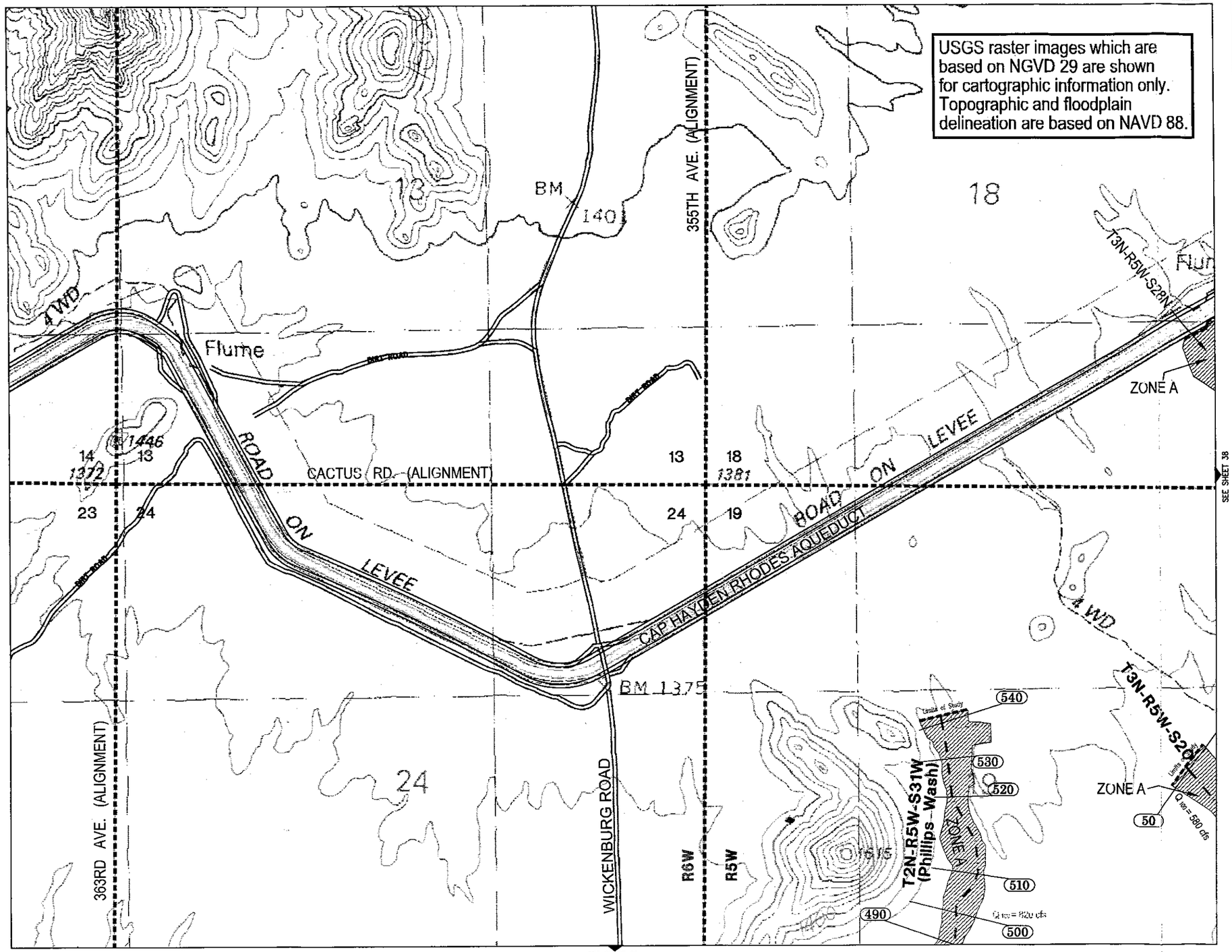
FILE: 310\310010a\Dwg\000_Plan_36.Dwg DATE:06/02/2003

USGS 7.5 MINUTES QUADRANGLE TOPOGRAPHIC MAPPING



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ZONE A
DELINEATION OF WATERSHED "PP"
LUKE WASH
F.C.D. CONTRACT NO. 99-03
REVISED BY: F.C.D. CONTRACT NO. 2002C033-1

LEGEND

100-YR APPROXIMATED ZONE A FLOODPLAIN BOUNDARY	
HYDRAULIC BASE LINE	
CROSS SECTION	30
ELEVATION REFERENCE MARK	ERM 6
ZONE DESIGNATIONS	ZONE A
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SECTION LINES	
SECTION CORNER	29 28 / 32 33
WASH I.D. LABEL	T1S-R5W-S22N
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EXISTING FLOOD PLAIN	
EXISTING FLOODWAY	
FLOW AT DOWNSTREAM CONC. POINT	Q_{100} = 850 cfs

ELEVATION REFERENCE MARKS

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NOTES

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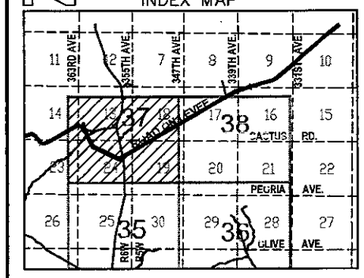
INDEX MAP



400' 0' 400' 800'
SCALE: 1"= 400'
USGS CONTOUR INTERVAL = 10 - 20 FEET

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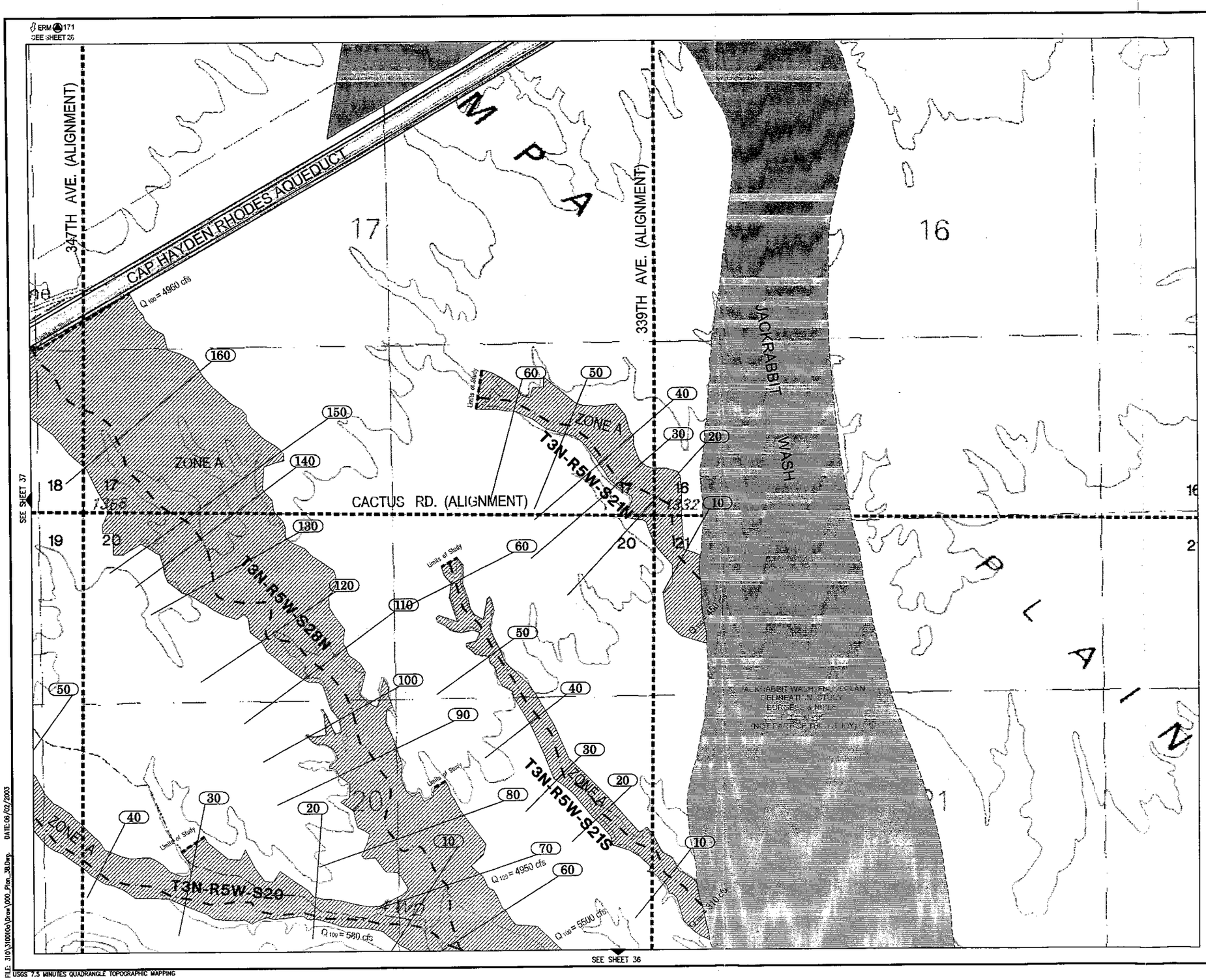
PLANS	KBA/RJR	06/2003	APPROVED BY: DATE
PLANS CHK.	HAA	06/2003	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE:			SHEET 37 OF 38



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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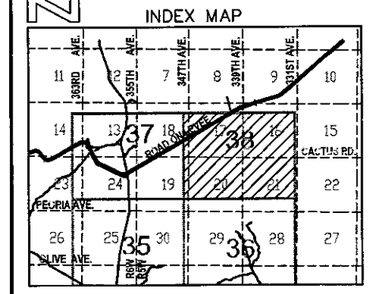

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CHIEF ENGINEER AND GENERAL MANAGER

SHEET 38 OF 38

SECTION 6: EROSION AND SEDIMENT TRANSPORT

Erosion and sediment control are not in the scope of work for this project. No significant signs of erosion were observed in the field.

SECTION 7: DRAFT FIS DATA

7.1 Summary of Discharges

The discharge summary is provided in **Table 7.1.** Wash T1S-R6W-S13 (Phillips South Wash) is representing flows from **Figure 2B**, all other washes are using flows from **Figure 2A**.

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T1S-R5W-S29		
Arlington Canal	6.349	2110
T1S-R5W-S29W		
Ray Road Alignment	1.706	1150
T1S-R5W-S29E		
Southern Pacific RR	2.354	1330
Ray Road Alignment	3.884	1680
T1S-R5W-S17		
Van Buren	3.722	1650
Lower Buckeye	6.910	2190
Salome Highway	8.474	2410
Southern Pacific RR	13.391	2970

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T2N-R6W-S35		
Indian School Road	1.19	1310
Interstate – 10	3.096	2160
T1N-R6W-S11		
Interstate – 10	0.313	660
Van Buren Street	1.391	1050
T2N-R6W-S36		
Glendale Avenue Alignment	1.144	1290
Bethany Home Road Alignment	1.685	1570
Indian School Road	2.097	1760
Interstate – 10	2.946	2110
T2N-R6W-S36W		
Interstate – 10	0.542	870
T1S-R5W-S32 (Luke Wash)		
Salome Highway	24.663	3930
Southern Pacific RR	27.366	4120
T1N-R5W-S32		
Salome Highway	1.172	970
T1N-R6W-S12		
Van Buren Street	0.644	740

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T1S-R6W-S13 (Phillips South Wash)		
Interstate – 10	7.944	3530
McDowell Road	8.030	2350
Van Buren Street	12.826	2910
Confluence at Lower Buckeye Road	19.398	3520
Broadway Road Alignment	19.712	3550
T2N-R5W-S31W (Phillips North Wash)		
Dunlap Road Alignment	0.908	1140
Glendale Avenue Alignment	2.583	1970
Bethany Home Road Alignment	3.457	2290
Indian School Road Alignment	4.809	2720
T2N-R5W-S19		
Indian School Road Alignment	2.366	1340
T2N-R5W-S08		
Bethany Home Road Alignment	0.313	660
T3N-R5W-S31		
Peoria Avenue Alignment	0.577	900
T3N-R5W-S30		
Peoria Avenue Alignment	0.503	840

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T1N-R6W-S05 (Dickey South Wash)		
Van Buren Street	3.943	2450
Buckeye Road	4.681	1830
Lower Buckeye Road	5.808	2020
T2N-R5W-S31 (Dickey North Wash)		
Indian School Road	0.813	1080
Interstate – 10	2.032	1740
T1N-R5W-S30		
Buckeye Road	1.083	930
Broadway Road Alignment	2.874	1460
T2N-R5W-S32		
Interstate – 10	0.797	1070
T1S-R5W-S08		
Southern Pacific RR	0.472	640
T1S-R5W-S09		
Baseline Road	1.637	1130
Salome Highway	3.784	1660
Baseline Road	5.088	1900
Southern Pacific RR	6.742	2170
Southern Pacific RR	6.905	2190

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T1N-R5W-S33W		
Baseline Road	0.679	750
Dobbins Road	0.805	810
T1N-R5W-S33N		
Baseline Road	1.651	1130
T1N-R5W-S28W		
Southern Avenue	0.617	720
T1S-R5W-S09W		
Interstate – 10	1.170	970
T1N-R5W-S33E		
Dobbins Road	0.499	650
T1N-R5W-S28E		
Southern Avenue	0.729	780
T1S-R5W-S16		
Elliot Road Alignment	0.582	700
T1S-R5W-S22N		
Arlington Canal	0.559	690

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T1S-R5W-S22S		
Arlington Canal	0.681	750
Cactus Rose Road Alignment	0.939	870
T1N-R5W-S22		
Lower Buckeye Road	0.670	750
T1N-R5W-S15		
Buckeye Road	0.834	830
T1N-R5W-S10		
Interstate – 10	0.723	780
T1N-R5W-S04		
Interstate – 10	0.573	900
T2N-R5W-S33E		
Peoria Avenue Alignment	0.339	680
Dunlap Road Alignment	1.490	1480
Northern Avenue Alignment	1.642	1550
Glendale Avenue Alignment	2.704	2010
Camelback Road Alignment	4.301	2560
Indian School Road	5.013	2780
Thomas Road Alignment	6.409	3150
Interstate – 10	7.222	3360

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T2N-R5W-S33W		
Thomas Road Alignment	0.513	850
T2N-R5W-S21		
Camelback Road Alignment	0.463	800
T2N-R5W-S05E		
Northern Avenue Alignment	0.295	640
T3N-R5W-S32E		
Dunlap Road Alignment	0.503	840
T2N-R5W-S28		
Camelback Road Alignment	0.365	710
Indian School Road	0.474	810
T2N-R5W-S05W		
Northern Avenue Alignment	0.476	820
T2N-R5W-S27S		
Indian School Road	1.012	1210
T2N-R5W-S27N		
Camelback Road Alignment	0.627	940
Indian School Road	1.457	1460

Table 7.1

Summary of Discharges

Flood Source and Location	Drainage Area (sq. miles)	100 Year Discharge (cfs)
T2N-R5W-S04		
Northern Avenue Alignment	0.989	1190
T3N-R5W-S28S		
Peoria Avenue Alignment	0.436	780
T3N-R5W-S28N		
Cactus Road Alignment	0.410	5220
Peoria Avenue Alignment	1.284	5830
T3N-R5W-S20		
Cactus Road Alignment	0.533	870
T3N-R5W-S21S		
Cactus Road Alignment	0.205	530
T3N-R5W-S21N		
Thunderbird Road Alignment	0.358	700

7.2 Floodway Data

Floodway data is not required for approximate methodology.

7.3 Annotated Flood Insurance Maps

The most recent Flood Insurance Rate Maps (FIRMS) have been annotated with the delineated wash's thalwegs. The applicable panels are 1510, 2470, 2475, 2460, 2000 and 1525. They have been included in the pocket at the end of this section.

7.4 Flood Profiles

Flood profiles are not required for approximate methodology.

APPENDIX A. REFERENCES

A.1. Data Collection Summary

As part of this study, data collection was performed in order to obtain available information on the study area. The study location is in a remote area and there is little data available. However, a few existing studies were found and are relevant to this one. The most relevant study is the *Luke Wash Flood Insurance Study (FIS)* completed in 1992 (**Reference 3**). This FIS has a HEC-1 model that covers most of the current study area except for the tributary areas to the Hassayampa River. These areas are covered under the *Hassayampa River Food Insurance Study* (**Reference 7**). In addition to these flood insurance studies, Entellus collected as-built information for the portion of Interstate-10 (**Reference 8**) and the CAP Canal (**Reference 9**) within the study area.

A.2. Reference Documents

The following is a list of references used during the course of this study:

1. United States Geological Survey, 30 meter Digital Elevation Models – converted to state plane coordinates by FCDMC.

2. Flood Control District of Maricopa County, Aerial Photography 1996-8 CD's 25, 34, 57.

3. Flood Control District of Maricopa County, December 1992. Luke Wash Flood Insurance Study – Between the Gila River Floodplain and the Southern Pacific Railroad. FCD contract 90-68. Prepared by Coe & Van Loo Consultants.

4. Arizona Department of Water Resources, Flood Warning and Dam Safety Section, Delineation of Riverine Floodplains in Arizona.

5. Flood Control District of Maricopa County, Internal Memorandum. Flood Frequency Analysis of Stream Flow Stations, Russ Cruff, FCDMC, April 1996.

6. Boss International, Inc. River Modeling System (RMS) version 2000 Windows.

7. U.S. Geological Survey, 1991. Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona.

8. Arizona Department of Transportation, 1974. I-10-2 As Built Plans.

9. Central Arizona Project, Granite Reef Aqueduct As-Built Plans.

10. United States Department of Transportation, September 1985. Hydraulic design of Highway culverts, Hydraulic Design Series No. 5. FHWA Report No. 1-P-85-15.

11. Chow, V.T., Open Channel Hydraulics, McGraw-Hill, 1959.

12. Flood Control District of Maricopa County, Drainage design Manual for Maricopa County, Volume I, Hydrology.

13. Flood Control District of Maricopa County, Drainage design Manual for Maricopa County, Volume II, Hydraulics.

14. United States Geological Survey, 7.5 minutes quadrangle topographic mapping.

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDANCE

B.1. Special Problems Reports

B.2. Contact (telephone) Reports

B.3. Meeting Minutes or Reports

B.4. General Correspondence

B.5A. Contract Documents

B.5B. On-Call Contract Documents

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDANCE

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Entellus™
2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
Website www.entellus.com

TO: Attendees
FROM: Hernan Aristizabal
JOB NO: 310-010A
DATE: November 3, 1999

JOB: Zone A flood Plain Delineation (Luke Wash)

MEMORANDUM

RE: Review Meeting at Flood Control District of Maricopa County (FCDMC)
4:00 PM, Tuesday, November 2, 1999

Attendees:		
	Joe Tram	FCDMC
	Sam Kao	Entellus
	Hernan Aristizabal	Entellus
	Patrick Wolf	Entellus

The purpose of this meeting was to review the hydrology equation developed by Entellus to be used in the Luke Wash project. The following is a summary of the issues discussed during the meeting:

1. Entellus presented a draft letter that contained the specifications for the LADAR mapping. The District will review these specifications, and if acceptable, incorporate them into the scope. Entellus will wait for a reply from the District before signing a contract with Eagle Scan.

2. Entellus presented the results from the methodology proposed for this project. Essentially, a HEC-1 model for the 100-yr storm was put together for what was considered a normal condition for the watershed. Results from the model were plotted and compared with the Arlington ADMS model results and the ADWR Region 13 regression equation. Plots of this data is included in **Attachment A.**

   After reviewing the results, it was agreed to use Equation A (see Attachment A) for the hydrology of this watershed.

3. Entellus requested the District to furnish following digital files in AutoCAD format:

   DEM's for the entire Area, Geo rectified
   USGS quadrangle raster images, Geo rectified
   Arlington ADMS boundaries
   ERM's along the Hassayampa River

4. The District suggested a wash naming scheme based on the township-range and section number of the downstream reach of the wash. It was agreed that this scheme will be implemented for washes that do not have a geographic name.

5. The desired reach length shall be no less than 1-mile (approximately), unless there is a good reason for a shorter length.

6. As soon as the data are obtained from the District, Entellus will begin delineating the north portion of the watershed. The south portion will be delineated once the mapping is received from Eagle Scan.

7. Entellus will schedule a field trip once the DEM and digital files are received from the District.

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDANCE

B.1. Special Problems Reports

B.2. Contact (telephone) Reports

B.3. Meeting Minutes or Reports

B.4. General Correspondence

B.5A. Contract Documents

B.5B. On-Call Contract Documents

ANNOUNCEMENT OF INTENT TO PERFORM FLOODPLAIN DELINEATION STUDY

The Flood Control District of Maricopa County (FCDMC) under authority of the National Flood Insurance Act of 1973 (PL 93-234), as amended, and the Flood Disaster Protection Act of 1973 (PL 93-234) is funding a study to identify flood hazard areas and has contracted Entellusinc to perform floodplain delineation for approximately 70 miles of Luke Wash and its tributaries to the Gila River as well as 20 miles of unnamed washes that are tributaries to the Hassayampa River. These washes are located immediately west of the Hassayampa River between the Central Arizona Canal and the Gila River.

This study will delineate the flood hazard areas in accordance with federal and state requirements. Results of the study will be used for floodplain management and the determination of flood insurance rates by the Federal Emergency Management Agency (FEMA).

This announcement is intended to inform all interested persons and communities of the commencement of this study so that they will have an opportunity to find any relevant technical information to the attention of FCDMC and FEMA in order to be considered during the course of this study. Any comments should be addressed to: Angie Trammell, Project Manager, Flood Control District of Maricopa County, 2801 W. Durango, Phoenix, Arizona 85009, Phone: (602) 506-4507.

January 26; February 2, 2000

THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Gloria Saldivar, being first duly sworn, upon oath deposes and says: That she is a legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

January 26; Februray 2, 2000

Gloria Saldivar

Sworn to before me this
4 day of
February A.D.2000

OFFICIAL SEAL
MARILYN GREENWOOD
NOTARY PUBLIC-ARIZONA
MARICOPA COUNTY
My Comm. Expires May 23, 2003

Marilyn Greenwood
Notary Public

FACSIMILE TRANSMITTAL

Entellus

2255 N. 44th St.
Suite 125
Phoenix AZ 85008
Phone (602) 244-2566
Fax (602) 244-8947
Website:www.Entellus.com

Date: Jan 20, 2000 **Send to Fax #:** 602-444-7364

Project Name:

Project Number: 310-010A

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The Flood Control District of Maricopa County (FCDMC) under authority of the National Flood Insurance Act of 1973 (PL-90-448), as amended, and the Flood Disaster Protection Act of 1973 (PL93-234) is funding a study to identify flood hazard areas and has contracted Entellus, Inc. to perform floodplain delineation for approximately 70 miles of Luke Wash and its tributaries to the Gila River, as well as 20 miles of unnamed washes that are tributaries to the Hassayampa River. These washes are located immediately west of the Hassayampa River, between the Central Arizona Canal and the Gila River.

This study will delineate the flood hazard areas in accordance with federal and state requirements. Results of the study will be used for floodplain management and the determination of flood insurance rates by the Federal Emergency Management Agency (FEMA).

This announcement is intended to inform all interested persons and communities of the commencement of this study so that they may have an opportunity to bring any relevant technical information to the attention of FCDMC and FEMA in order to be considered during the course of this study. Any comments should be addressed to Mr. Joe Tram, Project Manager, at the Flood Control District of Maricopa County, 2801 W. Durango Street, Phoenix, AZ 85009, phone number (602) 506-4607.

Entellus

FACSIMILE TRANSMITTAL

2255 N. 44th St.
Suite 125
Phoenix AZ 85008
Phone (602) 244-2566
Fax (602) 244-8947
Website:www.Entellus.com

Date: Jan 20, 2000 **Send to Fax #:** 623-386-4427

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Project Number: 310.010A cow

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Fax: (623) 386-4427

№ 6137

DATE 1-20- 2000

NAME Entellus, Inc.

ADDRESS 2255 N. 44th St. St. 125

CITY Phoenix, AZ 85008

QUAN.	DESCRIPTION	PRICE	AMOUNT	
2	Publication of Intent To Perform			
	Flood Elevation Study			
	Publication dates: 1-27-2000			
	2-3-2000			
	Total Cost		91	80

CUSTOMERS ORDER NO.

REC'D BY

KEEP THIS SLIP FOR REFERENCE

FAX

Date 3-31-00

Number of pages including cover sheet

TO: Pat Miller

Phone

Fax Phone 602-244-8947

FROM: Katie Keaney
Marsh/ACEC
800 Market Street
St. Louis, MO 63101

Phone 1-800-338-1391 x2624

Fax Phone 1-888-621-3173

CC:

REMARKS: ☒ Urgent ☒ For your review ☐ Reply ASAP ☐ Please Comment

Please see attached

ACEC to FAX to
District 3/31/00.

P

Thank you,

Flood Control District oF Maricopa County
CERTIFICATE OF INSURANCE

CONTRACT FCD 99-03

PROJECT TITLE: On-Call Zone A Flood Delineation Study

NAME AND ADDRESS OF INSURANCE AGENCY:
ACEC/Marsh
800 Market Street, Ste. 2600
St. Louis, MO 63101

NAME AND ADDRESS OF INSURED: Entellus, Inc.
2255 North 44th St., Ste. 125
Phoenix, AZ 85008

*INSURANCE COMPANIES AFFORDING COVERAGES:

Company Letter	A	Hartford
Company Letter	B	
Company Letter	C	
Company Letter	D	
Company Letter	E	
Company Letter	F	

This Certificate of Insurance certifies that policies of insurance listed below have been issued to the insured named above and are in full force at this time.

*CO. LTR.	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	COMMERCIAL GENERAL:	84SBXCG3067	11/1/99	11/1/00		
	x: LIABILITY FORM				GENERAL LIABILITY EACH OCCURRENCE	$1,000,000
	x: PREMISES OPERATIONS				PRODUCTS/COMPLETED OPERATIONS AGGREGATE	$2,000,000
	x: CONTRACTURAL				GENERAL AGGREGATE	$2,000,000
	x: BODILY INJURY				BODILY INJURY AND PROPERTY DAMAGE	$1,000,000
	x: BROAD FORM PROPERTY DAMAGE				PERSONAL INJURY	$1,000,000
	x: PERSONAL INJURY				EACH OCCURRENCE	$1,000,000
	x: PRODUCTS AND COMPLETED OPERATIONS HAZARD					
	x: EXPLOSION AND COLLAPSE					
	x: UNDERGROUND HAZARD					
	x: INDEPENDENT CONTRACTORS					
A	COMPREHENSIVE AUTO:					
	x: LIABILITY & NON-OWNED	84UEVNU7428	11/1/99	11/1/00	Each Occurrence	$1,000,000
	o: EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM	
	x: WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				Statutory limits plus Employer's Liability: each accident Disease: each employee Disease: policy limit	$1,000,000 $1,000,000 $1,000,000
	x: ENGINEERS PROFESSIONAL LIABILITY				EACH CLAIM AND ANNUAL AGGREGATE	$1,000,000
	x: OTHER:	Except for Professional Liability Insurance and Workers' Compensation Insurance, the Flood Control District of Maricopa County and Maricopa County, their agents, representatives, officers, Directors, Officials, and employees are named as Additional Insured's.				

Except for Professional Liability Insurance and Workers' Compensation Insurance, the Flood Control District of Maricopa County and Maricopa County are added as Additional Insured's on those types of policies described herein which are required to be furnished by this contract entered into between the Insured and the Flood Control District of Maricopa County. To the extent provided in this contract, Insured shall hold harmless the Flood Control District of Maricopa County and Maricopa County from liability arising out of any services provided or duty performed by insured as required by statute, law, purchase order or otherwise required, with the exception of liability for loss or damage resulting from the sole negligence of Flood Control District of Maricopa County, its agents, employees, or indemnities. It is agreed that any insurance available to the named insured shall be primary of other sources that may be available. It is further agreed that no policy shall expire, be cancelled, or materially changed to affect the coverage available to the District without thirty (30) days written notice to the District. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 WEST DURANGO STREET
PHOENIX, ARIZONA 85009

DATE ISSUED: 3/31/00

AUTHORIZED REPRESENTATIVE
NO Insurance Countersignature

CONTRACT: FCD 99-03, ON CALL ZONE A FLOOD DELINEATION STUDY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CERTIFICATE OF INSURANCE

CONTRACT FCD 99-03 PROJECT TITLE: On-Call Zone A Flood Delineation Study

NAME AND ADDRESS OF INSURANCE AGENCY:	*INSURANCE COMPANIES AFFORDING COVERAGES:	
ACEC/Marsh 800 Market St., Ste. 2600 St. Louis, MO 63101	Company Letter A	Hartford Ins. Co.
	Company Letter B	
	Company Letter C	
NAME AND ADDRESS OF INSURED:	Company Letter D	
Entellus, Inc. 2255 N. 44th St., Ste. 125 Phoenix, AZ 85008	Company Letter E	
	Company Letter F	

This certificate of insurance certifies that policies of insurance listed below have been issued to the insured named above and are in full force at this time.

*CO. LTR.	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	**COMMERCIAL GENERAL:** ☒: LIABILITY FORM ☒: PREMISES OPERATIONS ☒: CONTRACTURAL ☒: BODILY INJURY ☒: BROAD FORM PROPERTY DAMAGE ☒: PERSONAL INJURY ☒: PRODUCTS AND COMPLETED OPERATIONS HAZARD ☒: EXPLOSION AND COLLAPSE ☒: UNDERGROUND HAZARD ☒: INDEPENDENT CONTRACTORS	84SBXCG3067	11/1/00	11/1/01	GENERAL LIABILITY EACH OCCURRENCE PRODUCTS/COMPLETED OPERATIONS AGGREGATE GENERAL AGGREGATE BODILY INJURY AND PROPERTY DAMAGE PERSONAL INJURY EACH OCCURRENCE	$1,000,000 $2,000,000 $2,000,000 $1,000,000 $1,000,000 $1,000,000
A	**COMPREHENSIVE AUTO:** ☒: LIABILITY & NON-OWNED	84UEVNU7428	11/1/00	11/1/01	Each Occurrence	$1,000,000
	☐: EXCESS LIABILITY				NECESSARY IF UNDERLYING NOT ABOVE MINIMUM	
	☒: WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				Employer's Liability: each accident Disease: each employee Disease: policy limit	$1,000,000 $1,000,000 $1,000,000
	☒: ENGINEERS PROFESSIONAL LIABILITY				EACH CLAIM AND ANNUAL AGGREGATE	$1,000,000
	☒: OTHER:	The Flood Control District of Maricopa County and Maricopa County, their agents representatives, officers, directors, officials, and employees are named as Additional Insured's.				

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Except for Professional Liability Insurance and Workers' Compensation Insurance, the Flood Control District of Maricopa County and Maricopa County are added as Additional Insured's on those types of policies described herein which are required to be furnished by this contract entered into between the insured and the Flood Control District. To the extent provided in this contract, insured shall hold harmless the Flood Control District of Maricopa County and Maricopa County from liability arising out of any services provided or duty performed by insured as required by statute, law purchase order or otherwise required, with the exception of liability for loss or damage resulting from the sole negligence of Flood Control District, its agents, employees, or indemnities. It is agreed that any insurance available to the named insured shall be primary of other sources that may be available. It is further agreed that no policy shall expire, be cancelled, or materially changed to affect the coverage available to the District without thirty (30) days written notice to the District. **THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.**

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 2801 WEST DURANGO STREET PHOENIX, ARIZONA 85009	DATE ISSUED: 1-12-01 Alfred A. Ortegoso AUTHORIZED REPRESENTATIVE

Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
E-Mail Address hernan@entellus.com

LETTER OF TRANSMITTAL

DATE: 08-04-2000	JOB 310.010A
ATTENTION:	Joe Tram
RE:	Zone A Flood Plain Delineation (Luke Wash) FCD (99-03)

TO: Joe Tram
Flood Control District of Maricopa County
2801 W. Durango
Phoenix, AZ 85009

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change Order ☐ _____

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1			Report format (Preliminary for **format Only**)
1			Plates 1-4 (Preliminary for **format Only**)

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REMARKS Please review the preliminary, attached report and exhibits for **format only**.

COPY TO: _____

SIGNED _____

Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

LETTER OF TRANSMITTAL

Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
E-Mail Address hernan@entellus.com

DATE: 10/20/00	JOB 310.010
ATTENTION:	Joe Tram
RE:	Zone A Floodplain Delineation for watershed "PP" Luke Wash FCD 99-03 Pre-final report

TO: Flood Control District of Maricopa County
2801 West Durango
Phoenix, AZ 85009

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1	10/00	39	Inundation map set

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REMARKS FEMA forms will be included in next submittal as Volume 3 of 3. Also, the documentation section was not included with this submittal. If you have any questions or comments please feel free to contacting me.

COPY TO: _____

SIGNED Hernan A. Aristizabal

Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

LETTER OF TRANSMITTAL

Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
E-Mail Address hernan@entellus.com

DATE: 08-04-2000	JOB 310.010A
ATTENTION:	Joe Tram
RE:	Zone A Flood Plain Delineation (Luke Wash) FCD (99-03)

TO: Joe Tram
Flood Control District of Maricopa County
2801 W. Durango
Phoenix, AZ 85009

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1			Report format (Preliminary for **format Only**)
1			Plates 1-4 (Preliminary for **format Only**)

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☑ As Requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For Review and Comments ☐ _____

☐ FOR BID DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Please review the preliminary, attached report and exhibits for **format only**.

COPY TO: _____

SIGNED _____

Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
E-Mail Address herman@entellus.com

LETTER OF TRANSMITTAL

DATE: 6-19-2000	JOB 310-010B
ATTENTION:	Joe Tram
RE:	Zone A FPD Assignment No. 2 99-03

TO: Flood Control District of Maricopa County
2801 West Durago
Phoenix, AZ 85009

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items

☐ Shop Drawings ☑ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change Order ☑ Fee proposal

COPIES	DATE	NO.	DESCRIPTION
1			Cost Proposal Summary
1			Estimated Manhours and Direct Labor
1			Schedule
1			Expenditure Forecast
1			Additional Washes List
1			Map of Additional Washes

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

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☐ For Review and Comments ☐ _____

☐ FOR BID DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO U

REMARKS

COPY TO: _____

SIGNED Herman A. Aristizabal

Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

November 2, 1999

Joe Tram
Flood Control District
of Maricopa County
2801 West Durango
Phoenix, AZ 85009

RE: Study Guidelines and Specifications for
Laser Terrain Mapping and Imaging
Zone A–Luke Wash Delineation
FCD 99-03
Entellus No. 0310.010A

Entellus

Dear Mr. Tram:

In conjunction with our telephone conversation October 27, 1999 regarding the above-referenced issue, Entellus' subconsultant, EagleScan, expressed their opinion about the relevance of FEMA Document 37 to airborne LIDAR terrain mapping. They say the FEMA document used in our Contract FCD 99-03 is not relevant and EagleScan has offered the following explanations regarding:

Project Requirements. LIDAR terrain mapping of approximately 32 square miles of Luke Wash, Western Maricopa County. The area of interest covers approximately 30 linear miles of wash located between 400 feet north of Interstate (to the north), the Southern Pacific railroad (to the south), and the ADMS boundary (to the east and west). Product deliverables to include high-resolution Digital Elevation Models (DEMs), 2-foot contour data, and high-resolution digital orthorectified images.

2255 N. 44th Street
Suite 330
Phoenix. Arizona
85008.3279

Tel 602.244.2566
Fax 602.244.8947

Provisions
1. EagleScan will collect LIDAR (Light Detection and Ranging) DEM and Digital Panchromatic Image data using the EagleScan DATIS system.
2. EagleScan will provide all personnel and equipment required to perform data collection and processing. Project boundaries defining data collection area will be supplied by customer before contract authorization.
3. Data will be referenced to mutually agreeable National Geodetic Survey high order control stations or other accessible and acceptable control points specified by customer before contract authorization.

Deliverables.
Coordinate System
1. All data will be delivered in State Plane Coordinate system with DAD83 (horizontal) and NAVD88 (vertical) datum and unit will be in U.S. feet unless otherwise specified before contract authorization.
2. Conversion to other standard coordinate systems and datum can be accommodated also, but as an optional task. If a special, non-standard datum is required, details of datum and conversion factor or algorithm will need to be specified before contract authorization.
3. Unique or local datum conversions can be accommodated also, but as an optional task. If a special, non-standard datum is required, details of datum and conversion factor or algorithm will need to be specified before contract authorization.
4. Geoid conversions are based on GEOID96 model conversion factors on an individual point basis.

DEM Data

1. Absolute DEM accuracy will be 15cm (6 inches) Root Mean Square Error (RMSE) (or 1-sigma) vertical and 1-meter (~3 feet) RMSE (or 1-sigma) horizontal.
2. DEM data are based on a digital elevation model consistent with the US Geological Survey (USGS) National Mapping Program DEM Accuracy Standard.
3. Nominal elevation sample spacing will be approximately 3-5 meters (9-15 fee).
4. DEMs consist of a large number of random-sampled elevation points, each containing a northing, easting and elevation value. Elevation data can also be triangulated into a gridded DEM as an optional task.
5. Vegetation effects will be processed using an automatic removal process, yielding approximately 90-95% removal of vegetation from data. Effectiveness of automated vegetation removal may decrease under leaf-on conditions. Low height vegetation, such as shrubs or crop fields, may remain represented as surface elevation data as well. The vegetation removal process and water features will cause a decrease in DEM resolution. Additional manual vegetation removal is available as an optional task.
6. DEM data and resultant products will include structures and buildings. Manual removal of structures and buildings is available as an optional task.
7. Contours at 2-foot vertical interval will be generated by interpolation of the DEM data.
8. Topographic breaklines will not be generated.

Entellus

Digital Images

1. Digital panchromatic image data will be orthorectified using corresponding DEM data.
2. High-resolution orthorectified images will be mosaicked into approximately 1-square mile models and may contain spatial seams and radiometric imbalances.
3. Image spatial pixel resolution will be approximately 0.3 meters (~1 foot) Ground Sample Distance (GSD).
4. Absolute horizontal accuracy of image data will be 2-meters (~6 feet) RMSE (or 1-sigma).

Deliverable Format

1. DEM data will be delivered in x, y, z ASCII coma delimited text file format.
2. Contours will be delivered in AutoCAD DWG file format.
3. Images will be delivered in GeoTIFF file format.
4. All data will be delivered on CDROM media.

and specification for:

Digital Elevation Accuracies. Elevation data are based on a digital elevation model (DEM) consistent with the USGS National Mapping Program DEM Accuracy Standard. The data accuracy conforms to the National Mapping Program's "Standards for Digital Elevation Models," Section 2.2; Accuracy, referenced to ground control point. Horizontal accuracy of the data points meets the requirement of 1-meter Root Mean Square Error (RMSE). The vertical accuracy of the data points meets the requirement of 15 centimeters RMSE. The sampled elevation points on the ground are randomly spaced over the entire project area. Accuracy of the elevation data is better than one-half the value of the contour interval when verified against the measured points of the earth surface. Since the laser terrain mapping process is a random-sampled process, accuracy of interpolated measurements between actual measured points are dependent upon specific terrain slope and features. DEM data and resultant products reflect surface feature elevations, including elevations of structures and buildings. EagleScan's automated vegetation removal process, yields approximately 90% - 95% removal of vegetation from data. Effectiveness of automated vegetation removal may decrease under leaf-on conditions. Low height vegetation, such as shrubs or crop fields, may remain represented as surface elevation data as well.

Since the above information was not in the contract work scope, we request the District's concurrence in the above language and that the inclusion of same be substituted for all references to FEMA Document 37 where it pertains to the aerial mapping.

Please contact me at your earliest convenience with the District's written concurrence so that we may give EagleScan a notice to proceed with the work. Should you have any questions o need clarification, please do not hesitate to contact this office.

Very truly yours,

Entellus, Inc.

Edward A. Adair

Edward A. Adair, P.E.
President

Entellus

EAA:pmm

November 15, 1999

Edward A. Adair, P.E.
President
ENTELLUS, INC.
2255 North 44th Street, Suite 125
Phoenix, Arizona 85008-3279

RE: LETTER AMENDMENT
Study Guidelines and Specifications for
Laser Terrain Mapping and Imaging
Zone A–Luke Wash Delineation
FCD 99-03
Entellus No. 0310.010A

Entellus

Dear Mr. Adair:

This letter is provided as additional work scope in lieu of FEMA Document 37 with the addition of airborne LIDAR terrain mapping, and is incorporated into the above-referenced contract.

Project Requirements. LIDAR terrain mapping of approximately 32 square miles of Luke Wash, Western Maricopa County. The area of interest covers approximately 30 linear miles of wash located between 400 feet north of Interstate 10 (to the north), the Southern Pacific railroad (to the south), and the ADMS boundary (to the east and west). Product deliverables to include high-resolution Digital Elevation Models (DEMs), and 2-foot contour data.

2255 N. 44th Street
Suite 330
Phoenix. Arizona
85008.3279

Tel 602.244.2566
Fax 602.244.8947

Provisions
1. EagleScan will collect LIDAR (Light Detection and Ranging) DEM and Digital Panchromatic Image data using the EagleScan DATIS system.
2. EagleScan will provide all personnel and equipment required to perform data collection and processing. Project boundaries defining data collection area will be supplied by customer before contract authorization.
3. Data will be referenced to mutually agreeable National Geodetic Survey high order control stations or other accessible and acceptable control points specified by customer before contract authorization.

Deliverables.
Coordinate System
1. All data will be delivered in State Plane Coordinate system with DAD83 (horizontal) and NAVD88 (vertical) datum and unit will be in U.S. feet unless otherwise specified before contract authorization.
2. Eagle Scan will provide an equation for converting data from the NAVD88 vertical datum to the NGVD29 datum.
3. Unique or local datum conversions can be accommodated also, but as an optional task. If a special, non-standard datum is required, details of datum and conversion factor or algorithm will need to be specified before contract authorization.
4. Geoid conversions are based on GEOID96 model conversion factors on an individual point basis.

Entellus

2255 N. 44th St., Suite 125
Phoenix, AZ 85008
Phone (602) 244-2566
Fax (602) 244-8947
Website: www.Entellus.com

FACSIMILE TRANSMITTAL

Date: 7/29/99 Send to: 906-3080 (FAX #)

Project Name/Number: Zone A Floodplain Delineation 310.010A

Total # of pages including the cover sheet: 4

⇨ ⇨ ⇨ ⇨ ⇨ PLEASE DELIVER THE FOLLOWING PAGES TO:

Attention: Steve Mortensen

Organization: Project Engineering Consultants

Subject of Transmission: Survey Reques of pricing.

Comments:

DRAFT

FAXED 7-29-99

WE ARE FAXING YOU: ☐ Attached ☐ Under separate cover via _____ the following items:
☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐ Other _____

SENDER: Hemm A. Bryfogel

IF YOU HAVE ANY PROBLEMS RECEIVING THIS DOCUMENT PLEASE CALL US AT (602) 244-2566

Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
Website www.entellus.com

TO: Steve Mortensen

FROM: Hernan A Aristizabal

JOB NO.: 310.010A

JOB: FCDMC-Zone A Floodplain Delineation (FCD99-03)

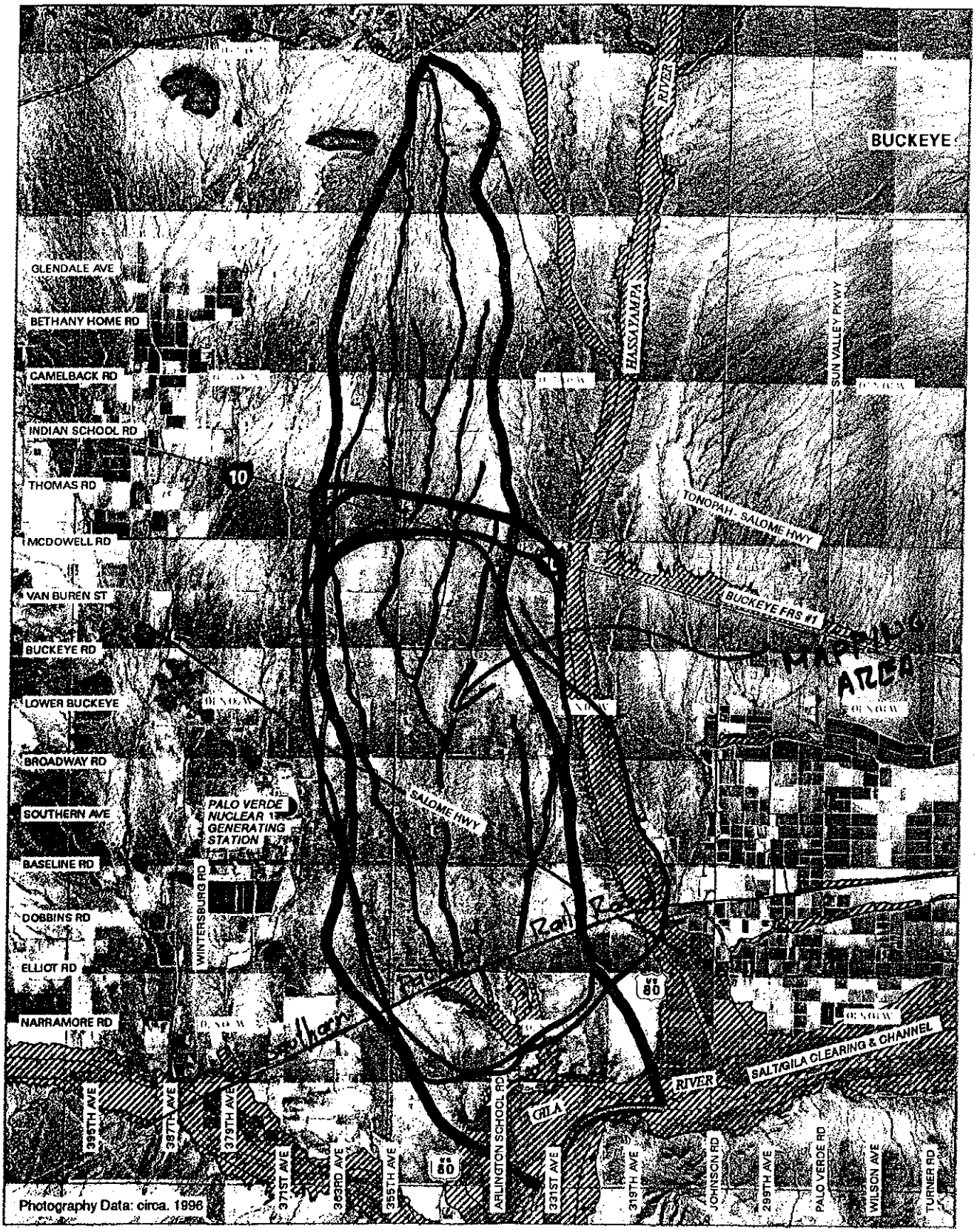
DATE: July29, 1999

MEMORANDUM

Reference: Ground Survey Scope of Work

1. Survey culverts at I-10 and Southern Pacific Rail Road
   (Including upstream/downstream Inverts, size, top of roadway x-section)
2. Survey roadway crossings of various washes along Salome Hwy. and 355th Avenue
3. Locate or establish permanent controls to be use as ERMs (unit price)
4. Coordinate with Aerial surveyor for horizontal and vertical controls
5. Survey wash cross-sections (we required unit price for cross-sections 400ft wide on average.)

ARLINGTON ADMS: FEMA FLOODPLAINS

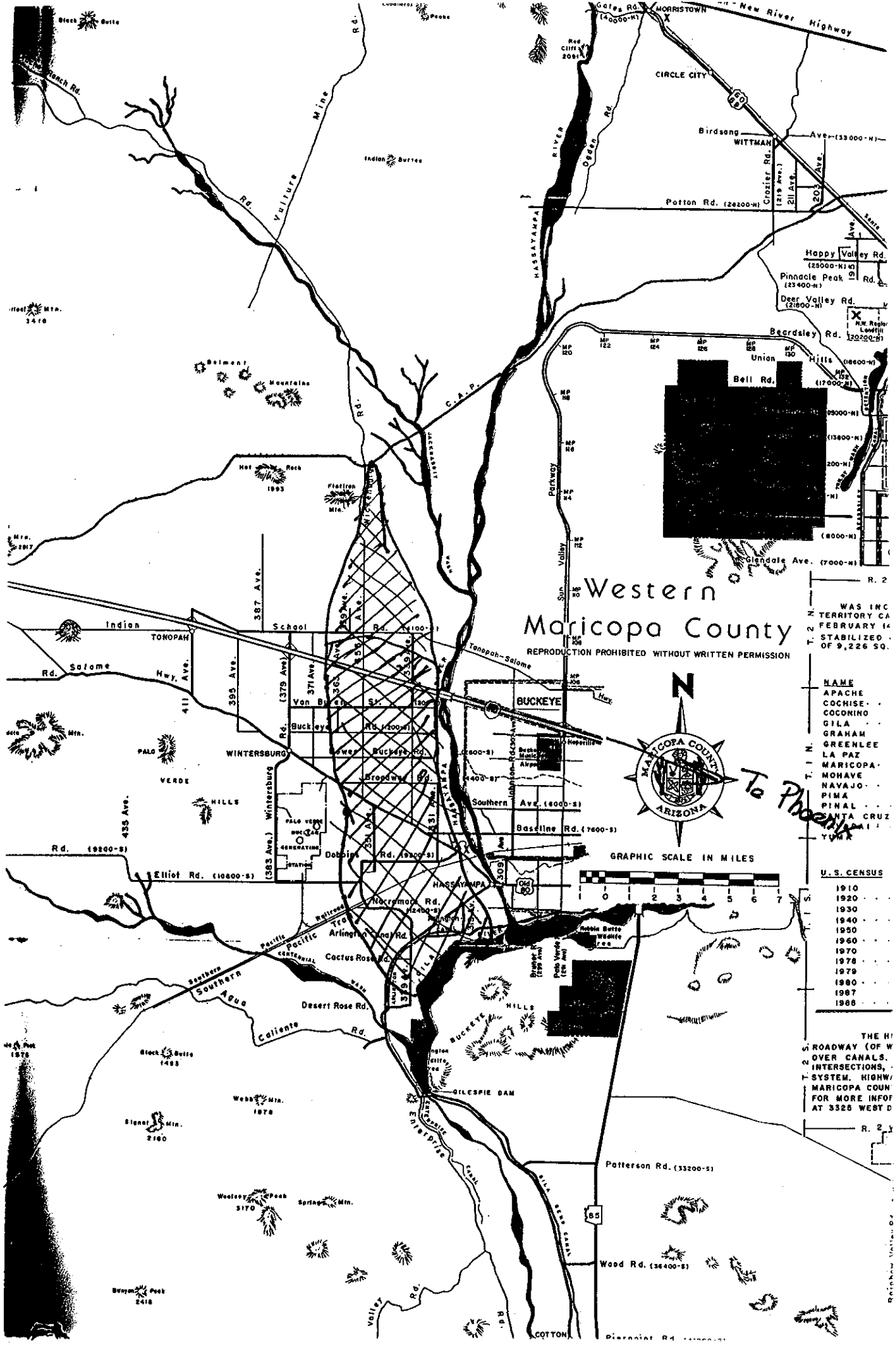


SYMBOLS

- FEMA FLOODPLAINS (6.0 SQ MILES DELINEATED IN THE ADMS)
- ADMS BOUNDARY (AREA = 66.2 SQ MI)
- USGS 1:100,000 HYDROGRAPHY (14.8 MI. MAPPED AS FLOODPLAIN 66.0 MI. NOT MAPPED AS FLOODPLAIN)

0 7000 14000 28000

Feet


Western
Maricopa County
REPRODUCTION PROHIBITED WITHOUT WRITTEN PERMISSION
N
MARICOPA COUNTY ARIZONA
GRAPHIC SCALE IN MILES
1 0 1 2 3 4 5 6 7
To Phoenix
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COCONINO
GILA
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GREENLEE
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MARICOPA
MOHAVE
NAVAJO
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PINAL
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YUMA
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1910
1920
1930
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1978
1979
1980
1987
1988
CIRCLE CITY
WITTMAN
MORRISTOWN
TONOPAH
WINTERSBURG
BUCKEYE
HASSAYAMPA
GILESPIE DAM
COTTON
Indian Bend Wash
Hassayampa River
Gila River
Salt River
Agua Caliente Wash
Gila Bend Canal
Enterprise Canal
Southern Pacific Railroad
Tonopah-Salome Hwy.
New River Highway
Vulture Mine Rd.
Ogden Rd.
Jackrabbit Trail
Parkway
Sun Valley
Grand Ave.
Indian School Rd.
Salome Hwy.
Van Buren St.
Buckeye Rd.
Broadway Rd.
Southern Ave.
Baseline Rd.
Dobbins Rd.
Elliot Rd.
Narramore Rd.
Arlington Canal Rd.
Cactus Rose Rd.
Desert Rose Rd.
Patterson Rd.
Wood Rd.
Valley Rd.
Beardsley Rd.
Bell Rd.
Glendale Ave.
Deer Valley Rd.
Pinnacle Peak Rd.
Happy Valley Rd.
Potton Rd.
Birdsong Ave.
Crozier Rd.
Gates Rd.
Vulture Mine Rd.
Buckeye Hills
Palo Verde Hills
Hot Rock
Flatiron Mtn.
Belmont Mountains
Indian Butte
Black Butte
Webb Mtn.
Signal Mtn.
Woolsey Peak
Spring Mtn.
Bunyan Peak
Rainbow Valley

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDANCE

B.1. Special Problems Reports

B.2. Contact (telephone) Reports

B.3. Meeting Minutes or Reports

B.4. General Correspondence

B.5A. Contract Documents

B.5B. On-Call Contract Documents

2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

RECEIVED
OCT 1 1999
Entellus

LETTER OF TRANSMITTAL

TO: Sam Kao
Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008

October 5, 1999

SUBJECT: Contract No. 99-03
Assignment No. 1
Zone A delineations of Watershed "PP" Luke Wash

WE ARE SENDING YOU THE FOLLOWING ITEMS:
( ) Enclosed ( ) Under separate cover

	Shop Drawings	Prints	Legal Description	Samples
	Specification	Change Order	Copy of Letter	Plans
X	Notice to Proceed			
X	Certificate of Performance			
X	Scope of Work			

THESE ARE TRANSMITTED:

	For Approval	Approved as submitted
X	For your use	Approved as noted
	As requested	Returned for corrections
	Resubmit ( ) copies for approval	For review and comments
	Submit ( ) copies for distribution	Return ( ) corrected prints
	FOR ESTIMATE DUE:	Borrowed prints being returned

Remarks: Please specify assignment number on all correspondence.

SIGNED: Joe Tram

Joe Tram, P.E.
Branch Manager

SCOPE OF WORK
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
APPROXIMATE ZONE A FLOODPLAIN DELINEATION STUDIES
ON-CALL CONTRACT
FCD 99-03

Assignment Number 1

GENERAL

The study area for Assignment Number 1 is watershed "PP", as shown on Exhibit A. The study will develop the 100-year hydrology and delineate approximate Zone A 100-year floodplains for the major undelineated watercourses that are located within watershed "PP", approximately 70miles in watershed "PP" and 20 miles of tributaries to the Hassayampa Wash. Exhibit A indicates the preliminary watercourses that will be studied, the delineation of any other watercourses will be finalized prior to notice to proceed. The consultant will either use USGS topographic mapping or develop the necessary topographic mapping to delineate the floodplains. The consultant will develop the discharges needed for the Zone A floodplain delineations by using or modifying the discharge-drainage area relationship from the existing Flood Insurance studies, or by using regression equations. The consultant must use sound engineering judgement in the development of the hydrologic data, hydraulic models, and the delineation of the floodplains. All work must meet at a minimum level 2 of State Standard 2-96; and Arizona Department of Water Resources (ADWR) and the Federal Emergency Management Agency (FEMA) requirements for Zone A floodplain delineations. Prior to the finalization of this contract, FEMA and the District must review and accept the results of this study, and all items called for in this Scope of Work must be delivered to the District.

The consultant and District will discuss, coordinate and prioritize the watersheds and the watercourses within watershed "PP" that need to be delineated, including modifications to the watershed boundaries.

For this assignment the FEMA submittal package must be completed and ready for submittal to FEMA within 270 days of notice to proceed on this assignment. The 270-day time limit includes a minimum of 60 days for District review. The contract is valid for two years or until the total contract amount is expended, whichever occurs first. All work must be completed, including FEMA review, within 730 days of the initial notice to proceed on this contract.

TASK 1 - COORDINATION

1.1 Within fourteen days of Notice to Proceed, the consultant will submit a project schedule to the District's Project Manager showing coordination meetings and completion dates for each task identified in the scope of work. The consultant will update this project schedule when appropriate.

1.2 The consultant will participate in regular coordination meetings (at least every 4 weeks) with the District's Project Manager and in milestone coordination meetings in the development of the hydrologic and hydraulic analyses. The consultant is responsible for the minutes of any meetings. Whenever possible, coordination and milestone meetings will be combined.

1.3 The consultant will submit an estimate of the monthly billing within 14 days of Notice to Proceed. Thereafter, this estimate will be updated and submitted to the District's project manager at least 10 days before the end of each quarter.

1.4 The consultant will submit monthly progress reports at least 5 days before submittal of monthly invoices. The report shall be brief and should be no longer than two typed pages. At a minimum, the monthly report shall contain the following:

a. A description of the work accomplished by task during the reporting month.

b. Percent (%) completed for the month and percent (%) cumulative completed for each task.

c. A brief description of the work to be accomplished in the following month.

d. A description of any problems encountered.

1.5 The consultant is responsible for placing the legal advertising at the beginning of the study, notifying the public of the study. The ad will be run in a widely circulated local newspaper twice, with approximately one week between runs. The ad must also be run twice in a local newspaper that serves the area being studied. After the newspapers run the ad, the consultant will supply the District with the original affidavit of publication from each newspaper for each day that the ad ran.

1.6 The consultant will notify property owners and obtain any necessary Rights of Entry for the study area on as-needed basis. The consultant will furnish the District with a list of all the property owners notified and a sample Right of Entry letter.

1.7 The consultant will meet with officials from the District, and communities within the study area impacted by the new Zone A floodplain delineations.

1.8 The District will plan and conduct one public meeting in conjunction with this study. The meeting will be to inform the public, obtain public comment on the study results, and shall take place prior to the submittal of the final report to FEMA. The consultant will be responsible for the preparation of the graphic displays for these meetings. At least one representative from the consultant will attend each of the meetings. The consultant will respond to the public's comments and make revisions to the study as necessary.

1.9 Consultant/District Performance Evaluations will be performed. An informal evaluation will be performed at the completion of the hydrologic analysis. A formal evaluation will be performed at the completion of the project upon receipt of all deliverables.

TASK 2 - DATA COLLECTION

2.1 The consultant will collect and review pertinent data from the District and other outside sources. Data to be collected will include previous flood hazard reports and hydrology for the study area; existing topographic mapping; historical flooding information; as-built plans for existing structures; FEMA Flood Hazard Boundary Maps, any Letters of Map Amendment and/or Revisions, and other pertinent information.

2.2 A written report summarizing the data collected will be included as a section in the Technical Data Notebook. A preliminary draft of the data collection section is due within 90 days of Notice to Proceed.

TASK 3 - TOPOGRAPHIC MAPPING

3.1 Development of new topographic mapping will be dependent upon location and relief. In high relief areas, USGS topographic mapping will be used. The consultant will either use USGS topographic mapping, or develop Digital Terrain Model (DTM) with accuracy equal, or exceeding the accuracy of mapping which will have a contour interval of 4-feet and a horizontal scale of 1 inch = 200 feet. The cost of the topography should be weighed against the cost of augmenting the USGS with surveyed cross sections.

3.2 USGS will be used as the base map. The new topographic information other than EMRs and controls will not be added to the base map, but will be submitted to the District separately.

3.3 In flat terrain, the consultant as part of this contract shall retain an aerial survey subcontractor. The consultant will coordinate all the aerial surveying work with the aerial surveying subcontractor to ensure that the specifications of the aerial surveying work are met. We are requesting that Airborne GPS control be utilized. The accuracy of the aerial survey and quality control on surveys will be per FEMA Document 37, Flood Insurance Study Guidelines and Specifications for Study Contractors, January 1995, page A4-11 et. al. The consultant is responsible for ensuring that the topographic mapping completely covers the entire flooplain

3.4 Digital Terrain Model data for this study will be developed and delivered according to the District's Data Delivery Specifications for the Hydrologic Information System (HIS).

3.5 The Digital Terrain Model shall consist of a mass points model. Accuracy of the model shall be consistent with the requirements for a 4-feet contour interval, and of 1 inch = 200 feet horizontal scale

3.6 If applicable, Ground Control will be established in the following manner:

a. The consultant shall provide all survey control using 1983 NAD.

b. The consultant shall establish horizontal and vertical control throughout the areas to be mapped for use in compilation by the aerial survey contractor. Where readily available, surveys will tie into the State Plane Coordinate System. Field control will be sufficient to readily allow for compilation of maps by the aerial survey contractor at the desired map scale and contour interval, and will be based on the National Geodetic Vertical Data of 1929 (NGVD 29). The consultant will provide a conversion factor to the North American Vertical Datum of 1988 (NAVD 88), including documentation of how it was derived, to allow comparison of NGVD 29 elevations to NAVD 88 elevations. The documentation on the conversion factor will be included in the Technical Data Notebook.

c. The horizontal and vertical control points shall be located and marked by the consultant. The controls for the aerial mapping will be in sufficient numbers and will be in locations that will be compatible with the accuracy of the mapping requirements. The controls will be of at least third order accuracy. Section corners, quarter corners, and mid-section points will be used for control points wherever possible.

TASK 4 - FIELD SURVEY

4.1 Ground Control for Floodplain Delineations:

4.1.1 All topographic mapping and survey work will meet or exceed Federal Emergency Management Agency (FEMA) minimum criteria as defined in FEMA Document 37, Flood Insurance Study Guidelines and Specifications for Study Contractors, January 1995. This includes, but is not limited to the establishment of "permanent" elevation reference marks (ERMs) and field control.

4.1.2 Horizontal and Vertical Control: The consultant will systematically set panel points and establish horizontal and vertical control throughout the area to be mapped for use in compilation by the aerial survey contractor. Where readily available, surveys will tie into State Plane Coordinate System 1983 NAD. Field control shall be sufficient, at least one "permanent" point per mile, such point(s) being used as Elevation Reference Marks (ERMs). Surveys will be based on the National Geodetic Vertical Datum of 1929 (NGVD 29), per FEMA guidelines. The consultant will provide a conversion factor, including documentation of how it was derived, to allow comparison of NGVD 29 elevations to North American Vertical Datum 1988 (NAVD 88) elevations. The documentation on the conversion factor will be included in the Technical Data Notebook. "Permanent" survey points will consist of existing monuments, such as brass caps or similar survey monuments. Where additional monuments are

needed, survey markers conforming to Maricopa Association of Governments (MAG) Uniform Standard Detail for Public Works Construction, detail 120-1, Type C, shall be placed 2" +/- above grade, and topped with a brass cap. Elevation Reference Marks will be labeled on available maps and described so that they can be easily located in the field.

4.1.3 All aerial targets are to be removed following completion of the topographic mapping.

4.2 The consultant shall verify the accuracy of the mapping by the procedures called for in FEMA Document 37 or other methods approved by FEMA. This shall include the verification of cross sections used in the floodplain delineation.

4.3 Field surveys of bridges, culverts, and hydraulic structures are to be obtained by the consultant when as-built plans are not available or when changes significant to the HEC-RAS modeling, such as sedimentation, have occurred since the date of the as-built plan. This information should be reduced and compiled into an 8-1/2"x 11" (11"x 17" maximum size) drawing for inclusion in the final report. The information presented in the drawing should be in a format appropriate for use in the HEC-RAS model. Field surveys of bridges, culverts, hydraulic structures, and routing reaches must also be obtained where necessary for proper hydrologic modeling. It may be necessary to field survey some structures since the as-built plans may not be on NGVD 29.

4.4 Copies of the survey field books and office calculations must be included in the Technical Data Notebooks. If District approval is obtained, this information can be submitted separately.

TASK 5 - HYDROLOGY

5.1 The Consultant will verify and revise the boundaries of watershed "PP" as appropriate

5.2 The Consultant will use, whenever possible, the hydrology generated for the existing Flood Insurance Studies, Area Drainage Master Studies, or in some instances generate new hydrology. In developing any new hydrology, the discharge-drainage area relationships or regressions equations will be used to determine the discharges for the sub-watersheds. The consultant must analyze the data carefully, and in some instances correlate data against other hydrologic data such as regression equations in order to obtain the most realistic results.

5.3 Meetings shall be held with the Flood Control District staff at the following milestones:

a. Meeting number 1: field trip at the start of the project to scope out the critical points of the watershed and problem areas.

b. Meeting number 2: as soon as basic data are gathered and the sub-basins have been delineated. A copy of the draft maps of the sub-basins must be delivered to the District at this meeting.

c. Meeting number 3: to review of final document and comments by the District.

5.4 The Hydrologic Report

5.4.1 The findings of the hydrologic study will be presented in Section 3 of the Technical Data Notebook and will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-90). The report will be organized as specified by the District, following SSA 1-90 format. Specific deviations from this hydrologic scope shall not be undertaken without the specific written concurrence from the Flood Control District.

TASK 6 - FLOODPLAIN DELINEATION

6.1 Each wash to be delineated will be assigned an ID name. The name will be either the geographic name of the wash or an assigned name .

6.2 Floodplain delineations will be conducted using methodology as outlined by FEMA. The consultant will prepare the study using the guidelines established in FEMA Document 37, Flood Insurance Study Guidelines and Specification for Study Contractors, January 1995, FIA Document 12, Appeals, Revisions, and Amendments to Flood Insurance Maps, December 1993, and FEMA 265, /July 1995, Managing Floodplain Development in Approximate Zone A Areas.

6.3 The delineation work shall meet requirements for floodplain delineations as prescribed by FEMA and the Arizona Department of Water Resources.

6.4 The Consultant will determine ponding limits behind major drainage structures by using stage-discharge relationships

6.5 The delineation study shall be based on the final results of the hydrologic study as directed by the District.

6.6 The consultant must obtain District approval at each of the following steps:

a. Field reconnaissance report and estimation of Manning's "n" values.

b. Proposed location and alignment of the cross sections and channel centerline.

c. Floodplain (natural) delineation.

d. Final Hydraulics Report.

6.7 Field Reconnaissance

6.7.1 The consultant will conduct a field reconnaissance of the full study reach. This will include observation of channel and floodplain conditions for estimating Manning's "n" values; photographic documentation of floodplain characteristics; determination of channel bank stations; observation of possible overflow areas; inspection of levees or other flood control structures; and measurement of bridge dimensions.

6.7.2 Manning's "n" values are to be determined using the methodology in the USGS report, Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona, April 1991.

6.7.3 Representative cross section location and "n" values for each reach will be selected. A draft section on the field reconnaissance will be submitted to the District for review and approval. The report will present the determination of channel and overbank "n" values using captioned color photographs or color photocopies. The report will also discuss floodplain conditions affecting the delineation, describe structures and obstructions, and provide color photos or photocopies of major hydraulic structures. Photo locations, structures, and "n" values will be displayed on reduced scale mapping and included in the Final Report.

6.8 Cross Sections

6.8.1 The location and alignment of cross sections and channel centerline will be submitted for the District's review and approval before digitizing the cross section data. The Consultant must coordinate with the District on the methodology being used to generate the cross sections, such as BOSSS RMS, WMS, GPS surveyed sections in the field, or cross sections from USGS topographic

mapping. In the majority of instances the channel centerline will be the line indicated on the current Flood Insurance Rate Map for the study area.

6.8.2 The cross section plots will show at a minimum the water surface profile, cross section identification number, and "n" values. All plots are to be accompanied by a legend. These plots should be available at all reviews.

6.9 The hydraulics of bridges and culverts should be incorporated into assessing the floodplain around such structures. Zone A's must be determined according to FEMA criteria and clearly labeled on the final drawings.

6.10 The findings of the floodplain delineation study will be presented in Section 4 of the Technical Data Notebook and will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-90). The report will be organized as specified by the District standards, following SSA 1-90 format.

6.11 The Consultant shall fill out all the forms required by FEMA for the submittal of a Floodplain Delineation Study.

6.12 The consultant will provide the delineations on work maps using either the base topographic mapping supplied by the District, or the new topographic mapping. The drawings will be 24" X 36" in size, with a horizontal scale of 1 inch = 200 feet and a contour interval of 4 feet for all mapping except section line roads, which will have spot elevations. The District's Project Manager must approve the use of any other sheet size. A cover sheet will be part of the work study drawings and shall have on it the project title, date of topographic mapping, and a location map showing geographic range covered by each specific mapping sheet. Each drawing will include the floodplain delineations, and a minimum of a north arrow, scale, section corners and quarter corners, current and proposed streets and highway names, State Plane Coordinate System, major drainage features, corporate boundaries, cross section lines, channel station center line, index map, the floodplain boundaries, and a description and elevation of each elevation reference mark (ERMs). A note explaining the proper means to convert the NGVD 29 elevations to NAVD 88 elevations shall be included in "NOTES" in the map border. See Section 5.0 of the Hydrologic Information System Data Delivery specifications for how the drawings are to be laid out. The mapping will have accuracy such that ninety percent (90%) of all contours will be within one-half contour of the true elevations and the remaining ten-percent (10%) of the contours will not be in error by more than one contour interval.

TASK 7 - HIS DATA

7.1 Digital data in either a CADD or GIS format will be prepared in conformance with the District's Hydrologic Information System Data Delivery Specifications, Revision 3.1. The following themes are the ones generally used for the data developed for Floodplain Delineation Studies. However, for this study there may not be data for every theme identified here, or the consultant might develop data for themes not listed here. Therefore, only those themes for which there is data need to be completed. If the consultant has data that doesn't fit one of the themes listed here, the District's Project Manager shall be contacted to determine the appropriate theme for that data.

a.	NDXPRJ (FCD Project Map Index)	b.	PRJ (Project Boundaries)
c.	CARTO (Cartographic Features)	d.	CORNERS (if any)
e.	CTRL (Miscellaneous Control Survey Points)	f.	STRCT (Structure)
g.	DQ (Data Quality)	h.	PRJ (Project Identification)
i.	FPCTLFCD (FCD Reference Marks)	j.	FPZNFCD (Floodplain FCD Zone)
k.	FPBLN (Floodplain Baseline Route System)	l.	ELV (contour)

m. FPXFCD (Cross Section) n. DTM

7.2 If the hydrologic and delineation maps were not derived directly from the digital data delivered to the District, then the consultant will develop check plots and certify that they have been examined, and that the check plots faithfully represent the data and maps used in the report and /or work maps. For data submitted in a GIS format, separate check plots will be produced from either Arc-Info or Arc-CAD from the digital database(s) of each theme in 7.1. The check plots will be prepared with a minimum of annotation and will serve only to verify the information in the database

TASK 8 - DELIVERABLES

8.1 Prior to FEMA Submittal: The consultant will deliver the following items to the District before delivering the FEMA submittal package:

8.1.1 *Original Affidavits of* Publication of the legal advertisements. Additional copies are to be included in the Technical Data Notebook.

8.1.2 If applicable, one (1) complete set of 9" X 9" contact prints of the aerial stereo photographs sequentially numbered and catalogued. An exhibit showing the flight path shall also be included.

8.1.3 If applicable, all-topographic and related data for the District's Hydrologic Information System that isn't subject to change during FEMA's review should be submitted at this time. The Digital Terrain Model and related data should also be submitted at this time.

8.1.4 If bound separately from the Technical Data Notebook, two (2) copies of the field survey notes and office calculations.

8.1.5 Red-lined FIRM panels indicating the new delineations.

8.2 FEMA Submittal: The consultant will submit the following items to the District for review by FEMA and any other appropriate governmental agency. All of the following products are considered deliverables for the FEMA submittal:

8.2.1 Two (2) complete sets of blackline topographic base maps with the floodplain/floodway delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.2.2 Two (2) complete copies of the Technical Data Notebook. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-90). The notebook will be organized as specified by the District, following SSA 1-90 format. These copies will be updated if necessary based upon FEMA's review comments. Completed FEMA forms will be included in the notebooks, along with copies of any public announcements about the study results.

8.3 Final Submittal: The following products are considered deliverables for the final submittal to the District after FEMA approval is issued:

8.3.1 One (1) complete set of non-erasable topographic/orthophoto mylars of the floodplain delineations. The preferred size of the mylars is 24" X 36", the District's Project Manager must authorize the use of any other size. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.3.2 All remaining hydrologic and floodplain delineation data in conformance with the District's HIS Specifications.

8.3.3 Two (2) additional copies of the Technical Data Notebooks. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-97). The notebook will be organized as specified by the District, following SSA 1-97 format. This submittal of the Technical Data Notebook shall include any correspondence and/or meeting minutes with the reviewing agencies and shall reflect any revisions required by those reviewing agencies.

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durar Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

NOTICE TO PROCEED

TO: Sam Kao
Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008

October 5, 1999

SUBJECT: PCN ZALW.00.97
FCD Contract No. 99-03
Assignment No. 1
Zone A delineations of Watershed "PP" Luke Wash

Your not-to-exceed cost estimate of $201,953.00 for Assignment No. 1 has been received and accepted for this project with a completion date of 6/30/01. You are hereby authorized to proceed with the work for the referenced project as originally described in the Scope of Work. Please specify the assignment number on all related correspondence. Invoices should be sent to the attention of Linda Hannan of our accounting department.

If at any time during the project assignment a material change in the scope of services to be provided occurs, causing an increase in the original cost estimate shown here, you must provide the District with a written explanation of the additional work along with an estimate of additional costs. No additional work shall commence prior to written authorization by the District. No claims for additional work shall be accepted that have not received prior District approval.

SIGNED:

Joe Tram, P.E.
Branch Manager

Michael S. Ellegood, P.E.
Chief Engineer and General Manager

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009-6399
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5897

BOARD OF DIRECTORS
Jan Brewer
Fulton Brock
Andrew Kunasek
Don Stapley
Mary Rose Garrido Wilcox

January 12, 2000

Mr. Edward A. Adair, President
Entellus, Inc.
255 N. 44th Street, Suite 125
Phoenix, AZ 85008-3279

Subject: Change Order No. 1 to
Contract FCD 99-03, Zone A Delineation of Watershed PP

Enclosed for your file is one fully executed original of the subject change order. The contract completion date is unchanged and remains June 1, 2001.

If you have any questions, feel free to call me at 602-506-4433.

Sincerely,

Dortha Klaahsen

Dortha Klaahsen
Contract Specialist

RECEIVED
JAN 27 2000
Entellus

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009-6399
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5897

BOARD OF DIRECTORS
Jan Brewer
Fulton Brock
Andrew Kunasek
Don Stapley
Mary Rose Garrido Wilcox

December 13, 1999

Edward A. Adair, P.E.
President
ENTELLUS, INC.
2255 North 44th Street, Suite 125
Phoenix, Arizona 85008-3279

RE: LETTER AMENDMENT
Study Guidelines and Specifications for
Laser Terrain Mapping and Imaging
Zone A–Luke Wash Delineation
FCD 99-03
Entellus No. 0310.010A

Dear Mr. Adair:

This letter is provided as additional work scope in lieu of FEMA Document 37 with the addition of airborne LIDAR terrain mapping, and is incorporated into the above-referenced contract.

Project Requirements. LIDAR terrain mapping of approximately 32 square miles of Luke Wash, Western Maricopa County. The area of interest covers approximately 30 linear miles of wash located between 400 feet north of Interstate 10 (to the north), the Southern Pacific railroad (to the south), and the ADMS boundary (to the east and west). Product deliverables to include high-resolution Digital Elevation Models (DEMs), and 2-foot contour data.

Provisions

1. EagleScan will collect LIDAR (Light Detection and Ranging) DEM and Digital Panchromatic Image data using the EagleScan DATIS system.
2. EagleScan will provide all personnel and equipment required to perform data collection and processing. Project boundaries defining data collection area will be supplied by customer before contract authorization.
3. Data will be referenced to mutually agreeable National Geodetic Survey high order control stations or other accessible and acceptable control points specified by customer before contract authorization.

Deliverables.

Coordinate System

1. All data will be delivered in State Plane Coordinate system with DAD83 (horizontal) and NAVD88 (vertical) datum and unit will be in international feet per state statutes.
2. Eagle Scan will provide all conversion factors through the area for all control used for converting data from the NAVD88 vertical datum to the NGVD29 datum.

3. Unique or local datum conversions can be accommodated also, but as an optional task. If a special, non-standard datum is required, details of datum and conversion factor or algorithm will need to be specified before contract authorization.
4. Geoid conversions are based on GEOID96 model conversion factors on an individual point basis.

DEM Data

1. Absolute DEM accuracy will be 15cm (6 inches) Root Mean Square Error (RMSE) (or 1-sigma) vertical and 1-meter (~3 feet) RMSE (or 1-sigma) horizontal.
2. DEM data are based on a digital elevation model consistent with the US Geological Survey (USGS) National Mapping Program DEM Accuracy Standard.
3. Nominal elevation sample spacing will be approximately 3-5 meters (9-15 fee).
4. DEMs consist of a large number of random-sampled elevation points, each containing a northing, easting and elevation value. Elevation data can also be triangulated into a gridded DEM as an optional task.
5. Vegetation effects will be processed using an automatic removal process, yielding approximately 90-95% removal of vegetation from data. Effectiveness of automated vegetation removal may decrease under leaf-on conditions. Low height vegetation, such as shrubs or crop fields, may remain represented as surface elevation data as well. The vegetation removal process and water features will cause a decrease in DEM resolution. Additional manual vegetation removal is available as an optional task.
6. DEM data and resultant products will include structures and buildings. Manual removal of structures and buildings is available as an optional task.
7. Contours at 2-foot vertical interval will be generated by interpolation of the DEM data.
8. Topographic breaklines will not be generated.

Vegetation Removal Accuracy of Model

After receiving DEM data from EagleScan, the District and Consultant shall evaluate the vegetation removal accuracy of model near the washes. If deemed necessary, a manual vegetation removal from model shall be requested from EagleScan as an Additional Task.

Deliverable Format

1. DEM data will be delivered in x, y, z ASCII coma delimited text file format according to FCD Consultant Guidelines.
2. Contours will be delivered in AutoCAD DXF file format accordng to FCD Consultant Guidelines.
3. Images will be delivered in GeoTIFF file format.
4. All data will be delivered on CDROM media.

<u>Digital Elevation Accuracies</u>. Elevation data are based on a digital elevation model (DEM) consistent with the USGS National Mapping Program DEM Accuracy Standard. The data accuracy conforms to the National Mapping Program's "Standards for Digital Elevation Models," Section 2.2; Accuracy, referenced to ground control point. Horizontal accuracy of the data points meets the requirement of 1-meter Root Mean Square Error (RMSE). The vertical accuracy of the data points meets the requirement of 15 centimeters RMSE. The sampled elevation points on the ground are randomly spaced over the entire project area. Accuracy of the elevation data is better than one-half the value of the contour interval when verified against the measured points of the earth surface. Since the laser terrain mapping process is a random-sampled process, accuracy of interpolated measurements between actual measured points are dependent upon specific terrain slope and features. DEM data and resultant products reflect surface feature elevations, including elevations of structures and buildings. EagleScan's automated vegetation removal process, yields approximately 90% - 95% removal of vegetation from data. Effectiveness of

automated vegetation removal may decrease under leaf-on conditions. Low height vegetation, such as shrubs or crop fields, may remain represented as surface elevation data as well.

Since the above information was not in the original contract work scope, the above language shall be substituted for all references to FEMA Document 37 where it pertains to the aerial mapping.

Very truly yours,

Joe Tram

Joe Tram

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

RECEIVED
JUL 07 2000
Entellus

LETTER OF TRANSMITTAL

TO: Sam Kao
Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008

June 29, 2000

SUBJECT: Contract No. 99-03
Assignment No. 2
Zone A delineations of Watershed "PP" Luke Wash

WE ARE SENDING YOU THE FOLLOWING ITEMS:
( ) Enclosed ( ) Under separate cover

	Shop Drawings	Prints	Legal Description	Samples
	Specification	Change Order	Copy of Letter	Plans
X	Notice to Proceed			
X	Certificate of Performance			
X	Scope of Work			

THESE ARE TRANSMITTED:

	For Approval	Approved as submitted
X	For your use	Approved as noted
	As requested	Returned for corrections
	Resubmit ( ) copies for approval	For review and comments
	Submit ( ) copies for distribution	Return ( ) corrected prints
	FOR ESTIMATE DUE:	Borrowed prints being returned

Remarks: Please specify assignment number on all correspondence.

SIGNED: Joe Tram

Joe Tram, P.E.
Floodplain Branch Manager

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

NOTICE TO PROCEED

TO: Sam Kao
Entellus
2255 N. 44th St., Suite 125
Phoenix, AZ 85008

June 29, 2000

SUBJECT: PCN ZALW.00.97
FCD Contract No. 99-03
Assignment No. 2
Zone A delineations of Watershed "PP" Luke Wash

Your not-to-exceed cost estimate of $48,044.00 for Assignment No. 2 has been received and accepted for this project with a completion date of 6/30/01. You are hereby authorized to proceed with the work for the referenced project as originally described in the Scope of Work. Please specify the assignment number on all related correspondence. Invoices should be sent to the attention of Linda Hannan of our accounting department.

If at any time during the project assignment a material change in the scope of services to be provided occurs, causing an increase in the original cost estimate shown here, you must provide the District with a written explanation of the additional work along with an estimate of additional costs. No additional work shall commence prior to written authorization by the District. No claims for additional work shall be accepted that have not received prior District approval.

SIGNED: Joe Tram

Joe Tram, P.E.
Floodplain Branch Manager

Michael S. Ellegood, P.E.
Chief Engineer and General Manager

SCOPE OF WORK
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PIEDMONT ASSESSMENT MANUAL
FCD 99-01

Task 1

The study area for Assignment #2 is watershed "PP", as shown on the exhibit that was approved with Assignment #1. Assignment #2 will develop the 100-year hydrology and delineate approximate Zone A 100-year floodplains for an additional 39 miles of major undelineated watercourses that are located within watershed "PP" as indicated on map exhibit for Assignment #2.

All work must meet at a minimum the specifications as defined within the scope of Work for Assignment #1.

All deliverables will be as defined in the scope of Work Assignment #1.

The total project will still meet the final due date, with the revised schedule for submittals and review as outlined in the revised schedule which applies to both Assignment #1 and #2.

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDANCE

B.1. Special Problems Reports

B.2. Contact (telephone) Reports

B.3. Meeting Minutes or Reports

B.4. General Correspondence

B.5A. Contract Documents

B.5B. On-Call Contract Documents

SCOPE OF WORK
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
ON-CALL ENGINEERING, HYDROLOGY AND HYDRAULIC SERVICES
ASSIGNMENT NO. 1
RE-DELINEATION OF ZONE A FLOODPLAIN FOR PHILLIPS WASH
WITHIN THE LUKE WASH WATERSHED "PP"
FCD 2002C033 - 1

GENERAL

The objective of this project is to re-delineate an estimated 4.5 miles of Phillips Wash approximate Zone A 100-year floodplains in Watershed "PP", based on revised hydrologic data. The project limits are shown on **Figure 1**. In order to accomplish the study's objective the consultant will have to 1) coordinate the study with the District and others, 2) use all existing cross section, topographic, and hydraulic data from the original 1999 study; 3) recalculate the 100-year peak discharges at all concentration points per formula provided by the District; 4) re-analyze each cross section with the new peak discharge values; 5) re-delineate the Zone A floodplain boundaries (per on the ground conditions reflected by the 1999 data), 6) prepare the study results in an electronic format, and 7) deliver all of the study documentation in formats acceptable to the District and Federal Emergency Management Agency (FEMA). The consultant must use sound engineering judgement in the development of the hydrologic data and hydraulic models. All work must meet at a minimum level 2 of State Standard 2-96; and Arizona Department of Water Resources (ADWR) and the Federal Emergency Management Agency (FEMA) requirements for Zone A floodplain delineations. Prior to the finalization of this contract, FEMA and the District must review and accept the results of this study, and all items called for in this Scope of Work must be delivered to the District.

The time frame for delineation of the Zone A floodplains will be 60 days. Additional time allowed included 14 days for District review and 360 day for FEMA review. All work must be completed including FEMA review.

TASK 1 – RE-DELINEATION OF PHILLIPS WASH

1.0 Coordination

1.1 Within seven days of Notice to Proceed, the consultant will submit a project schedule to the District's Project Manager showing coordination meetings and completion dates for each task identified in the scope of work. The consultant will update this project schedule when appropriate.

1.2 The consultant will participate in one coordination meetings with the District's Project Manager. The consultant is responsible for the minutes of the meeting.

1.3 The consultant will submit an estimate of the monthly billing within 7 days of Notice to Proceed. Thereafter, this estimate will be updated and submitted to the District's project manager at least 10 days before the end of each quarter.

1.4 The consultant will submit the progress report at least 5 days before submittal of monthly invoice. The report shall be brief and should be no longer than two typed pages. At a minimum, the monthly report shall contain the following:

a. A description of the work accomplished by task during the reporting month.

b. Percent (%) completed for the month and percent (%) cumulative completed for each task.

c. A brief description of the work to be accomplished in the following month, if any.

d. A description of any problems encountered.

1.5.1 It will not be necessary to notify any property owners to obtain Rights of Entry for the study area, as no additional fieldwork is required.

1.6 Consultant/District Performance Evaluations will be performed. A formal evaluation will be performed at the completion of the project upon receipt of all deliverables.

2.0 Data Collection

2.1 With the exception of the newly created peak discharge values the consultant will use previously collected and reviewed data. No new data will be collected under this assignment.

3.0 Topographic Mapping

3.1 The consultant will use existing topographic mapping developed in the original study.

4.0 Field Survey

4.1 No new survey will be required.

4.2 No new field surveys are anticipated of bridges, culverts, and hydraulic structures.

4.3 Copies of any survey field books and office calculations obtained in the original study will be included in the TDN.

5.0 Hydrology

5.1 The Consultant will use the hydrology formula (using discharge-drainage area relationships) provided by the District to re-calculate the peak discharges along Phillips Wash. The consultant must analyze the data carefully and in some instances may correlate data against other hydrologic data such as regression equations in order to obtain the most realistic results.

5.2 The following meeting shall be held with the Flood Control District staff at the following milestones in conjunction with or instead of the scheduled monthly progress meetings:

a. Meeting number 1: following the District's review of the new peak discharges to discuss the revised hydrology results and any review comments by the District.

b. Meeting number 2: if needed to review final results and any responses to previous comments by the District.

5.3 The Hydrologic Report

5.3.1 Section 3 of the Technical Data Notebook will be modified to include the new flows for Phillips wash. The District will provide the background information on the development of the area flow relationship. The report modifications will be in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). Specific deviations from this hydrologic scope shall not be undertaken without the specific written authorization from the District's Project Manager.

6.0 Floodplain Delineation

6.1 The Consultant shall re-delineate approximately 4.5 miles of Phillips Wash between Interstate-10 and the confluence with Luke Wash at CP 59, see **Figure 1**, using approximate Zone A methodology. The floodplain delineations will be conducted using methodology as outlined by FEMA. The consultant will prepare the study using the guidelines established in *Floodplain guidelines and specifications for flood Hazard Mapping Partners*, February 2002, FIA 12, *Appeals, Revisions, and Amendments to Flood Insurance Maps*, December 1993, and FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas*, April 1995.

6.2 The delineation work shall meet requirements for floodplain delineations as prescribed by FEMA and the Arizona Department of Water Resources.

6.3 The delineation study shall be based on the final results of the hydrologic study as directed by the District.

6.4 The consultant must obtain District approval at each of the following steps:
a. Floodplain (natural) delineation.
b. Final hydraulics section of the TDN.

6.5 Field Reconnaissance

6.5.1 The consultant will not conduct any additional field reconnaissance of the study reaches. The observation of channel and floodplain conditions for estimating Manning's "n" values; photographic documentation of floodplain characteristics; determination of channel bank stations; observation of possible overflow areas; inspection of levees or other flood control structures; and measurement of bridge dimensions, were previously done in the original study.

6.6 Cross Sections

6.6.1 The location and alignment of cross sections and channel centerline will not be changed from the previous original (1999) study.

6.6.2 The cross section plots will at a minimum show computer water surface elevation, and "n" values. All plots are to be accompanied by a legend. These plots should be available at all reviews.

6.7 The hydraulics of bridges and culverts were incorporated into assessing the floodplain around such structures especially in areas where ponding will occur, per 1999 conditions in the original study. No new such assessments will be made. The Zone A limits based on the revised hydrology will be determined according to FEMA criteria and clearly labeled on the final drawings.

6.8 Section 4 of the Technical Data Notebook and will be modified to include the new Phillips Wash floodplain and supporting documentation in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The report will be organized as specified by the District standards, following SSA 1-97 format.

6.9 The Consultant shall modify any FEMA forms affected by the re-delineation of Phillips Wash performed under this project.

6.10 The consultant will provide work maps on USGS maps. The drawings will be 24" X 36" in size. A cover sheet will be part of the work study drawings and shall have on it the project title, source and date of topographic mapping, and a location map showing geographic range covered by each specific mapping sheet. Each drawing will include the floodplain delineations, and a minimum of a north arrow, scale, and section corners current and proposed streets and highway names, State Plane Coordinate System, major drainage features, corporate boundaries, cross section lines, channel station center line, index map, the floodplain boundaries, and a description and elevation of each elevation reference mark (ERMs).

7.0 HIS data

7.1 Digital data in either a CADD or GIS format will be prepared in conformance with the District's Hydrologic Information System Data Delivery Specifications, Revision 3.1. The following themes are the ones generally used for the data developed for Floodplain Delineation Studies. However, for this study there may not be data for every theme identified here, or the consultant might develop data for themes not listed here. Therefore, only those themes for which there is data need to be completed. If the consultant has data that doesn't fit one of the themes listed here, the District's Project Manager shall be contacted to determine the appropriate theme for that data.

a. NDXPRJ (FCD Project Map Index)	b. PRJ (Project Boundaries)
c. CARTO (Cartographic Features)	d. CORNERS (if any)
e. ~~CTRL (Miscellaneous Control Surv.)~~ (original study)	f. STRCT (Structure)
g. ~~DQ (Data Quality)~~ (original study)	h. PRJ (Project Identification)
i. ~~FPCTLFCD (FCD Reference Marks)~~ (original study)	j. FPZNFCD (Floodplain FCD Zone)
k. ~~FPBLN (Floodplain Baseline Route)~~ (original study)	l. ~~ELV (contour)~~ (original study)
m. FPXFCD (Cross Section)	n. ~~DTM~~(original study)

TASK 2 – FEMA SUBMITTAL FOR ENTIRE LUKE WASH WATERSHED

8.1 Both paper and electronic deliverables will be made at the completion of each task. The consultant will deliver re-issued Technical Data Notebooks including all applicable information from the previous study along with any new (updated) information to the District.

8.2 The consultant will submit the following items to the District for review by FEMA and any other appropriate governmental agency. All of the following products are considered deliverables for the FEMA submittal:

8.2.1 Two (2) complete sets of blackline topographic base maps with the floodplain delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.2.2 Two (2) complete copies of the Technical Data Notebook. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The notebook will be organized as specified by the District, following SSA 1-97 format. These copies will be updated if necessary based upon FEMA's review comments. Completed FEMA forms will be included in the Technical Data Notebook.

8.2.3 The consultant will address any of FEMA's comments on the re-delineation of Phillips Wash as well as the entire project previously completed under contract FCD # 99-03.

8.3 Final Submittal: The following products are considered deliverables for the final submittal to the District after FEMA approval is issued:

8.3.1 One (1) complete composite set of sealed non-erasable mylars with the topographic data and floodplain delineations shown. Two (2) complete sets of sealed blueline copies of the delineation exhibits. The sheets shall be 24" X 36" in size, and all drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.3.2 All remaining hydrologic and floodplain delineation data in conformance with the District's HIS Specifications.

8.3.3 Two (2) additional, complete copies of the Technical Data Notebooks. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The notebook will be organized as specified by the District, following SSA 1-97 format. This submittal of the Technical Data Notebook shall include any correspondence and/or meeting minutes with the reviewing agencies and shall reflect any revisions required by those reviewing agencies.

8.3.4 The Consultant will submit final HIS data for the themes specified in Section 7.1

APPENDIX C. SURVEY AND FIELD NOTES

C.1. Survey Field Notes for LIDAR Mapping Control

Control information for LIDAR mapping is included under in this section.

C.2. Survey Field Notes for Hydrology Modeling

No additional survey was performed for hydrology calculations.

C.3. Survey Notes for Hydraulic modeling

ERM Control

Structures and Map Verification Survey

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
Retrieving Datasheet Retrieval...
     National Geodetic Survey,   Retrieval Date = SEPTEMBER 29, 2000
AA3554 ***********************************************************************
AA3554  DESIGNATION -  BXK A 1994
AA3554  PID         -  AA3554
AA3554  STATE/COUNTY-  AZ/MARICOPA
AA3554  USGS QUAD   -  BUCKEYE NW (1982)
AA3554
AA3554                        *CURRENT SURVEY CONTROL
AA3554
AA3554* NAD 83(1992)-  33 25 33.92984(N)    112 41 07.53427(W)     ADJUSTED
AA3554* NAVD 88     -       310.21   (meters)    1017.7    (feet)  GPS OBS
AA3554
AA3554  X           -  -2,055,174.452 (meters)                     COMP
AA3554  Y           -  -4,916,565.042 (meters)                     COMP
AA3554  Z           -   3,493,649.697 (meters)                     COMP
AA3554  LAPLACE CORR-           2.80  (seconds)                    DEFLEC99
AA3554  ELLIP HEIGHT-         279.57  (meters)                     GPS OBS
AA3554  GEOID HEIGHT-         -30.63  (meters)                     GEOID99
AA3554
AA3554  HORZ ORDER  -  B
AA3554  ELLP ORDER  -  FOURTH    CLASS I
AA3554
AA3554.This mark is at Buckeye Municipal Airport (BXK)
AA3554
AA3554.The horizontal coordinates were established by GPS observations
AA3554.and adjusted by the National Geodetic Survey in December 1994.
AA3554
AA3554.The orthometric height was determined by GPS observations and a
AA3554.high-resolution geoid model using precise GPS observation and
AA3554.processing techniques.
AA3554
AA3554.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AA3554
AA3554.The Laplace correction was computed from DEFLEC99 derived deflections.
AA3554
AA3554.The ellipsoidal height was determined by GPS observations
AA3554.and is referenced to NAD 83.
AA3554
AA3554.The geoid height was determined by GEOID99.
AA3554
AA3554;                    North         East     Units   Scale      Converg.
AA3554;SPC AZ C     -   269,268.098   141,870.562   MT  0.99996299 -0 25 24.6
AA3554;UTM  12      - 3,699,794.890   343,306.693   MT  0.99990271 -0 55 43.0
AA3554
AA3554                        SUPERSEDED SURVEY CONTROL
AA3554
AA3554  NGVD 29     -       309.58   (m)         1015.7    (f) LEVELING    3
AA3554
AA3554.Superseded values are not recommended for survey control.
AA3554.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AA3554.See file dsdata.txt to determine how the superseded data were derived.
AA3554
AA3554_MARKER: DD = SURVEY DISK
AA3554_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AA3554_STAMPING: BXK A 1994
AA3554_MAGNETIC: O = OTHER; SEE DESCRIPTION
AA3554_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AA3554+STABILITY: SURFACE MOTION
AA3554_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AA3554+SATELLITE: SATELLITE OBSERVATIONS - September 29, 1998
AA3554
AA3554  HISTORY     - Date     Condition        Recov. By
AA3554  HISTORY     - 1994     MONUMENTED       NOS
AA3554  HISTORY     - 19940615 GOOD             NGS
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AA3554  HISTORY     - 19980929 GOOD            AZ-013
AA3554
AA3554                          STATION DESCRIPTION
AA3554
AA3554'DESCRIBED BY NATIONAL OCEAN SERVICE 1994 (HSK)
AA3554'THE STATION IS LOCATED ABOUT 15.0 MI (24.1 KM) EAST OF TONOPAH, 8.0 MI
AA3554'(12.9 KM) NORTH OF PALO VERDE, 8.0 MI (12.9 KM) WEST OF BUCKEYE, AT
AA3554'THE BUCKEYE MUNICIPAL AIRPORT IN THE MEDIAN BETWEEN RUNWAY 17 AND THE
AA3554'NORTH-SOUTH PARALLEL TAXIWAY AND NEAR RUNWAY END 17.  FOR ACCESS
AA3554'CONTACT THE AIRPORT MANAGER, RT.2, BOX 351, BUCKEYE, AZ 85326.  PHONE
AA3554'(602) 386-3353. TO REACH THE STATION FROM INTERSTATE 10 AND PALO VERDE
AA3554'ROAD (EXIT 109) ABOUT 8.0 MI (12.9 KM) WEST OF BUCKEYE, GO SOUTH ON
AA3554'PALO VERDE ROAD FOR 1.3 MI (2.1 KM) TO THE AIRPORT ENTRANCE ROAD ON
AA3554'THE RIGHT, TURN RIGHT, WESTERLY ON ASPHALT ROAD FOR 0.45 MI (0.72 KM)
AA3554'TO THE INTERSECTION OF AN NORTH-SOUTH PARALLEL TAXIWAY.  TURN RIGHT,
AA3554'NORTHERLY ON PARALLEL TAXIWAY FOR 0.4 MI (0.6 KM) TO THE STATION ON
AA3554'THE LEFT. THE STATION IS LOCATED 206.3 FT (62.9 M) NORTHEAST OF THE
AA3554'FIRST RUNWAY LIGHT (SHOWS WHITE) SOUTH OF RUNWAY END 17 AND ON THE
AA3554'EAST EDGE OF THE RUNWAY, 202.9 FT (61.8 M) EAST OF THE CENTERLINE OF
AA3554'RUNWAY 17, 147.6 FT (45.0 M) SOUTH OF THE CENTERLINE OF THE TAXIWAY
AA3554'LEADING TO RUNWAY END 17 AND 117.7 FT (35.9 M) SOUTH OF A TAXIWAY
AA3554'LIGHT (SHOWS BLUE) AND ON LINE WITH THE FIRST SET OF TAXIWAY LIGHTS
AA3554'EAST OF THE RUN UP AREA.
AA3554
AA3554                          STATION RECOVERY (1994)
AA3554
AA3554'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1994
AA3554'THE STATION IS LOCATED AT THE BUCKEYE MUNI AIRPORT NEAR THE NORTH END
AA3554'OF THE RUNWAY.  IT IS 202.9 FT (61.8 M) EAST OF THE CENTERLINE OF THE
AA3554'RUNWAY, 206.3 FT (62.9 M) NORTHEAST OF THE FIRST RUNWAY LIGHT SOUTH OF
AA3554'THE NORTH END OF THE RUNWAY, 117.7 FT (35.9 M) SOUTH OF A TAXIWAY
AA3554'LIGHT AND ON LINE WITH THE FIRST SET OF TAXIWAY LIGHTS EAST OF THE
AA3554'RUNUP AREA, AND 147.6 FT (45.0 M) SOUTH OF THE CENTERLINE OF THE
AA3554'TAXIWAY.  THE STATION IS AN NOS DISK SET IN THE TOP OF A CONCRETE POST
AA3554'SET FLUSH WITH THE GROUND.  THE DISK IS STAMPED BXK A 1994.
AA3554
AA3554                          STATION RECOVERY (1998)
AA3554
AA3554'RECOVERY NOTE BY MARICOPA COUNTY ARIZONA 1998 (LOC)
AA3554'RECOVERED AS DESCRIBED.  GENERAL STATION LOCATION NEAR BUCKEYE,
AA3554'ARIZONA.  RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:04
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The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
  :ing Datasheet Retrieval...
       National Geodetic Survey,   Retrieval Date = SEPTEMBER 29, 2000
DV2141 ***********************************************************************
DV2141  DESIGNATION -  ARCHES
DV2141  PID         -  DV2141
DV2141  STATE/COUNTY-  AZ/MARICOPA
DV2141  USGS QUAD   -  BUCKEYE (1976)
DV2141
DV2141                         *CURRENT SURVEY CONTROL
DV2141
DV2141* NAD 83(1992)-  33 22 12.27189(N)    112 37 27.61654(W)     ADJUSTED
DV2141* NAVD 88     -       267.117  (meters)     876.37   (feet)  ADJUSTED
DV2141
DV2141  LAPLACE CORR-           2.86  (seconds)                    DEFLEC99
DV2141  GEOID HEIGHT-         -30.66  (meters)                     GEOID99
DV2141  DYNAMIC HT  -         266.811 (meters)     875.36   (feet) COMP
DV2141  MODELED GRAV-     979,484.8   (mgal)                       NAVD 88
DV2141
DV2141  HORZ ORDER  -  FIRST
DV2141  VERT ORDER  -  FIRST     CLASS II
DV2141
DV2141.The horizontal coordinates were established by classical geodetic methods
DV2141.and adjusted by the National Geodetic Survey in August 1993.
DV2141
DV2141.The orthometric height was determined by differential leveling
DV2141.and adjusted by the National Geodetic Survey in November 1993.
DV2141
DV2141.The Laplace correction was computed from DEFLEC99 derived deflections.
DV2141
DV2141.The geoid height was determined by GEOID99.
DV2141
DV2141.The dynamic height is computed by dividing the NAVD 88
DV2141.geopotential number by the normal gravity value computed on the
DV2141.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DV2141.degrees latitude (g = 980.6199 gals.).
DV2141
DV2141.The modeled gravity was interpolated from observed gravity values.
DV2141
DV2141;                    North         East     Units   Scale      Converg.
DV2141;SPC AZ C     -   263,015.376   147,509.238   MT  0.99995345 -0 23 21.4
DV2141;UTM  12      - 3,693,493.154   348,889.698   MT  0.99988153 -0 53 37.1
DV2141
DV2141:                Primary Azimuth Mark                     Grid Az
DV2141:SPC AZ C     -  PM 868A G                                187 15 27.8
DV2141:UTM  12      -  PM 868A G                                187 45 43.5
DV2141
DV2141|-----------------------------------------------------------------------|
DV2141| PID    Reference Object                    Distance      Geod. Az    |
DV2141|                                                          dddmmss.s   |
DV2141|        ARCHES RM 1                         14.635 METERS 07310       |
DV2141|        ARCHES AZ MK                                      0874643.9   |
DV2141|        PM 868A G                                         1865206.4   |
DV2141|        ARCHES RM 2                         14.774 METERS 26241       |
DV2141|-----------------------------------------------------------------------|
DV2141
DV2141                         SUPERSEDED SURVEY CONTROL
DV2141
DV2141  NAD 83(1986)-  33 22 12.26526(N)    112 37 27.62199(W) AD(       ) 1
DV2141  NAD 27      -  33 22 12.11300(N)    112 37 25.02400(W) AD(       ) 1
DV2141  NGVD 29     -       267.     (m)          876.     (f) VERT ANG
DV2141
DV2141.Superseded values are not recommended for survey control.
DV2141.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DV2141.See file dsdata.txt to determine how the superseded data were derived.
DV2141
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DV2141_MARKER: DS = TRIANGULATION STATION DISK
DV2141_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DV2141_STAMPING: ARCHES 1934
DV2141_MAGNETIC: N = NO MAGNETIC MATERIAL
DV2141_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DV2141+STABILITY: SURFACE MOTION
DV2141_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DV2141+SATELLITE: SATELLITE OBSERVATIONS - March 16, 1992
DV2141
DV2141  HISTORY     - Date     Condition        Recov. By
DV2141  HISTORY     - 1934     MONUMENTED       CGS
DV2141  HISTORY     - 1934     GOOD             CGS
DV2141  HISTORY     - 1970     GOOD             NGS
DV2141  HISTORY     - 1979     GOOD             USE
DV2141  HISTORY     - 19920316 GOOD             NGS
DV2141
DV2141                          STATION DESCRIPTION
DV2141
DV2141'DESCRIBED BY COAST AND GEODETIC SURVEY 1934 (EBL)
DV2141'TWO MILES WEST OF BUCKEYE ON U.S. HIGHWAY NO. 80 AND 0.1 MILE
DV2141'WEST OF ARCHES SERVICE STATION, AT THE EAST END OF A CURVE
DV2141'IN THE HIGHWAY.  (WHERE HIGHWAY TURNS SOUTH THERE IS ANOTHER
DV2141'PAVED ROAD MAKING A JUNCTION THAT IS 0.1 MILE WEST OF THE
DV2141'SERVICE STATION.) ON THE SOUTH SIDE OF THE ROAD, AND ON THE
DV2141'SOUTH SIDE OF A FENCE, BETWEEN THE FENCE AND AN IRRIGATION
DV2141'DITCH AND OPPOSITE A SIGN THAT READS WHITE HOUSE CABINS, 50
DV2141'CENTS AND UP.  MARKED BY STANDARD BRONZE DISKS.
DV2141'REFERENCE MARK NO. 1, A STANDARD BRONZE
DV2141'REFERENCE DISK, IS 14.516 METERS (47.62 FEET) FROM
DV2141'STATION.  REFERENCE MARK NO. 2, A
DV2141'STANDARD BRONZE REFERENCE DISK, IS 14.793 METERS
DV2141'(48.53 FEET) FROM STATION.  THE
DV2141'AZIMUTH MARK, A STANDARD BRONZE DISK, IS 0.3
DV2141'MILE FROM STATION, ON LEFT SIDE OF ROAD IN CULVERT.
DV2141
DV2141                          STATION RECOVERY (1934)
DV2141
DV2141'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1934
DV2141'RECOVERED IN GOOD CONDITION.
DV2141
DV2141                          STATION RECOVERY (1970)
DV2141
DV2141'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1970 (LFS)
DV2141'THE STATION MARK AND THE REFERENCE MARKS WERE RECOVERED AND FOUND
DV2141'IN GOOD CONDITION.  REFERENCE MARK 1 HAS BEEN DISTURBED AND
DV2141'IS LEANING TO THE EAST.  THE MARK IS SOLID AND STILL SERVES
DV2141'THE PURPOSE SINCE THERE IS NO GOOD PLACE TO SET A NEW REFERENCE
DV2141'MARK.  THE AZIMUTH MARK WAS DESTROYED IN CONSTRUCTION OF U.S.
DV2141'HIGHWAY 80.  A NEW AZIMUTH MARK WAS ESTABLISHED AT THIS TIME.
DV2141'
DV2141'THE STATION IS LOCATED 2 MILES WEST OF BUCKEYE, 0.1 MILE NORTH
DV2141'OF U.S. HIGHWAY 80 AND ALONG THE SOUTH SIDE OF AN OLD CONCRETE
DV2141'ROAD.
DV2141'
DV2141'TO REACH THE STATION FROM THE INTERSECTION OF FIRST STREET AND
DV2141'U.S. HIGHWAY 80 IN BUCKEYE, GO WEST ALONG THE HIGHWAY FOR 1.85
DV2141'MILE TO POINT WHERE THE HIGHWAY TURNS SOUTH, CONTINUE STRAIGHT
DV2141'AHEAD FOR 0.15 MILE TO THE STATION ON THE LEFT JUST BEFORE
DV2141'REACHING AN INTERSECTION.
DV2141'
DV2141'THE STATION MARK IS A STANDARD DISK STAMPED, ARCHES 1934.  IT
DV2141'IS SET IN THE TOP OF A 12X12 INCH CONCRETE MONUMENT WHICH
DV2141'PROJECTS ABOUT 2 INCHES ABOVE THE GROUND SURFACE.  IT IS 38
DV2141'FEET SOUTH OF THE CENTER LINE OF THE ROAD, 10 FEET WEST OF
DV2141'POWER POLE NUMBER 2 OVER 17 AND 8 FEET SOUTH OF THE WITNESS POST.
DV2141'
DV2141'REFERENCE MARK 1 IS A STANDARD DISK STAMPED, ARCHES NO 1 1934.
DV2141'IT IS SET IN THE TOP OF A 12 INCH CONCRETE MONUMENT WHICH
DV2141'LEANS TO THE EAST.  IT IS 40 FEET EAST OF THE POWER POLE, 30
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DV2141'FEET SOUTH OF THE CENTER LINE OF THE ROAD 10 FEET NORTH OF A
DV2141'DITCH AND 3 FEET NORTH OF A FENCE LINE.
DV2141'
DV2141'REFERENCE MARK 2 IS A STANDARD DISK STAMPED, ARCHES NO 2 1934.
DV2141'IT IS SET IN THE TOP OF A 12 INCH CONCRETE MONUMENT WHICH
DV2141'PROJECTS ABOUT 3 INCHES. IT IS 33 FEET SOUTH OF THE CENTER
DV2141'LINE OF THE ROAD, 54 FEET SOUTHWEST OF THE POWER POLE AND 9
DV2141'FEET NORTH OF THE FENCE LINE.
DV2141'
DV2141'THE AZIMUTH MARK IS AN ARIZONA HIGHWAY DEPARTMENT BENCH MARK
DV2141'STAMPED, P AND M 868A G 1970. IT IS SET IN THE TOP OF A
DV2141'6-INCH CONCRETE POST WHICH PROJECTS ABOUT 4 INCHES. IT IS 0.45
DV2141'MILE SOUTHWEST OF THE STATION ALONG THE WEST RIGHT OF WAY FENCE
DV2141'LINE, 78 FEET SOUTH OF POWER POLE NO. 39, ABOUT 100 FEET NORTH OF
DV2141'A SIDE ROAD LEADING WEST AND 2 FEET EAST OF THE FENCE LINE AND
DV2141'WITNESS SIGN.
DV2141'
DV2141'HEIGHT OF LIGHT ABOVE STATION MARK 5 FEET.
DV2141'
DV2141'AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN--2 MILES WEST
DV2141'OF BUCKEYE
DV2141
DV2141 STATION RECOVERY (1979)
DV2141
DV2141'RECOVERY NOTE BY US ENGINEERS 1979 (FLC)
DV2141'ARCHES 1934 RECOVERED GOOD.
DV2141'
DV2141'R. M.S 1 AND 2 DESTROYED.
DV2141
DV2141 STATION RECOVERY (1992)
DV2141
DV2141'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
DV2141'0.1 KM (0.05 MI) NORTHERLY ALONG 6TH STREET FROM THE POST OFFICE IN
DV2141'BUCKEYE, THENCE 3.8 KM (2.35 MI) WESTERLY ALONG COUNTY ROAD 85, AT A
DV2141'POINT WHERE THE ROAD TURNS SOUTH, 29.8 M (97.8 FT) WEST OF THE ROAD
DV2141'CENTERLINE, 11.9 M (39.0 FT) SOUTH OF THE CENTERLINE OF A PAVED ROAD,
DV2141'3.0 M (9.8 FT) WEST OF UTILITY POLE NUMBER 2 17, 1.0 M (3.3 FT) BELOW
DV2141'THE LEVEL OF THE ROAD, 0.5 M (1.6 FT) NORTH OF A WITNESS POST, AND
DV2141'THE MONUMENT PROJECTS 0.1 M (0.3 FT) ABOVE THE GROUND SURFACE.

*** retrieval complete.
Elapsed Time = 00:00:05

The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
    ing Datasheet Retrieval...
         National Geodetic Survey,   Retrieval Date = SEPTEMBER 29, 2000
AA3556 ***********************************************************************
AA3556  DESIGNATION -  BXK C 1994
AA3556  PID         -  AA3556
AA3556  STATE/COUNTY-  AZ/MARICOPA
AA3556  USGS QUAD   -  BUCKEYE NW (1982)
AA3556
AA3556                        *CURRENT SURVEY CONTROL
AA3556
AA3556* NAD 83(1992)-  33 24 55.70643(N)    112 41 08.92104(W)     ADJUSTED
AA3556* NAVD 88     -       302.71   (+/-2cm)     993.1    (feet)  VERTCON
AA3556
AA3556  X           -  -2,055,455.259 (meters)                     COMP
AA3556  Y           -  -4,917,143.908 (meters)                     COMP
AA3556  Z           -   3,492,662.625 (meters)                     COMP
AA3556  LAPLACE CORR-            2.57  (seconds)                   DEFLEC99
AA3556  ELLIP HEIGHT-          272.07  (meters)                    GPS OBS
AA3556  GEOID HEIGHT-          -30.66  (meters)                    GEOID99
AA3556
AA3556  HORZ ORDER  -  B
AA3556  VERT ORDER  -  THIRD ? (See Below)
AA3556  ELLP ORDER  -  FOURTH    CLASS I
AA3556
AA3556.This mark is at Buckeye Municipal Airport (BXK)
AA3556
AA3556.The horizontal coordinates were established by GPS observations
AA3556.and adjusted by the National Geodetic Survey in December 1994.
AA3556
AA3556.The NAVD 88 height was computed by applying the VERTCON shift value to
AA3556.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
AA3556.The vertical order pertains to the superseded datum.
AA3556
AA3556.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AA3556
AA3556.The Laplace correction was computed from DEFLEC99 derived deflections.
AA3556
AA3556.The ellipsoidal height was determined by GPS observations
AA3556.and is referenced to NAD 83.
AA3556
AA3556.The geoid height was determined by GEOID99.
AA3556
AA3556;                    North         East     Units   Scale      Converg.
AA3556;SPC AZ C     -   268,090.818   141,826.032   MT  0.99996307 -0 25 24.9
AA3556;UTM  12      - 3,698,618.119   343,251.790   MT  0.99990292 -0 55 42.9
AA3556
AA3556                        SUPERSEDED SURVEY CONTROL
AA3556
AA3556  NGVD 29     -       302.07   (m)          991.0    (f) LEVELING    3
AA3556
AA3556.Superseded values are not recommended for survey control.
AA3556.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AA3556.See file dsdata.txt to determine how the superseded data were derived.
AA3556
AA3556_MARKER: DD = SURVEY DISK
AA3556_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AA3556_STAMPING: BXK C 1994
AA3556_MAGNETIC: O = OTHER; SEE DESCRIPTION
AA3556_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AA3556+STABILITY: SURFACE MOTION
AA3556_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AA3556+SATELLITE: SATELLITE OBSERVATIONS - 1994
AA3556
AA3556  HISTORY     - Date     Condition        Recov. By
AA3556  HISTORY     - 1994     MONUMENTED       NOS
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AA3556  HISTORY     - 19940615 GOOD             NGS
AA3556
AA3556                          STATION DESCRIPTION
AA3556
AA3556'DESCRIBED BY NATIONAL OCEAN SERVICE 1994 (HSK)
AA3556'THE STATION IS LOCATED ABOUT 15.0 MI (24.1 KM) EAST OF TONOPAH, 8.0 MI
AA3556'(12.9 KM) NORTH OF PALO VERDE, 8.0 MI (12.9 KM) WEST OF BUCKEYE, AT
AA3556'THE BUCKEYE MUNICIPAL AIRPORT IN THE MEDIAN BETWEEN RUNWAY 35 AND THE
AA3556'NORTH-SOUTH PARALLEL TAXIWAY AND NEAR RUNWAY END 35.  FOR ACCESS
AA3556'CONTACT THE AIRPORT MANAGER, RT.2, BOX 351, BUCKEYE, AZ 85326.  PHONE
AA3556'(602) 386-3353. TO REACH THE STATION FROM INTERSTATE 10 AND PALO VERDE
AA3556'ROAD (EXIT 109) ABOUT 8.0 MI (12.9 KM) WEST OF BUCKEYE, GO SOUTH ON
AA3556'PALO VERDE ROAD FOR 1.3 MI (2.1 KM) TO THE AIRPORT ENTRANCE ROAD ON
AA3556'THE RIGHT, TURN RIGHT, WESTERLY ON ASPHALT ROAD FOR 0.45 MI (0.72 KM)
AA3556'TO THE INTERSECTION OF AN NORTH-SOUTH PARALLEL TAXIWAY.  TURN LEFT,
AA3556'SOUTHERLY ON PARALLEL TAXIWAY FOR 0.4 MI (0.6 KM) TO THE STATION ON
AA3556'THE RIGHT. THE STATION IS LOCATED 214.9 FT (65.5 M) EAST OF THE
AA3556'CENTERLINE OF RUNWAY 35, 167.2 FT (51.0 M) EAST OF THE FIRST RUNWAY
AA3556'LIGHT (SHOWS WHITE)NORTH OF RUNWAY END 35 AND ON THE EAST SIDE OF THE
AA3556'RUNWAY, 57.0 FT NORTH OF THE SECOND TAXIWAY LIGHT (SHOWS BLUE) EAST OF
AA3556'THE HOLD BAR FOR RUNWAY END 35.
AA3556
AA3556                          STATION RECOVERY (1994)
AA3556
AA3556'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1994
AA3556'THE STATION IS LOCATED NEAR THE SOUTH END OF THE RUNWAY AT THE BUCKEYE
AA3556'MUNI AIRPORT.  IT IS 214.9 FT (65.5 M) EAST OF THE CENTERLINE OF THE
AA3556'RUNWAY, 167.2 FT (51.0 M) EAST OF THE FIRST RUNWAY LIGHT NORTH OF THE
AA3556'SOUTH END OF THE RUNWAY, AND 57.0 FT (17.4 M) NORTH OF A TAXIWAY
AA3556'LIGHT.  IT IS ALSO ON LINE WITH THE FIRST SET OF RUNWAY LIGHTS AND THE
AA3556'SECOND SET OF TAXIWAY LIGHTS EAST OF THE HOLD BAR.  THE STATION IS A
AA3556'NOS DISK SET IN THE TOP OF A CONCRETE POST FLUSH WITH THE GROUND.  THE
AA3556'DISK IS STAMPED BXK C 1994.

retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
Processing Datasheet Retrieval...
         National Geodetic Survey,   Retrieval Date = OCTOBER  3, 2000
DV0776 ***********************************************************************
DV0776  DESIGNATION -  J 13
DV0776  PID         -  DV0776
DV0776  STATE/COUNTY-  AZ/MARICOPA
DV0776  USGS QUAD   -  WINTERSBURG (1984)
DV0776
DV0776                          *CURRENT SURVEY CONTROL
DV0776
DV0776* NAD 83(1986)-  33 23 18.     (N)    112 47 35.     (W)     SCALED
DV0776* NAVD 88     -       291.942  (meters)     957.81   (feet)  ADJUSTED
DV0776
DV0776  GEOID HEIGHT-         -30.88  (meters)                     GEOID99
DV0776  DYNAMIC HT  -         291.606 (meters)     956.71   (feet)  COMP
DV0776  MODELED GRAV-     979,478.6   (mgal)                       NAVD 88
DV0776
DV0776  VERT ORDER  -  FIRST     CLASS II
DV0776
DV0776.The horizontal coordinates were scaled from a topographic map and have
DV0776.an estimated accuracy of +/- 6 seconds.
DV0776
DV0776.The orthometric height was determined by differential leveling
DV0776.and adjusted by the National Geodetic Survey in June 1991.
DV0776
DV0776.The geoid height was determined by GEOID99.
DV0776
DV0776.The dynamic height is computed by dividing the NAVD 88
DV0776.geopotential number by the normal gravity value computed on the
DV0776.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DV0776.degrees latitude (g = 980.6199 gals.).
DV0776
DV0776.The modeled gravity was interpolated from observed gravity values.
DV0776
DV0776;                    North         East    Units  Estimated Accuracy
DV0776;SPC AZ C     -   265,160.      131,830.     MT  (+/- 180 meters Scaled)
DV0776
DV0776                          SUPERSEDED SURVEY CONTROL
DV0776
DV0776  NGVD 29     -       291.325  (m)          955.79   (f) ADJ UNCH    1 2
DV0776
DV0776.Superseded values are not recommended for survey control.
DV0776.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DV0776.See file dsdata.txt to determine how the superseded data were derived.
DV0776
DV0776_MARKER: DB = BENCH MARK DISK
DV0776_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DV0776_STAMPING: J 13 1927 955.789
DV0776_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DV0776+STABILITY: SURFACE MOTION
DV0776
DV0776  HISTORY     - Date     Condition        Recov. By
DV0776  HISTORY     - 1927     MONUMENTED       CGS
DV0776  HISTORY     - 1967     GOOD             NGS
DV0776  HISTORY     - 1981     GOOD             NGS
DV0776
DV0776                          STATION DESCRIPTION
DV0776
DV0776'DESCRIBED BY NATIONAL GEODETIC SURVEY 1967
DV0776'4.8 MI NW FROM HASSAYAMPA.
DV0776'4.8 MILES NORTHWEST ALONG THE BUCKEYE-SALOME ROAD FROM THE CHEVRON
DV0776'SERVICE STATION AND STORE AT HASSAYAMPA, IN SECTION 32, T 1 N, R 5 W
DV0776'200 FEET NORTH OF THE CENTER LINE OF THE HIGHWAY, 160 FEET NORTH OF
DV0776'THE TOP OF THE NORTH BANK OF A SHALLOW CUT FOR THE HIGHWAY, 45 FEET
DV0776'SOUTH OF THE CENTER LINE OF AN OLD ROAD, 1.8 FEET NORTH OF A WOODEN
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DV0776'WITNESS POST, ABOUT 2 1/2 FEET ABOVE THE LEVEL OF THE OLD ROAD, AND
DV0776'SET IN THE TOP OF A CONCRETE POST PROJECTING 5 INCHES.
DV0776
DV0776                          STATION RECOVERY (1981)
 776
 776'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1981
DV0776'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
Processing Datasheet Retrieval...
           National Geodetic Survey,   Retrieval Date = OCTOBER  3, 2000
DV0830 ***********************************************************************
DV0830  DESIGNATION -  M 10
DV0830  PID         -  DV0830
DV0830  STATE/COUNTY-  AZ/MARICOPA
DV0830  USGS QUAD   -  ARLINGTON (1984)
DV0830
DV0830                          *CURRENT SURVEY CONTROL
DV0830
DV0830* NAD 83(1986)-  33 20 46.     (N)    112 47 35.     (W)     SCALED
DV0830* NAVD 88     -       262.03   (+/-2cm)     859.7    (feet)  VERTCON
DV0830
DV0830  GEOID HEIGHT-         -30.95  (meters)                     GEOID99
DV0830
DV0830  VERT ORDER  -  FIRST     CLASS II (See Below)
DV0830
DV0830.The horizontal coordinates were scaled from a topographic map and have
DV0830.an estimated accuracy of +/- 6 seconds.
DV0830
DV0830.The NAVD 88 height was computed by applying the VERTCON shift value to
DV0830.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
DV0830.The vertical order pertains to the superseded datum.
DV0830
DV0830.The geoid height was determined by GEOID99.
DV0830
DV0830;                     North         East    Units  Estimated Accuracy
DV0830;SPC AZ C     -   260,480.      131,790.      MT  (+/- 180 meters Scaled)
DV0830
DV0830                          SUPERSEDED SURVEY CONTROL
DV0830
DV0830  NGVD 29     -       261.397  (m)          857.60   (f) ADJ UNCH    1 2
DV0830
DV0830.Superseded values are not recommended for survey control.
DV0830.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DV0830.See file dsdata.txt to determine how the superseded data were derived.
DV0830
DV0830_MARKER: DB = BENCH MARK DISK
DV0830_SETTING: 30 = MONUMENT
DV0830_STAMPING: 857.600 M 10 1927
DV0830_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
DV0830
DV0830  HISTORY     - Date     Condition        Recov. By
DV0830  HISTORY     - 1927     MONUMENTED       CGS
DV0830
DV0830                          STATION DESCRIPTION
DV0830
DV0830'DESCRIBED BY COAST AND GEODETIC SURVEY 1927
DV0830'4.3 MI W FROM HASSAYAMPA.
DV0830'4.3 MILES WEST OF HASSAYAMPA RR. SWITCH.  BRONZE DISC SET IN STANDARD
DV0830'CONCRETE MONUMENT 100 FEET SOUTH OF THE SOUTHERN PACIFIC RR. TRACKS,
DV0830'AND JUST INSIDE THE RIGHT-OF-WAY FENCE LINE.  9 1/2 TELEPHONE POLES
DV0830'EAST OF MILEPOST 863.  625 FEET EAST OF BRIDGE NO. 863 A.  200 FEET
DV0830'WEST OF BRIDGE NO. 863 B.  2 MILES EAST OF STATION ARLINGTON.  MARK IS
DV0830'1 FOOT ABOVE GROUND LEVEL, AND 3 FEET BELOW TRACK LEVEL.  MARK IS ON
DV0830'THE S.P. RR. WELLTON-HASSAYAMPA-PHOENIX LINE.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.27
Retrieving Datasheet Retrieval...
         National Geodetic Survey,   Retrieval Date = SEPTEMBER 29, 2000
DV0778 ***********************************************************************
DV0778  DESIGNATION -  H 322
DV0778  PID         -  DV0778
DV0778  STATE/COUNTY-  AZ/MARICOPA
DV0778  USGS QUAD   -  ARLINGTON (1984)
DV0778
DV0778                          *CURRENT SURVEY CONTROL
DV0778
DV0778* NAD 83(1986)-  33 22 15.     (N)    112 45 48.     (W)     SCALED
DV0778* NAVD 88     -       280.336  (meters)     919.74   (feet)  ADJUSTED
DV0778
DV0778  GEOID HEIGHT-         -30.88  (meters)                     GEOID99
DV0778  DYNAMIC HT  -         280.013 (meters)     918.68  (feet)  COMP
DV0778  MODELED GRAV-     979,476.0   (mgal)                       NAVD 88
DV0778
DV0778  VERT ORDER  -  FIRST     CLASS II
DV0778
DV0778.The horizontal coordinates were scaled from a topographic map and have
DV0778.an estimated accuracy of +/- 6 seconds.
DV0778
DV0778.The orthometric height was determined by differential leveling
DV0778.and adjusted by the National Geodetic Survey in June 1991.
DV0778
DV0778.The geoid height was determined by GEOID99.
DV0778
DV0778.The dynamic height is computed by dividing the NAVD 88
DV0778.geopotential number by the normal gravity value computed on the
DV0778.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DV0778.degrees latitude (g = 980.6199 gals.).
DV0778
DV0778.The modeled gravity was interpolated from observed gravity values.
DV0778
DV0778;                    North         East     Units  Estimated Accuracy
DV0778;SPC AZ C     -   263,200.      134,580.      MT  (+/- 180 meters Scaled)
DV0778
DV0778                          SUPERSEDED SURVEY CONTROL
DV0778
DV0778  NGVD 29     -       279.707  (m)          917.67   (f) ADJ UNCH    1 2
DV0778
DV0778.Superseded values are not recommended for survey control.
DV0778.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DV0778.See file dsdata.txt to determine how the superseded data were derived.
DV0778
DV0778_MARKER: DB = BENCH MARK DISK
DV0778_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DV0778_STAMPING: H 322 1952
DV0778_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DV0778+STABILITY: SURFACE MOTION
DV0778
DV0778  HISTORY     - Date     Condition        Recov. By
DV0778  HISTORY     - 1952     MONUMENTED       CGS
DV0778  HISTORY     - 1967     GOOD             NGS
DV0778  HISTORY     - 1981     GOOD             NGS
DV0778
DV0778                          STATION DESCRIPTION
DV0778
DV0778'DESCRIBED BY NATIONAL GEODETIC SURVEY 1967
DV0778'2.95 MI NW FROM HASSAYAMPA.
DV0778'2.8 MILES NORTHWEST ALONG THE BUCKEYE-SALOME ROAD FROM THE CHEVRON
DV0778'SERVICE STATION AND STORE AT HASSAYAMPA, THENCE 0.15 MILE SOUTH ALONG
DV0778'A GRAVELED ROAD, IN SECTION 3, T 1 S, R 5 W, AT AN INTERSECTION OF THE
DV0778'GRAVELED ROAD AND AN OLD DIRT ROAD, 31 1/2 FEET EAST OF THE CENTER
DV0778'LINE OF THE GRAVELED ROAD, 22 FEET NORTH OF THE CENTER LINE OF THE OLD
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DV0778'DIRT ROAD, 1 1/2 FEET EAST OF A FENCE, 2.0 FEET WEST OF A WOODEN
DV0778'WITNESS POST, ABOUT LEVEL WITH THE ROADS, AND SET IN THE TOP OF A
DV0778'CONCRETE POST PROJECTING 2 INCHES.
DV0778
  778                          STATION RECOVERY (1981)
  778
DV0778'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1981
DV0778'RECOVERED IN GOOD CONDITION.
Elapsed Time = 00:00:02
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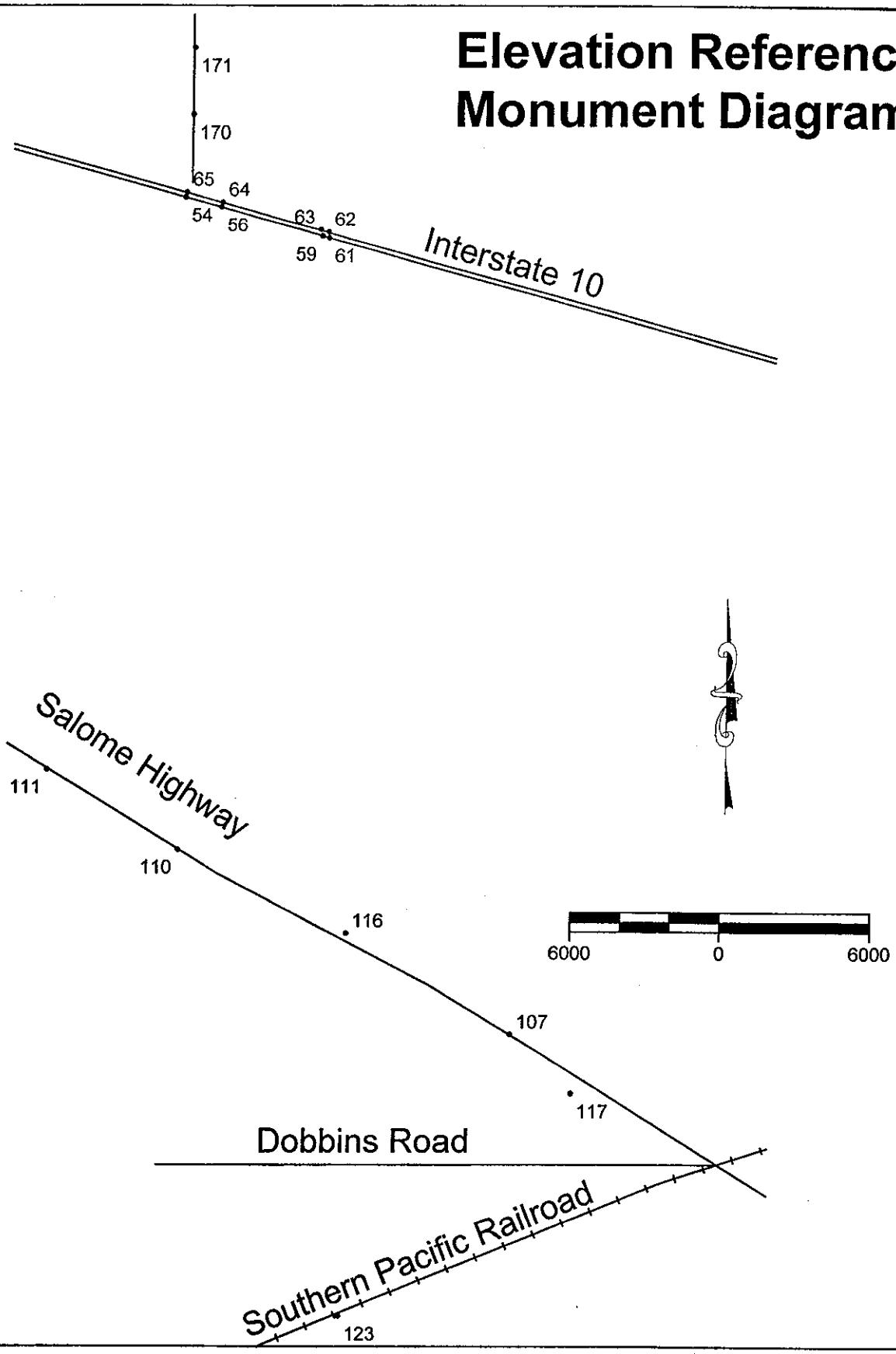
Elevation Reference Monument Diagram



NAD 83 State Plane Coordinates (1992 Adjustment)
NAVD 88 Elevations

PEC Point Number	Horizontal Coordinates	Elevation	Section Data	Description
54	899797.751 425583.013	1094.570		Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-250' west of 355th Avenue alignment; stamped "5345+62.25 ELEV 1092.81 Wash-4"
56	899398.755 427027.016	1092.851		Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-1200' east of 355th Avenue alignment; stamped "5360+50 ELEV 1091.16 Wash-3"
59	898246.280 431120.358	1077.707		Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-5300' east of 355th Avenue alignment; stamped "ELEV 1076.02 Wash-2"
61	898179.493 431385.540	1076.831		Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-5600' east of 355th Avenue alignment; stamped "ELEV 1075.17 Wash-1"
62	898404.465 431371.428	1078.862		Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-5600' east of 355th Avenue alignment
63	898503.025 431054.397	1078.852		Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-5200' east of 355th Avenue alignment
64	899585.184 427078.622	1093.533		Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-1250' east of 355th Avenue alignment
65	899984.424 425634.507	1095.571		Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-200' west of 355th Avenue alignment
107	865961.850 438982.675	910.883		Maricopa County Highway Department Brass Cap flush w/pavement @ intersection of Baseline Road and Salome Highway
110	873428.906 425581.564	959.528		Brass Cap in Handhole @ intersection of 355th Avenue and Salome Highway
111	876696.272 420331.141	981.388		Brass Cap in Handhole in center of Salome Highway, +/ 2.35 miles southeasterly of Wintersburg Road, +/-5.3' northwesterly of center of dirt road

112	883304.804 409811.267	1010.984		Brass Cap flush w/pavement @ intersection of Salome Highway and Wintersburg Road
116	870054.053 432399.289	957.815		United States Geological Survey Brass Cap, +/-200' north of Salome Highway, +/-1.45 miles northwesterly of Baseline Road; stamped "J 13"
117	863593.178 441412.498	919.738		United States Geological Survey Brass Cap, +/-650' south of Salome Highway, +/-3300' southeasterly of Baseline Road; stamped "H 322"
123	854645.734 432265.479	859.678		United States Geological Survey Brass Cap, +/-100' south of Southern Pacific Railroad tracks, +/-3 miles southwesterly of Salome Highway; stamped "M 10"
170	903062.639 425859.192	1116.909	E¼ Corner Section 36 T2N R6W	Maricopa County Department of Transportation Brass Cap in Handhole in center of 355th Avenue, +/-½ mile north of Interstate 10
171	905705.151 425884.353	1125.417	NE Corner Section 36 T2N R6W	Maricopa County Department of Transportation Brass Cap in Handhole in center of 355th Avenue, +/-1 mile north of Interstate 10

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      3, 876317.41800, 420883.25300,    978.49701,Rebar
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     49, 860708.33400, 431926.33000,    891.28003,Rebar
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     51, 900711.68100, 422355.44200,   1099.44897,PK Nail in Pvmt
     52, 899864.03500, 425421.82400,   1095.85999,PK Nail in Pvmt
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     56, 899398.75500, 427027.01600,   1092.85095,BC "Wash-3" Sout
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     57, 899359.35300, 427248.15000,   1096.74194,PK Nail
     58, 898290.58300, 431116.39800,   1083.73401,PK Nail
     59, 898246.28000, 431120.35800,   1077.70703,BC "Wash-2" Sout
h
     60, 898238.92400, 431302.41600,   1083.68396,PK Nail
     61, 898179.49300, 431385.54000,   1076.83105,BC "Wash-1" Sout
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     62, 898404.46500, 431371.42800,   1078.86206,BC "Wash-1" Nort
h
     63, 898503.02500, 431054.39700,   1078.85205,BC "Wash-2" Nort
h
     64, 899585.18400, 427078.62200,   1093.53296,BC "Wash-3" Nort
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     65, 899984.42400, 425634.50700,   1095.57104,BC "Wash-4" Nort
h
    100, 875599.27600, 422042.97700,    959.08099,Rebar
    101, 874560.36800, 423713.72900,    951.69299,Rebar
    102, 870847.23600, 430463.25500,    938.20502,Rebar
    103, 870449.08300, 431148.31300,    936.04303,Rebar
    104, 866081.40900, 438773.67000,    910.83698,Rebar
    105, 865795.50100, 439182.80300,    909.67798,Rebar
    106, 864427.93500, 441381.03800,    922.29303,RR Spike in Pvmt
    107, 865961.85000, 438982.67500,    910.88300,BCF Baseline-Sal
ome
    108, 871327.37000, 429472.59600,    944.93799,RR Spike in Pvmt
    109, 871979.04100, 428195.83600,    954.82599,Nail in Pothole
    110, 873428.90600, 425581.56400,    959.52802,BCHH 355th Ave-S
alome
    111, 876696.27200, 420331.14100,    981.38800,BCHH
    112, 883304.80400, 409811.26700,   1010.98401,
    113, 879563.05200, 465308.50500,    993.13300,
    114, 883425.51900, 465454.60100,   1017.64099,
    115, 862911.33900, 483954.19300,    876.42401,
    116, 870054.05300, 432399.28900,    957.81201,USGS BC "J-13"
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120, 852496.12300, 427147.97400,    867.02399,Rebar
121, 854480.57200, 431570.41100,    862.39203,Rebar
122, 854320.54900, 431166.61100,    862.87097,Rebar
123, 854645.73400, 432265.47900,    859.67798,
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127, 856809.82400, 437457.34400,    871.12903,Rebar
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259,	870716.02445,	430671.94205,	937.04852,P
260,	870668.87600,	430764.38940,	936.47860,P
261,	870621.33501,	430858.24397,	936.36632,P
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269, 870579.44325, 430968.44417,    936.31059,EP
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271, 870787.61994, 430977.15787,    936.04698,NG
272, 870874.80628, 430966.81125,    936.13377,NG
273, 870955.73711, 430967.39428,    936.30383,NG
274, 871039.83430, 430942.06361,    936.71165,NG
275, 871131.16199, 430932.75751,    937.08846,NG
276, 871211.89753, 430952.03435,    937.49971,NG
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281, 870437.37921, 430963.58887,    935.91971,NG
282, 870358.81870, 430903.54753,    933.57401,NG
283, 870229.21529, 430873.29775,    933.24359,NG
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1626, 855016.16143, 432899.36491,    864.15997,NORTH RAIL
1627, 855054.80462, 432993.11804,    864.31903,NORTH RAIL
1628, 855092.49454, 433084.84201,    864.59491,NORTH RAIL
1629, 855130.13964, 433176.34215,    864.93402,NORTH RAIL
1630, 855167.89581, 433268.13789,    865.33539,NORTH RAIL
1631, 855206.37278, 433361.74313,    865.77008,NORTH RAIL
1632, 854491.07769, 431606.50662,    851.86395,CENTER wash 2
1633, 854559.02844, 431572.64602,    853.21027,CENTER WASH2
1634, 854671.87027, 431492.73244,    856.25171,CENTER WASH2
1635, 854751.07219, 431434.77789,    855.82520,CENTER WASH2
1636, 854849.01890, 431394.99682,    856.65497,CENTER WASH2
```

1637,	854943.82985,	431338.79313,	857.04236,CENTER WASH2
1639,	855128.41840,	431233.23177,	857.84723,WASH 2
1640,	855036.78593,	431281.51652,	857.21729,WASH 2
1641,	855227.73497,	431166.90975,	858.05157,WASH 2
1642,	855293.88038,	431033.86713,	858.65796,WASH 2
1643,	854500.29447,	431626.81668,	856.77173,NG
1644,	854493.80370,	431614.10765,	852.08899,NG
1645,	854488.13797,	431599.94676,	852.16278,NG
1646,	854483.73929,	431586.58980,	857.63751,NG
1647,	854482.40432,	431587.38411,	860.36078,PIER TOP
1648,	854487.55956,	431600.09135,	860.29950,PIER TOP
1649,	854493.39157,	431613.95172,	860.24506,PIER TOP
1650,	854498.72107,	431626.76061,	860.14069,PIER TOP
1651,	854474.60103,	431613.64950,	851.89392,WASH 2
1652,	854395.75563,	431643.72370,	853.15656,WASH 2
1653,	854301.57445,	431708.56747,	854.68176,WASH 2
1654,	854235.17862,	431751.40881,	853.86859,WASH 2
1655,	854169.32971,	431837.57195,	853.30487,WASH 2
1656,	854099.69833,	431901.89264,	853.24255,WASH 2
1657,	853959.60268,	431962.38409,	852.78339,WASH 2
1658,	853876.97572,	432022.03250,	852.85864,WASH 2
1659,	853792.73499,	432079.89320,	852.44073,WASH 2
1660,	853700.15032,	432136.49854,	852.05933,WASH 2
1800,	856060.68623,	435439.98208,	876.89807,NORTH RAIL
1801,	856021.76487,	435345.20296,	876.42706,NORTH RAIL
1802,	856021.75818,	435345.19554,	876.42542,NORTH RAIL
1803,	855986.49280,	435259.52459,	875.98273,NORTH RAIL
1804,	855949.63677,	435169.81678,	875.51794,NORTH RAIL
1805,	855914.36962,	435084.00033,	875.03082,NORTH RAIL
1806,	855876.91656,	434992.77179,	874.50055,NORTH RAIL
1807,	855840.85627,	434905.23050,	873.99176,NORTH RAIL
1808,	855804.73278,	434817.59365,	873.64447,NORTH RAIL
1809,	855767.49976,	434727.02873,	873.27740,NORTH RAIL
1810,	855730.76463,	434637.66920,	872.83820,NORTH RAIL
1811,	855694.53572,	434549.54316,	872.37604,NORTH RAIL
1812,	855658.78731,	434462.61849,	871.85083,NORTH RAIL
1813,	855621.14319,	434371.12469,	871.43555,NORTH RAIL
1814,	855576.88162,	434263.25930,	870.80273,NORTH RAIL
1815,	855538.75261,	434170.53995,	870.18420,NORTH RAIL
1816,	855501.24711,	434079.17886,	869.57080,NORTH RAIL
1817,	855462.90574,	433985.99655,	869.06586,NORTH RAIL
1818,	855425.24941,	433894.26187,	868.50995,NORTH RAIL
1819,	855386.43852,	433800.02283,	867.97260,NORTH RAIL
1820,	855351.59735,	433714.93414,	867.48810,NORTH RAIL
1822,	855641.57686,	434451.73868,	858.24438,CL WASH 4
1823,	855552.19836,	434477.63459,	857.52948,CL WASH 4
1824,	855458.34623,	434498.55384,	856.91644,CL WASH 4
1825,	855390.40795,	434526.23353,	856.90045,CL WASH 4

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1826, 855289.95925, 434546.22884,    856.44452,CL WASH 4
1827, 855205.79391, 434571.74971,    856.34875,CL WASH 4
1828, 855121.25317, 434604.29074,    855.78308,CL WASH 4
1829, 855045.00691, 434623.56083,    854.86011,CL WASH 4
1830, 854962.95338, 434644.53590,    855.15405,CL WASH 4
1831, 854879.62397, 434704.86375,    854.50342,CL WASH 4
1832, 855659.35045, 434443.90900,    858.32410,CL WASH 4
1833, 855756.42739, 434443.70266,    857.73352,CL WASH 4
1834, 855872.40425, 434391.12845,    859.54779,CL WASH 4
1835, 855993.06878, 434342.65861,    860.36957,CL WASH 4
1836, 856106.78476, 434343.84714,    861.48187,CL WASH 4
1837, 856192.78151, 434357.91913,    862.31152,CL WASH 4
1838, 856305.21559, 434304.11955,    862.72369,CL WASH 4
1839, 856383.56292, 434265.57847,    863.06146,CL WASH 4
1840, 856480.50995, 434256.09658,    863.45300,CL WASH 4
1841, 856575.87243, 434251.22619,    863.86591,CL WASH 4
1842, 855670.76450, 434476.24376,    869.02838,NG
1843, 855665.78216, 434462.53587,    860.72998,NG
1844, 855661.79405, 434449.72925,    858.19159,NG
1845, 855656.05748, 434435.76033,    858.31244,NG
1846, 855648.09458, 434421.63589,    865.45673,NG
1847, 855642.90831, 434409.26941,    867.80487,NG/PIER TOP
1848, 855647.78602, 434421.50824,    867.83441,PIER TOP
1849, 855653.41169, 434435.86531,    867.75427,PIER TOP
1850, 855659.07016, 434449.60499,    867.85321,PIER TOP
1851, 855664.81476, 434463.42412,    868.04016,PIER TOP
5046, 860689.78901, 438640.22057,    886.68000,REBAR
5047, 860696.69700, 438185.12500,    885.51000,REBAR
5048, 860711.17700, 431149.27400,    889.18000,REBAR
5049, 860708.33408, 431926.30780,    891.45000,REBAR
5050, 900658.43300, 422550.65500,   1099.11000,PKN
5051, 900711.68102, 422355.44192,   1099.38000,PKN
5100, 875599.34000, 422043.03200,    959.04000,CP-100 REBAR
5101, 874560.42183, 423713.78927,    951.62000,CP-101 REBAR
5102, 870847.28300, 430463.28800,    938.21000,CP-102 REBAR
5103, 870449.11582, 431148.38285,    936.14000,CP-3 REBAR
5104, 866081.45300, 438773.69300,    910.85000,CP-104 WASH
5105, 865795.52299, 439182.84302,    909.60000,CP-105 REBAR
5119, 852414.75300, 427343.84900,    860.09003,REBAR
5120, 852496.22200, 427147.96000,    867.03003,REBAR
```

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$

$\text{Sin. } \frac{1}{2}D = \frac{50}{R}$

$\text{Sin. } \frac{1}{2}D = \frac{50 \tan \frac{1}{2}I}{T}$

$R = T \cot. \frac{1}{2}I$

$R = \frac{50}{\text{Sin. } \frac{1}{2}D}$

$E = R \text{ ex. sec } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{I}{D}$

Tan. def. = ½ chord def.

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

Right Angle Triangles. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Leveling. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574\ d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3}d^2$. The combined correction is negative.

Probable Error. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean = $\pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$

MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

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1078 41

T @ # 100 . 4.95
Bs # 101 @ 5.20

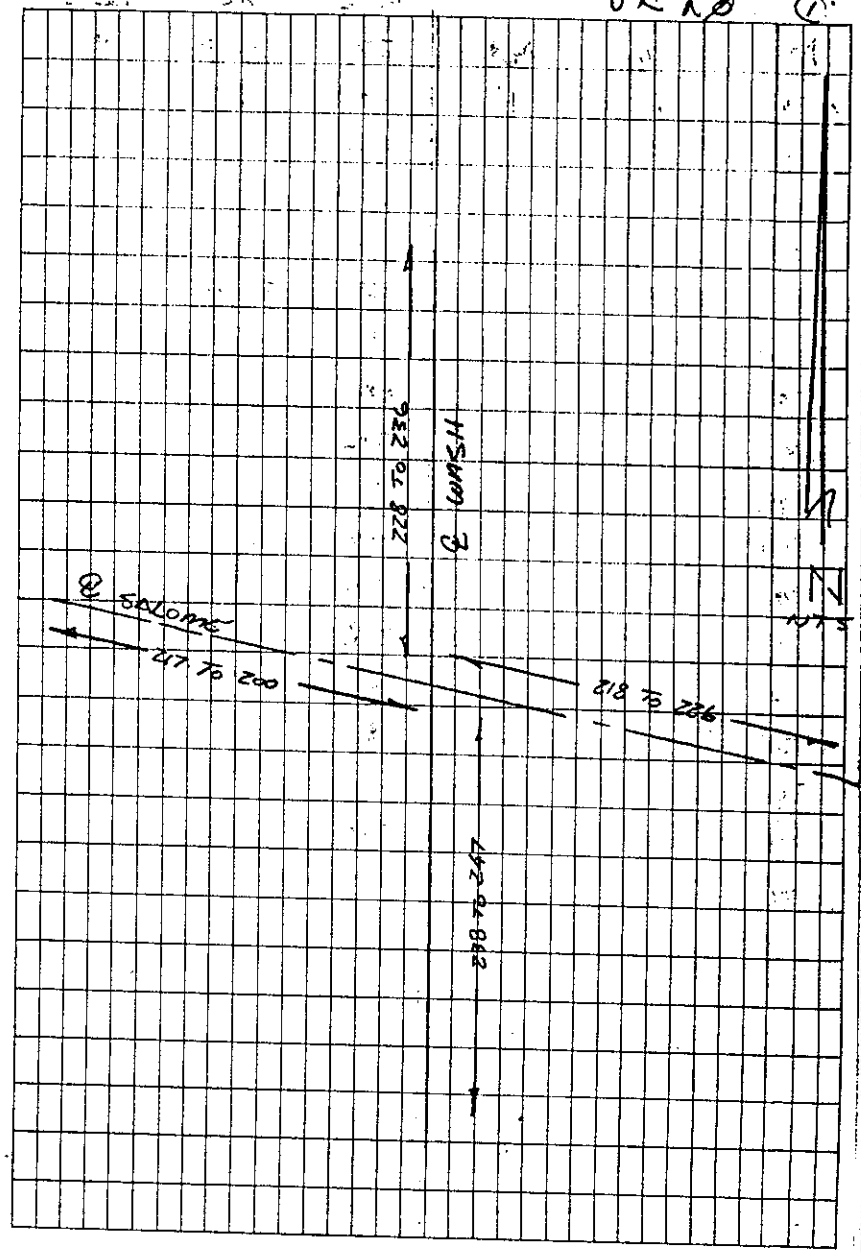
WASH - 1

Pt #	HR	DESC
200	4.80	P
201		
202		
203		
204		
205		
206		
207		
208		
209		
210		
211		
212		
213		
214		
215		
216		
217		
218		
219		
220		
221		
222		
223	4.80	P

PT #	HR	DESC
224	4.80	P
225	4.80	
226	4.80	P
227	17.95	NG
228	17.95	NG
229	25.45	
230		
231		
232		
233		
234		
235		
236	25.45	
237	5.96	
238	5.96	
239	25.45	
240		
241		
242		
243		
244		
245		
246		
247	25.45	NG

5-22-00

GB ∅
DWT
JR TØ



TØ # 103 5.55
BS # 102 4.98

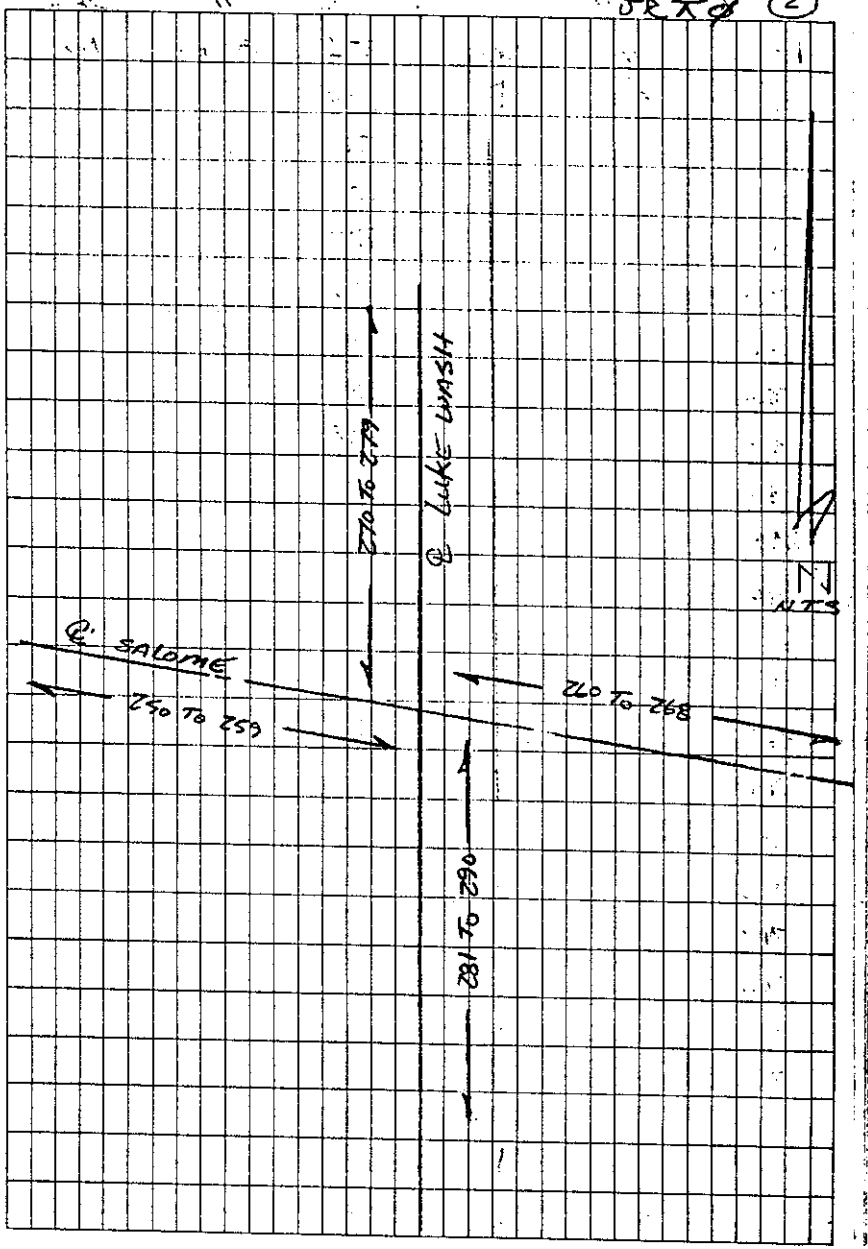
LUKE WASH

PT #	HR	DESC
250	5.96	P
251		
252		
253		
254		
255		
256		
257		
258		
259		
260		
261		
262		
263		
264		
265		
266		
267		
268		P
269	5.96	NG
270	25.45	
271		
272		
273	25.45	NG

PT #	HR	DESC
274	25.45	NG
275		
276		
277		
278		
279	25.45	
280	5.96	
281	25.45	
282		
283		
284		
285		
286		
287		
288		
289		
290	25.45	NG

5-22-00

GB ØØ
DWT Ø
DRT Ø
2



TO # 104 5.06
BS @ # 105 5.35

WASH # 3

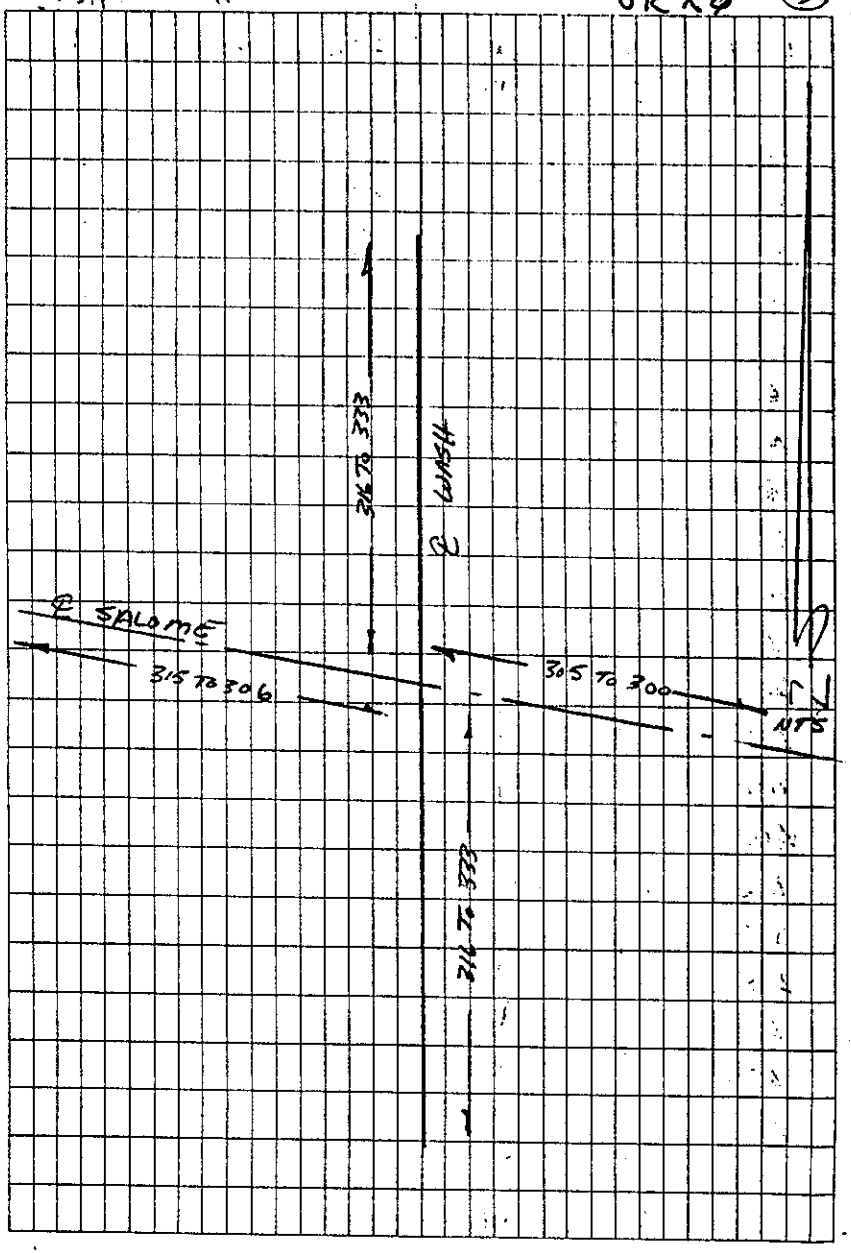
PT #	HR	DESC
300	5.96	P
301		
302		
303		
304		
305		
306		
307		
308		
309		
310		
311		
312		
313		
314		
315	5.96	P
316	25.45	NG
317		
318		
319		
320		
321		
322		
323	25.45	NG

PT #	HR	DESC
324	25.45	NG
325	25.45	
326	5.96	
327		
328		
329		
330		
331		
332		
333	5.96	NG

5-22-00

GOOD
DWT Ø
JRT Ø

3



T @ # 50 HI = 5.22 WASH-5A Z-17

BS # 51 HR = 4.80

PT #	HR	DESC
400	4.80	P
401		
402		
403		
404		
405		
406		
407		
408		
409		
410		
411		
412		
413		
414		
415		
416		
417		
418		
419		
420		P
421		P1
422		P1
423	4.80	P1

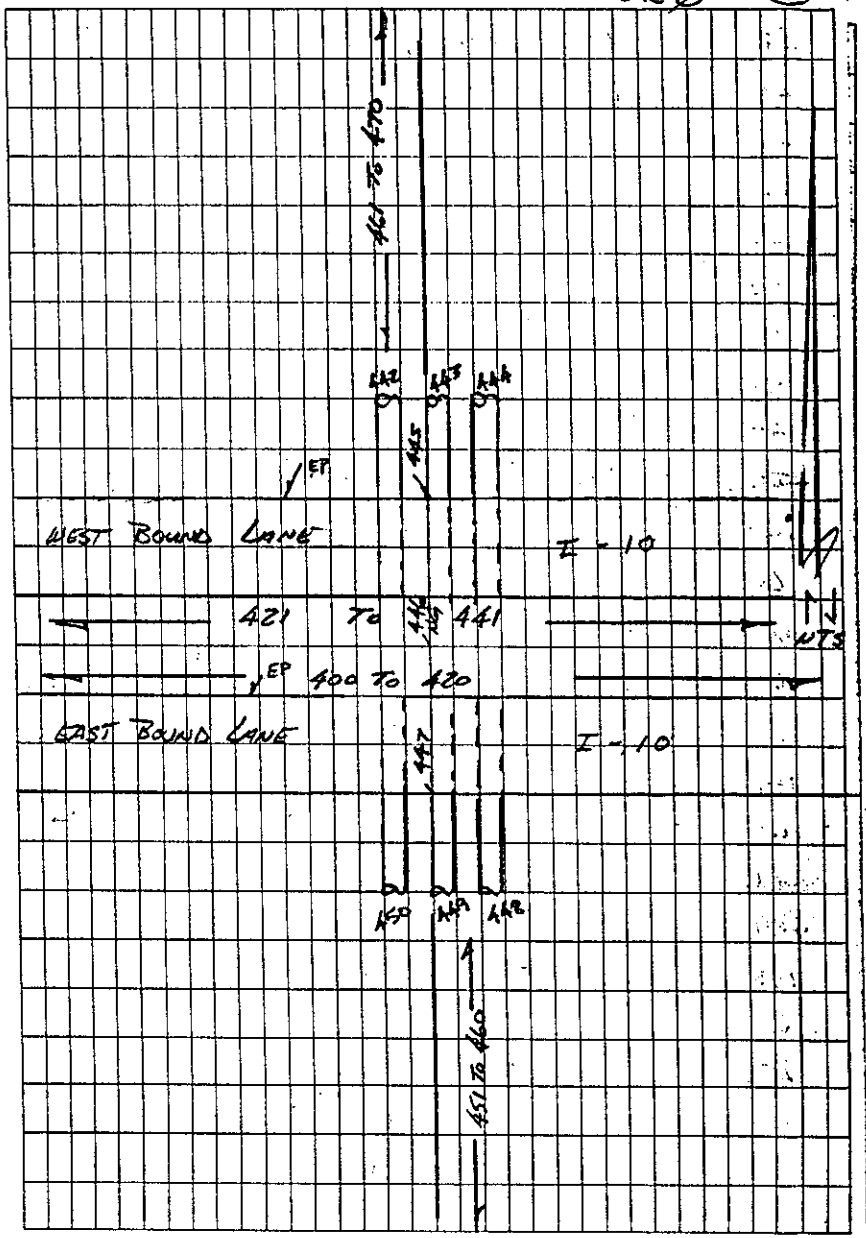
PT #	HR	DESC
424	4.80	P1
425		
426		
427		
428		
429		
430		
431		
432		
433		
434		
435		
436		
437		
438		
439		
440		
441	4.80	P1
442	8.42	INV 36" CMP
443		" "
444		" "
445		EP
446		NG
447		EP
448	8.42	INV-36" Cmp

Con't NEXT PG

5-24-00

SB 170
DWK
JR Ø

(4)



WASH - SA

PT #	HR	DESC
449	8.42	INV 36" CMP
450		" " "
451		NG
452		
453		
454		
455		
456		
457		
458		
459		
460		NG
461		
462	8.42	
463	25.40	NG
464	25.40	NG
465	25.40	NG
466	13.37	
467	13.37	
468	13.37	
469	25.40	
470	25.40	NG

FINISHED

5-24-00

GB Ø
DW X
JR Ø
5

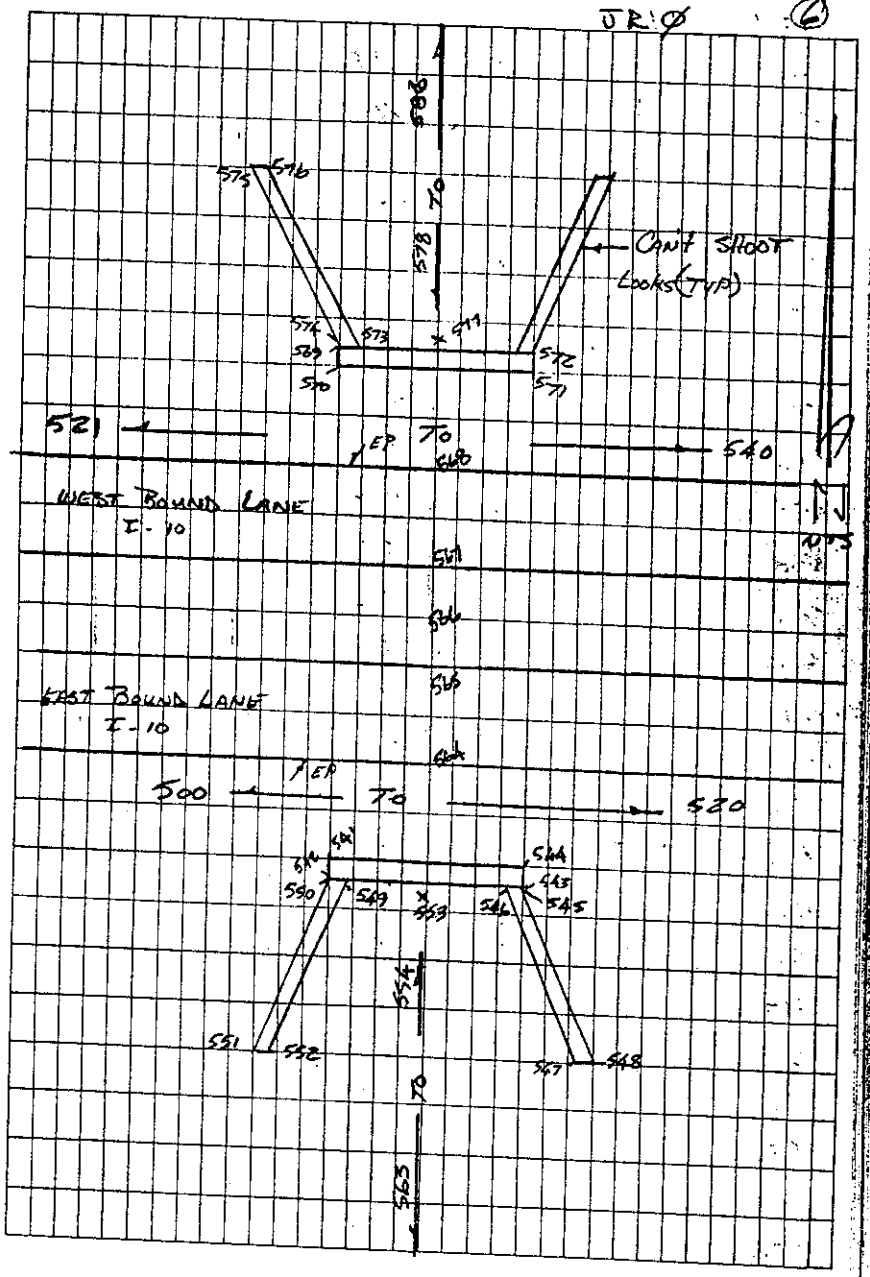
TO # 53 5.06
BS # 52 4.85

WASH-4A

PT#	HR	DESC	PT#	HR	DESC
500	4.85	EP	524	4.85	EP
501			525		
502			526		
503			527		
504			528		
505			529		
506			530		
507			531		
508			532		
509			533		
510			534		
511			535		
512			536		
513			537		
514			538		
515			539		
516			540	4.85	EP
517			541	5.94	HW
518			542		HW
519			543		HW
520			544		HW
521			545		WW
522			546		WW
523	4.85	EP	547	5.94	WW

6-4-00

GB
DWK
JR: Ø



WASH - 4 A

PT #	HR	DESC	PT #	HR	DESC
548	5.94	WW	573	5.94	WW
549		WW1	574		WW
550		WW1	575		WW
551		WW1	576	5.94	WW
552	5.94	WW1	577	14.03	ELEV
553	14.03	ELEV	578	25.49	NG
554	25.49	NG	579		
555		NG	580		
556		NG	581		
557		NG	582		
558		NG	583		
559		NG	584		
560		NG	585		
561		NG	586	25.49	NG
562		NG	587		
563	25.49	NG	588	FINISHED	
BS # 53 5.07 BS # 52 2.85			589		
564	5.94	EP	590		
565		EP	591		
566		NG	592		
567		EP	593		
568		EP	594		
569		HW	595		
570		HW	596		
571		HW	597		
572	5.94	HW			

6-1-00

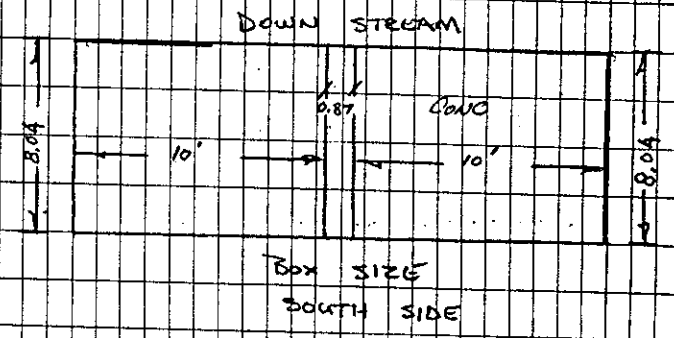
BOX CULVERT DETAIL

GB
DW
JR

7

NOTE: UP STREAM SAME SIZE AS DOWN STREAM

WASH - 4 A



BOX SIZE
SOUTH SIDE

LUKE WASH

SESSION "A"

UNIT 2 @ #2 HI = 1.845 START 8:04 OFF 12:06

UNIT 3 @ #3 HI = 1.858 START 8:23 OFF 12:05

PT #	INSTR	HR	TIME ON	TIME OFF	EPOCHS
100	ROVER	2.037	8:34	8:44	120
101			8:50	8:52	24
102			8:58	9:00	
103			9:02	9:04	
104			9:08	9:10	
105			9:12	9:14	
106			9:20	9:22	
107			9:25	9:27	
108			9:36	9:38	
109			9:43	9:45	
110			9:48	9:50	
111			9:55	9:57	
112			10:07	10:09	24
113			10:34	10:44	120
114			10:51	11:01	120
115			11:16	11:26	120
116			11:45	11:47	24
117	ROVER	2.037	11:54	12:04	120

5.64 4-19-00

GB
EP Ø
DW Ø
TR Ø

(10)

SET REBAR S. SIDE OF SALOME RD EAST OF WASH #3
" " " " " " " WEST OF WASH #1

SET REBAR S. SIDE SALOME RD FOR TOPO
" " " " " " "

SET REBAR N. SIDE OF SALOME RD FOR TOPO

SET REBAR S. SIDE OF SALOME RD FOR TOPO
" " " " " " "
" " " " " " "

FND RR SPIKE @ 331ST AVE & SALOME RD FLUSH

FND BC FLUSH M.C.H.D. @ BASELINE RD & SALOME

FND RR SPIKE DWN .110 @ SALOME

FND NAIL DWN .030 @ 351ST AVE & SALOME

FND BC HH @ 355TH AVE & SALOME DWN .230

FND BC HH @ SALOME 5.3' N. OF ℄ @ DIET RD

FND BC FLUSH @ SALOME & WINTERSBURG ℄

FND BC FLUSH STAMPED BXK "C" 1994 S. END OF RUNWAY 35 BUCK AIRPORT

" " " " BXK "A" 1994 N. END RUNWAY 35

FND BC UP .110 ARCHES 1974

FND BC D-13 UP .120 USGS

FND BC FLUSH H-322 USGS

GPS I-10

UNIT #3 @ # 114 HI = 1.775 START 6:14 OFF 11:43
UNIT #2 @ # 116 HI = 1.617 START 6:56 OFF 11:27

PT #	INSTR	HR	TIME ON	TIME OFF	EPOCHS
115	ROVER	2.504	7:36	7:46	120
51			8:13	8:15	24
50			8:17	8:19	
52			8:25	8:27	
53			8:28	8:30	
54			8:33	8:35	
55			8:39	8:41	
56			8:42	8:44	
57			8:46	8:48	
58			8:53	8:55	
59			8:56	8:58	
60			9:00	9:02	
61			9:05	9:07	24
113			9:29	9:49	240
62			10:13	10:15	24
63			10:18	10:20	
64			10:26	10:28	
64 CHANGE TO 65	***		10:33	10:35	
100			10:58	11:00	
117	ROVER	2.504	11:09	11:19	24
		FINISHED			

10:33

5-25-00

GB
PG Ø (11)

SEE PG 10 FOR DESC
SEE PG 10 FOR DESC

SEE PG 10 FOR DESC
SET PKN @ S SIDE I-10 @ EP WASH-5
SET PKN @ S. SIDE I-10 @ EP WASH-5
" " " " " " WASH-4
" " " " " " WASH-4
FND BC 5345+62.25 EL= 1092.81 STAMPED WASH-4
SET PKN @ S. SIDE I-10 @ EP WASH-3
FND BC 5360+50 EL=1091.16 STAMPED WASH-3
SET PKN @ S. SIDE I-10 @ EP WASH-3
" " " " " " WASH-2 & 1
FND BC STAMPED EL=1076.02 WASH-2
SET PKN S. SIDE I-10 @ EP WASH 1 & 2
FND BC EL=1075.17 STAMPED WASH-1
SEE PG 10 FOR DESC
FND BC NO STAMP WASH-1 NORTH
" " " " WASH-2 " "
" " " " WASH-3 " "
FND BC 5345+63.25 EL=1093.78 STAMPED WASH-4 NORTH
SEE PG 10 FOR DESC
" " " " " "

T @ # 55 5.03
BS # 57

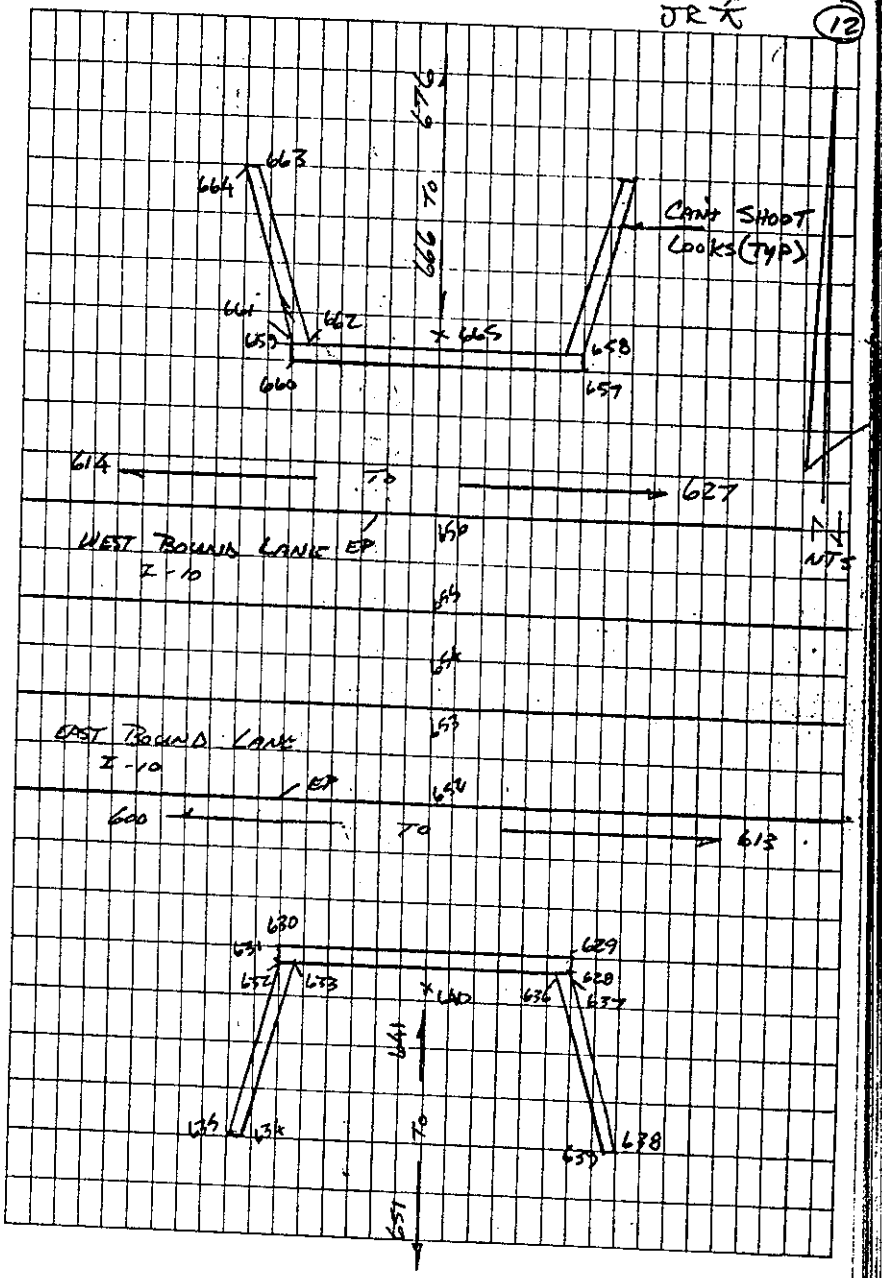
WASA - 3A

PT #	HR	DESC	PT #	HR	DESC
600	4.85	EP	624	4.85	EP
601			625		
602			626		
603			627	4.85	EP
604			T @ # 55	4.84	——
605			BS # 57	4.85	——
606			628	5.94	HW
607			629		HW
608			630		HW
609			631		HW
610			632		WW
611			633		WW
612			634		WW
613			635		WW
614			636		WW
615			637		WW
616			638		WW
617			639	5.94	WW
618			640	14.03	ELEV
619			641		NG
620			642		NG
621			643		NG
622			644		NG
623	4.85	EP	645	14.03	NG

6-1-00

GB-29
DW Ø
JR T

(12)



WASH-3A

PT #	HR	DESC	PT #	HR	DESC
646	14.03	NG	671	25.49	NG
647	14.03	NG	672		NG
648	25.49	NG	673		NG
649		NG	674		NG
650		NG	675		NG
651	25.49	NG	676	25.49	NG
652	5.94	EP	677		
653		EP	678		
654		NG	679		
655		EP	680		
656		EP	681		
657		HW	682		
658		HW	683		
659		HW	684		
660		HW	685		
661		WW	686		
662		WW	687		
663		WW	688		
664	5.94	WW	689		
665	14.03	ELEV	690		
666	14.03	NG	691		
667	25.49	NG	692		
668		NG	693		
669		NG	694		
670	25.49	NG	695		

6-1-00

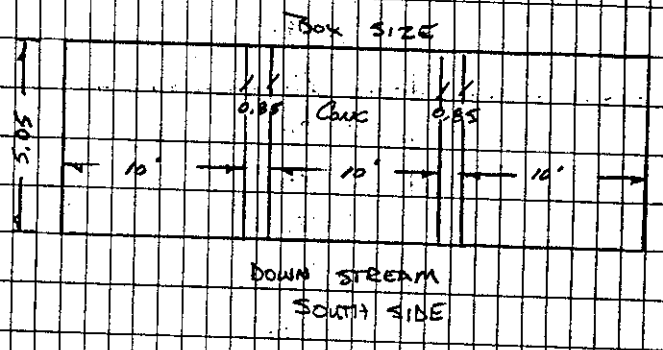
GB
DW Ø
JRT

(13)

NOTE: UP STREAM IS SAME SIZE AS DOWN STREAM

WASH-3A

BOX DETAIL



Te # 60 4.86
BS # 58 4.86

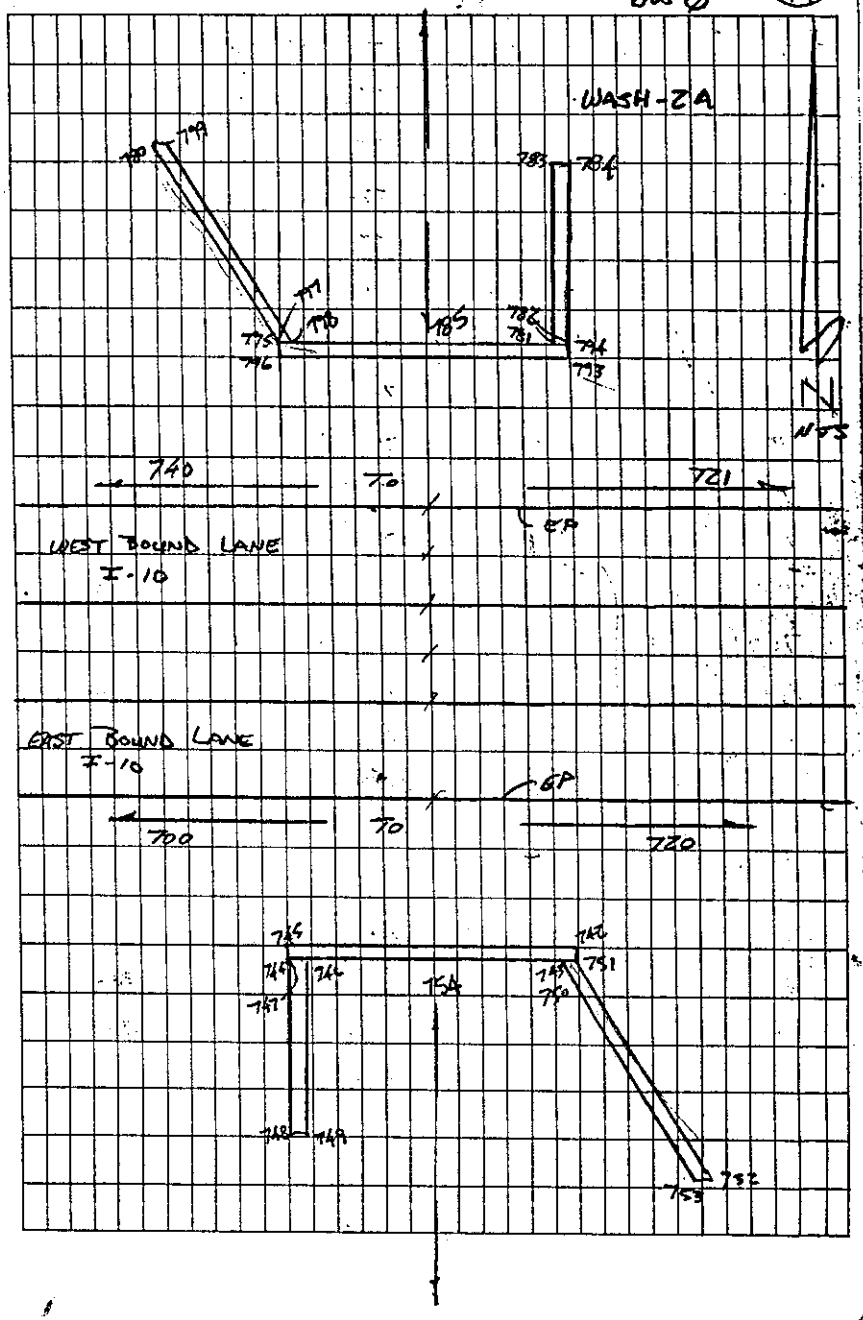
WASH - 2 A

PT #	HR	DESC	PT	HR	DESC
700	4.86	EP	724	4.86	EP
701			725		
702			726		
703			727		
704			728		
705			729		
706			730		
707			731		
708			732		
709			733		
710			734		
711			735		
712			736		
713			737		
714			738		
715			739		
716			740	4.86	EP
717			Te #60 BS # 58	5.58 4.87	
718			742	8.47	HW
719			743		HW
720			744		HW
721			745		HW
722			746		RWALL
723	4.86	EP	747	8.47	RWALL

6-2-00

GB
DR T
DW Ø

(14)



WASH-2A

PT #	HR	DESC	PT #	HR	DESC
748	8.47	RWALL	773	25.42	Wash #1
749		RWALL	774	17.33	INV
750		RWALL	775	17.33	INV: Cmp
751		RWALL	776	13.40	HDW
752		RWALL	777		HDW
753	8.47	RWALL	778		HDW
754	13.40	INV	779		HDW
755	13.40	Wash #2	780		RWALL
756	13.40		781		RWALL
757			782		RWALL
758			783		RWALL
759			784		RWALL
760			785		RWALL
761			786	13.40	RWALL
762	13.40	Wash #2	787	13.40	E.P.
763	25.42	Wash #1 inlet	788	5.87	EP
764	25.42		789	5.87	NG
765	25.42		790	5.87	EP
766			791	5.87	EP
767			792	5.87	N.G
768			793		H/W
769			794		
770			795		
771			796		H/W
772	25.42	Wash #1	797	5.87	R/wall
			798		
			799		

6-2-00

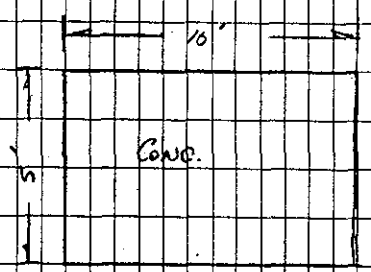
GB
DR
DW Ø

(15)

NOTE: UP STREAM IS SAME AS DOWN STREAM (NORTH)

WASH-2A
BOX DETAIL

NOTE: BOX RUNS DIAGONAL



DOWN STREAM
SOUTH

WASH-1A

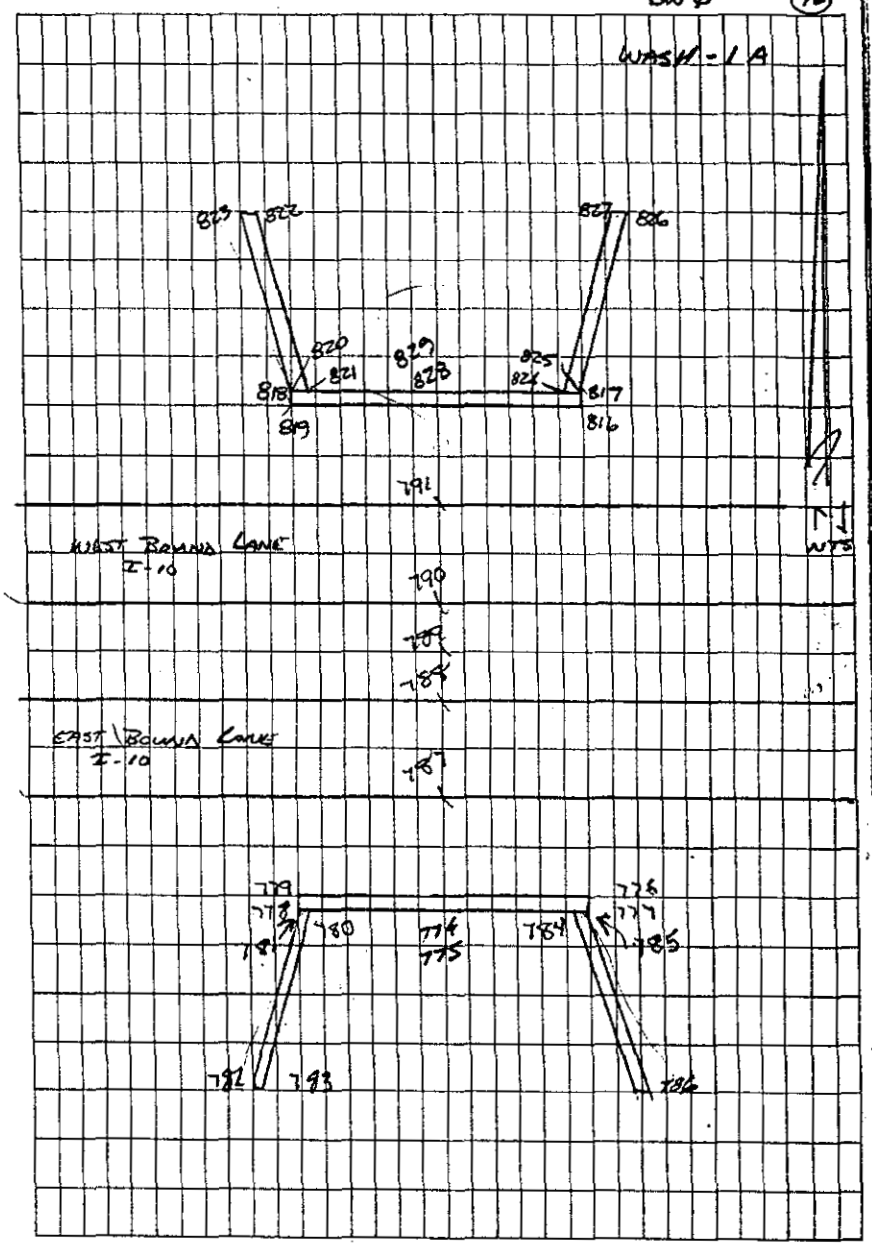
PT #	HR	DESC	PT #	HR	DESC
800	5.87	R/Wall	824	13.40	RWALL
801			825		RWALL
802			826		RWALL
803			827		RWALL
804	5.87	R/Wall	828		INV CMP
805	13.40	INV	829	13.40	INV
806	13.40	Wash #2	830	25.42	Wash #1
807			831		
808			832		
809			833		
810	13.40		834		
811	25.42		835		
812			836		
813			837		
814			838		
815	25.42	END Wash #2	839		
816	5.87	HDW	840	25.42	Wash #1 end
817		HDW	841		
818		HDW	842		
819	5.87	HDW	843		
820	13.40	RWALL	844		
821		RWALL	845		
822		RWALL	846		
823	13.40	RWALL	847		

6-2-00

GB
DR
DW Ø

(16)

WASH-1A

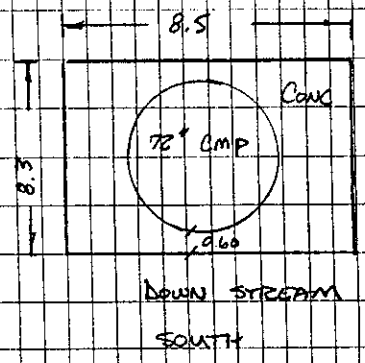


6-2-00

GB
DR K
DWG (17)

NOTE: UP STREAM IS SAME AS DOWN STREAM (NORTH)

WASH-1A
BOX DETAIL



SESSION "C"

UNIT #3	@ #116	HI =	1.780	START = 7:01	OFF = 11:00
UNIT #2	@ #118	HI =	1.915	START = 7:40	OFF = 11:23

PT #	INSTR	HR	TIME ON	TIME OFF	EPOCHS
#117	ROVER	2.037	8:06	8:16	120
#119			8:35	8:36	12
#120			8:41	8:42	12
#121			8:54	8:55	12
#122			8:59	9:00	12
#123			9:09	9:10	12
#124			9:14	9:15	12
#125			9:23	9:24	12
#126			9:32	9:33	12
#127			9:36	9:37	12
#2			10:05	10:10	60
#102	DELET		10:18	10:23	60
#102			10:24	10:29	60
#3	ROVER	2.037	10:41	10:51	120

6-7-00

GB
JD

(18)

J-13 USGS UP .170
SET REBAR S. OF RR TRACKS "NEW BASE POINT"

SEE PG 10 FOR DESC
SET REBAR WASH #1 S. OF RR TRACKS
" " " " N. OF RR TRACKS
" " WASH #2 " " " "
" " " " " " " "
FND USGS STAMPED M-10 1927 UP .650 WASH-3
SET REBAR S. SIDE OF RR TRACKS WASH-3
SET " " " " " " " WASH-4 USE #118 FOR BS.
" " " " " " " " WASH-5
" " " " " " " " " "
SEE PG 10 FOR DESC
" " " " "
" " " " "
" " " " "

T @ # 120
BS # 119

PT #	HR	DESC	PT #	HR	DESC
500	4.87	North Rail	524	17.32	Wash #1
501	"	"	525	"	"
502			526		
503			527		
504			528		
505			529		
506			530		
507			531	17.32	Wash #1 (N)
508			532		
509			533		
510			534		
511			535		
512			536		
513			537		
514			538		
515			539		
516			540	17.32	Wash #1
517			541	17.32	Wash #1
518			542	5.86	NG
519			543	"	"
520	4.87	North Rail	544		
521	17.32	Wash #1 (S)	545		
522	" "	" "	546	586	NG
523	17.32	Wash #1	547	5.86	Pier Top

6-9-00

GB 7 Ø
JDT

(A)

119
852414.753
427343.849
860.09

120
852496.722
427147.96
867.03

FILE NAME
WASH-13

541

N
WTS

520

500

TO

℄ RR TRACKS

521

℄ WASH

TO 120
B.S. #119

PT. #	H.R.	DESC.	PT. #	H.R.	DESC
548	5.86	Pier Top			
549	5.86	" "			
550	5.86	" "			
551	5.86	PIER TOP			

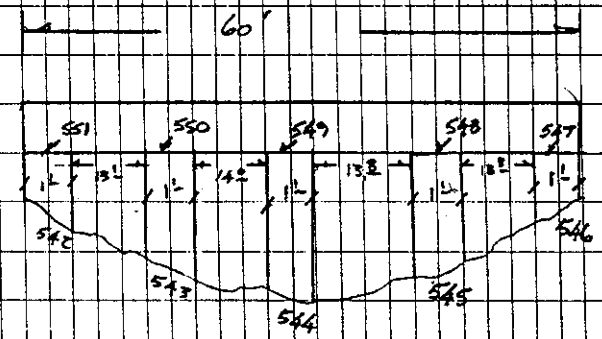
6-14-00

GB
UD Ø

20

WASH-IB

UP STREAM



NOTE: PIERS ARE WOOD

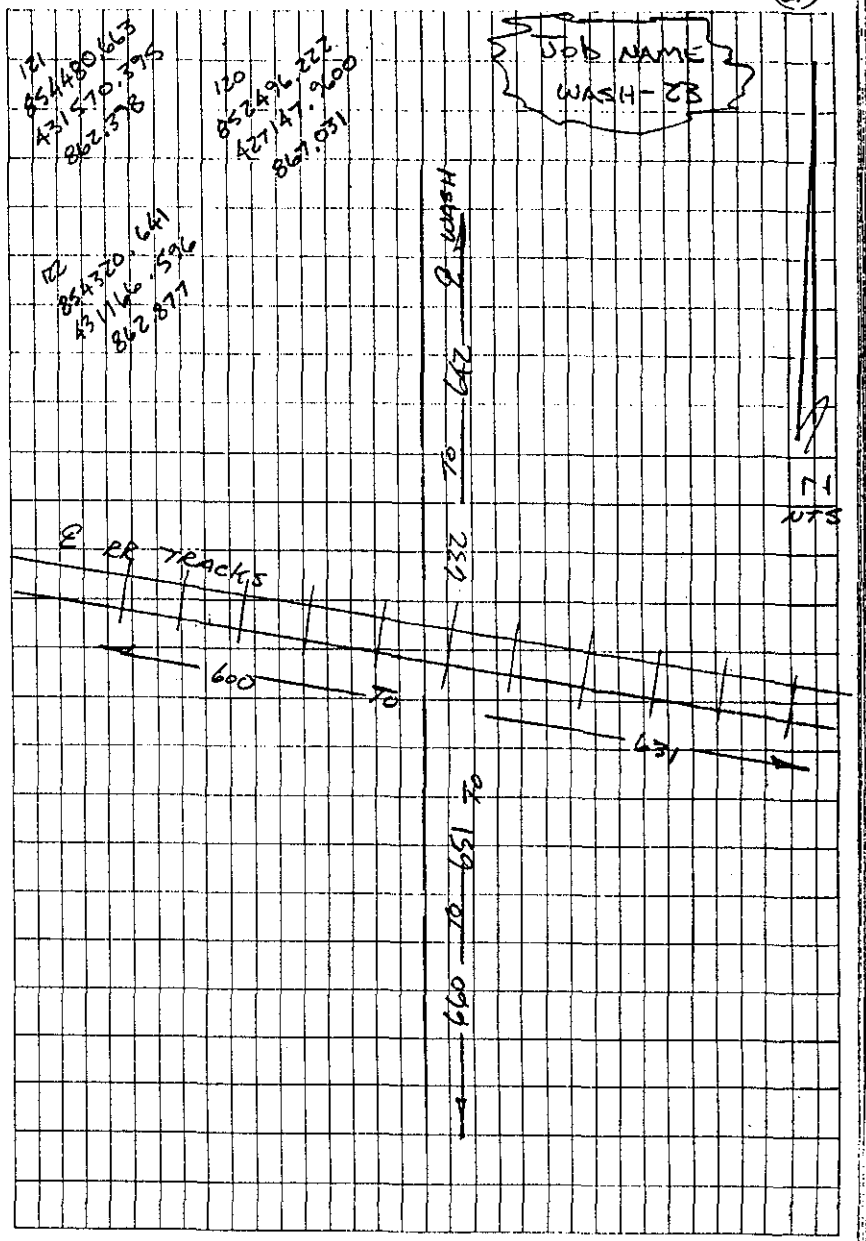
T @ # 121 5.27
BS # 122 4.87

PT #	HR	DESC	PT #	HR	DESC
1600	4.87	North Rail	624	4.87	N. RAIL
1601			625		
1602			626		
1603			627		
1604			628		
1605			629		
1606			630		
1607			631	4.87	North Rail
1608			632	17.32	℄ Wash #2 (N)
1609			633	17.32	
1610			634	17.32	
1611			635	25.42	
1612			636	25.42	
1613			637	25.42	℄ WASH-2
1614			638	T @ # 121 5.25 BS # 122 5.88	
1615			639	25.42	℄ Wash #2
1616			640		
1617			641		
1618			642	25.42	℄ WASH 2
1619			643	5.88	N.G.
1620			644	5.88	N.G.
1621			645	5.88	N.G.
1622			646	5.88	N.G.
1623	4.87	N. RAIL	647	5.88	Pier Top

6-12-00

GB
DM T

(21)



PT #	HR	DESC	PT #	HR	DESC
648	5.88	Pier Top			
649	5.88	Pier Top			
650	5.88	Pier Top			
651	25.42	℄ Wash #2(S)			
652	↓	↓			
653					
654					
655					
656					
657					
658					
659					
660	25.42	℄ Wash #2			

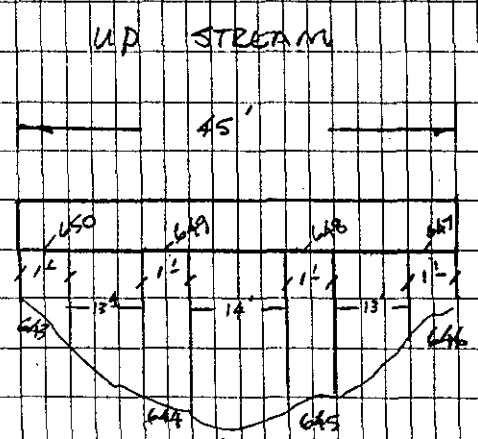
6-14-00

GB
DD Ø

22

WASH-2B

add 1 to left of all Point #

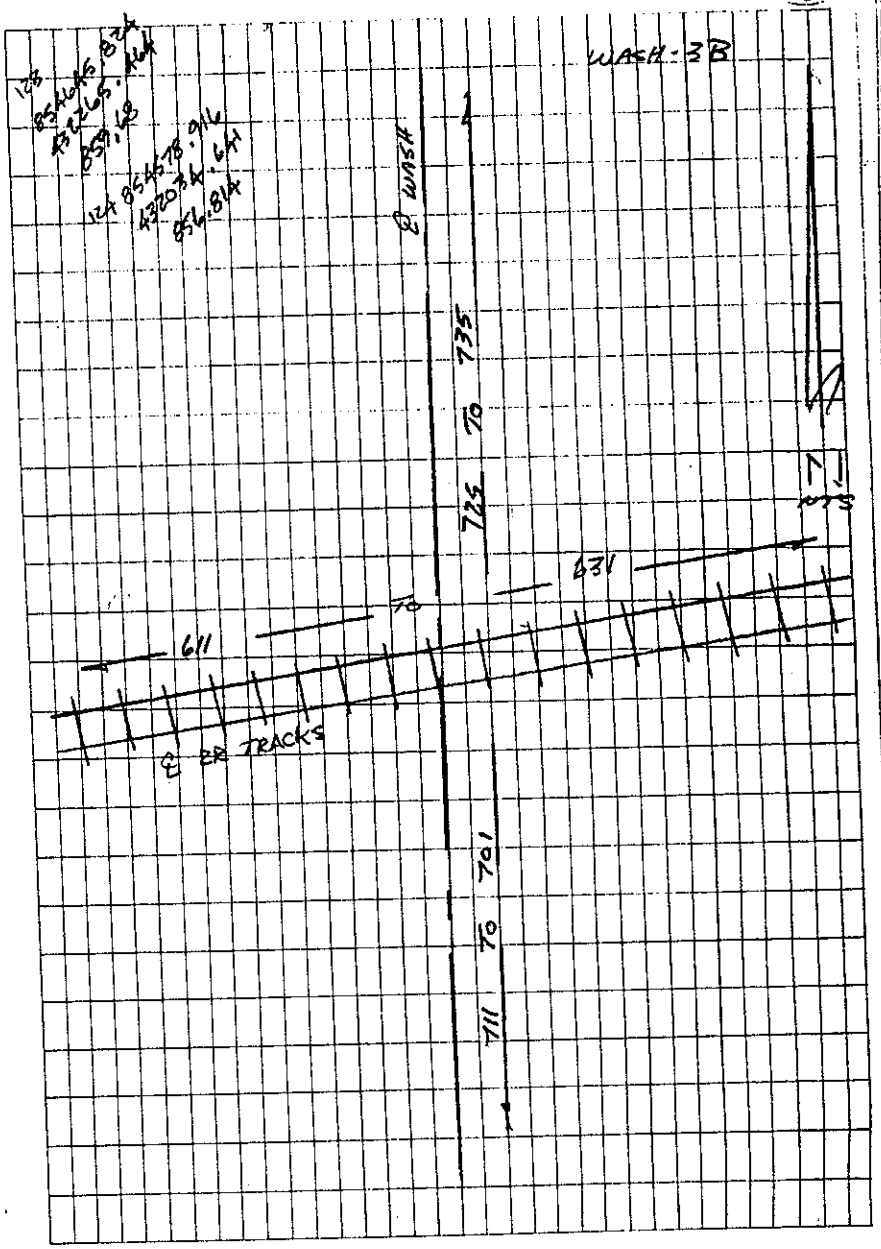


Te # 123 3.06 + 12.02 859.98

Bs # 124 4.87

PT #	HR	DESC	PT #	HR	DESC
700	4.87	CP (SET NAIL)	724	13.40	Pier Top
701	25.42	℄ Wash #3(S)	725	13.40	℄ Wash #3(N)
702			726	13.40	
703			727	25.42	℄ Wash #3(N)
704			728		
705			729		
706			730		
707			731		
708			732		
709			733		
710			734	25.42	℄ WASH #3
711	25.42	℄ Wash #2	735		
Te # 700 5.44 Bs # 124 4.87			736		
713	13.40	N. G	737		
714		N. G	738		
715		N. G	739		
716		N. G	740		
717		N. G			
718		N. G			
719		Pier Top			
720					
721					
722					
723	13.40	PIER TOP			

GB. ℄ ~~BB~~
DB T 23



PT #	HR	DESC	PT #	HR	DESC

6-14-00

GB 77
DD Ø

(24)

WASH - 3B

N/3

UP STREAM

75'

124	123	122	121	120	119
1.2	1.2	1.2	1.2	1.2	1.2

13.2 13.5 14 13.9 13.9

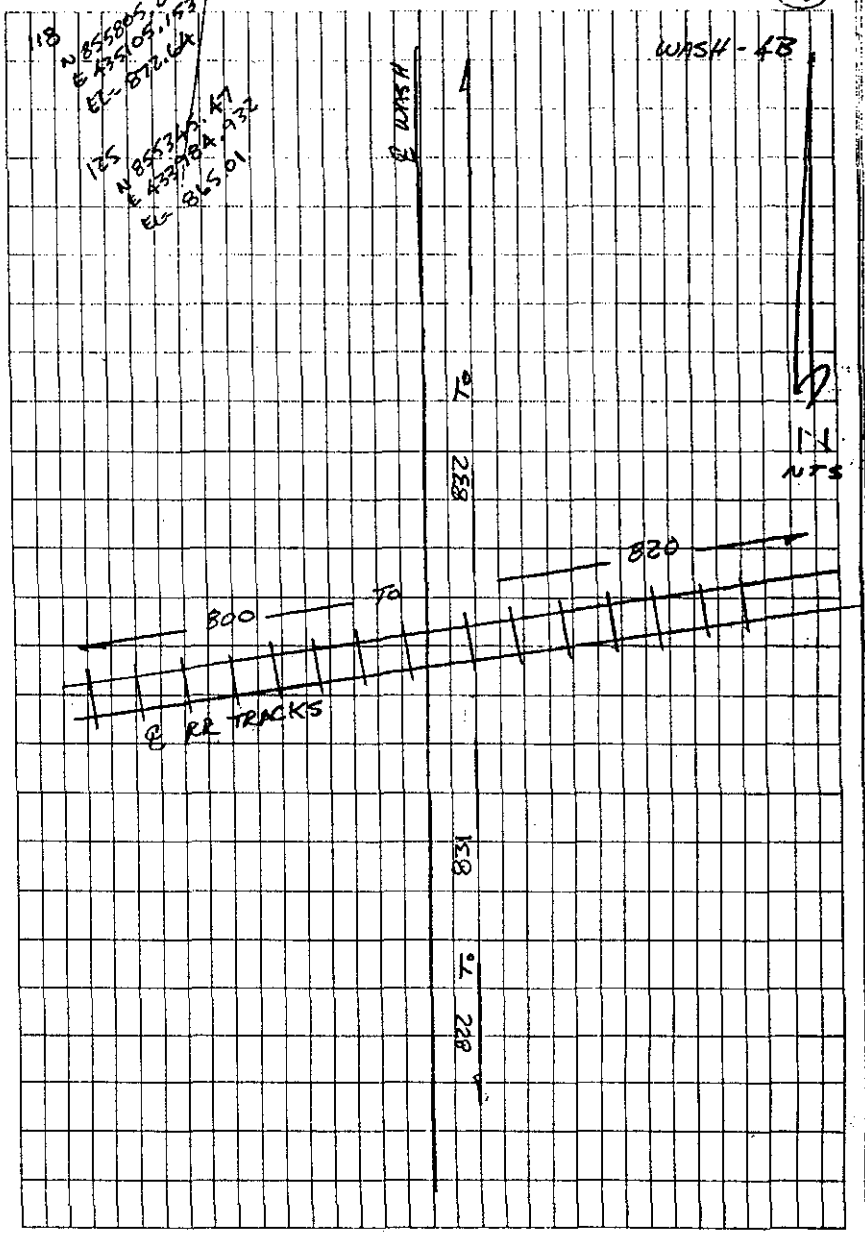
713 714 715 716 717 718

T @ # 118 5.58 Natural BS - 67° 17' 18"
BS # 125 4.87

PT #	HR	DESC	PT #	HR	DESC
800	4.87	North Rail	824	13.40	℄ Wash #4(S)
801			825		
802			826		
803			827		
804			828		
805			829		
806			830		
807			831	13.40	℄ Wash #4(S)
808			832	25.42	℄ wash #4(N)
809			833		
810			834		
811			835		
812			836	25.42	
813			837	13.40	
814			838		
815			839		
816			840		
817			841	13.40	℄ Wash #4(N)
818			842	13.40	N. G.
819			843	13.40	
820	4.87	N. RAIL	844	25.42	
T @ # 118 5.53 BS # 125 4.87			845	25.42	
822	13.40	℄ Wash #4(S)	846	13.40	
823			847	13.40	NG / Pier Top

GB 77 Ø
VD T

(25)



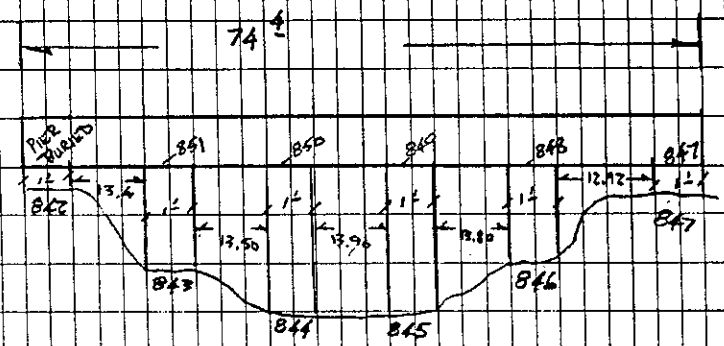
PT #	HR	DESC	PT #	HR	DESC
848	13.40	Pier Top			
849	↓	↓			
850	↓	↓			
851	13.40	PIER TOP			
852					
853					

6-14-00

GB
JD Ø

26

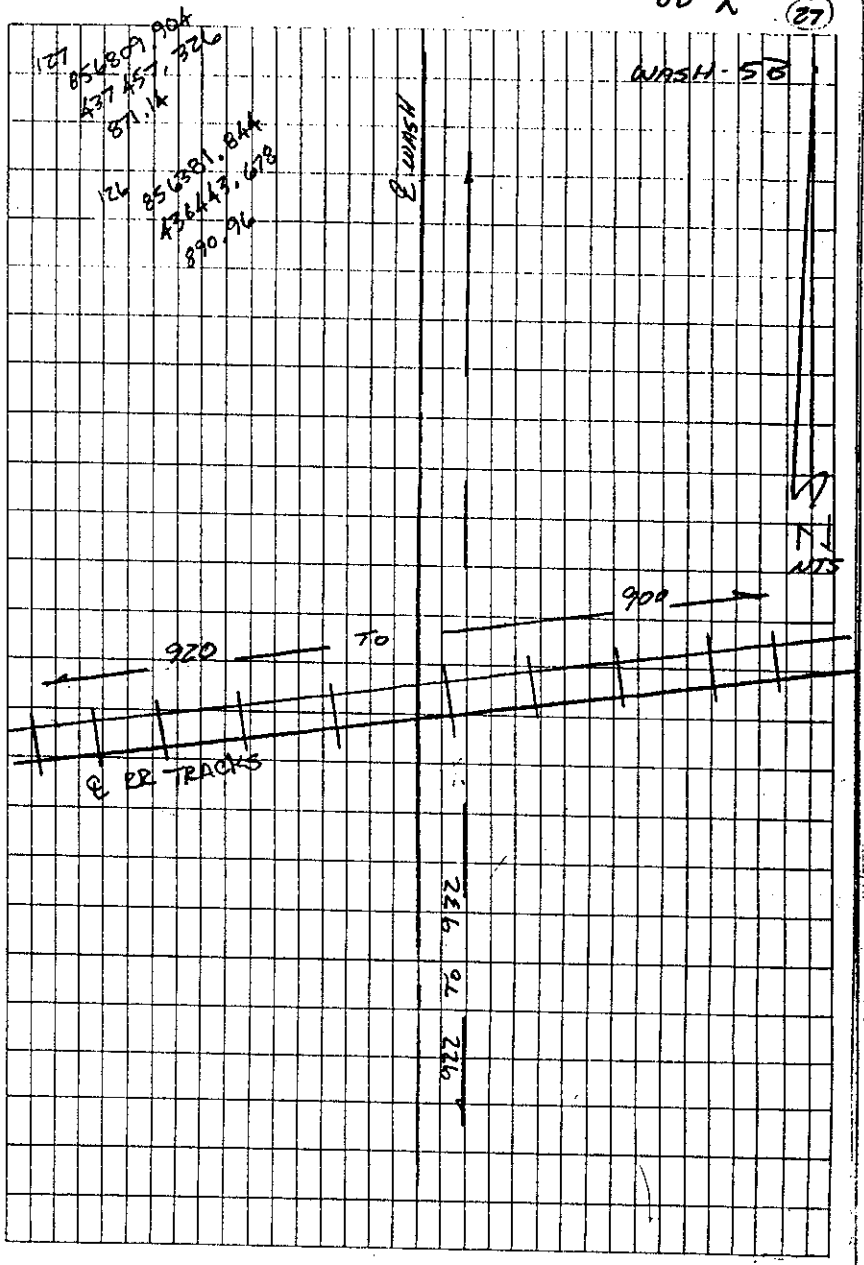
WASH-43



Ⓐ @ # 127 5.40
BS # 126 4.87

PT #	HR	DESC	PT #	HR	DESC
900	4.87	North Rail	924	13.40	℄ Wash #5 (S)
901			925		
902			926		
903			927		
904			928		
905			929		
906			930		
907			931		
908			932	13.40	℄ Wash #5 (S.)
909			933	4.87	Set Nail
910			Ⓐ @ # 933 B.S. # 126	5.17	
911			935	25.42	℄ Wash #5 (N)
912			936	25.42	
913			937	13.40	
914			938		
915			939		
916			940	13.40	
917			941	25.42	
918			942		
919			943		
920	4.87	North Rail	944		
Ⓐ @ # 126 BS # 127	5.43 5.17		945	25.42	
922	25.42	℄ Wash #5 (S)	946	13.40	
923	13.40	℄ Wash #5 (S)	947	13.40	℄ Wash #5 (N)

GB 77 Ø
OD Ⓐ (27)



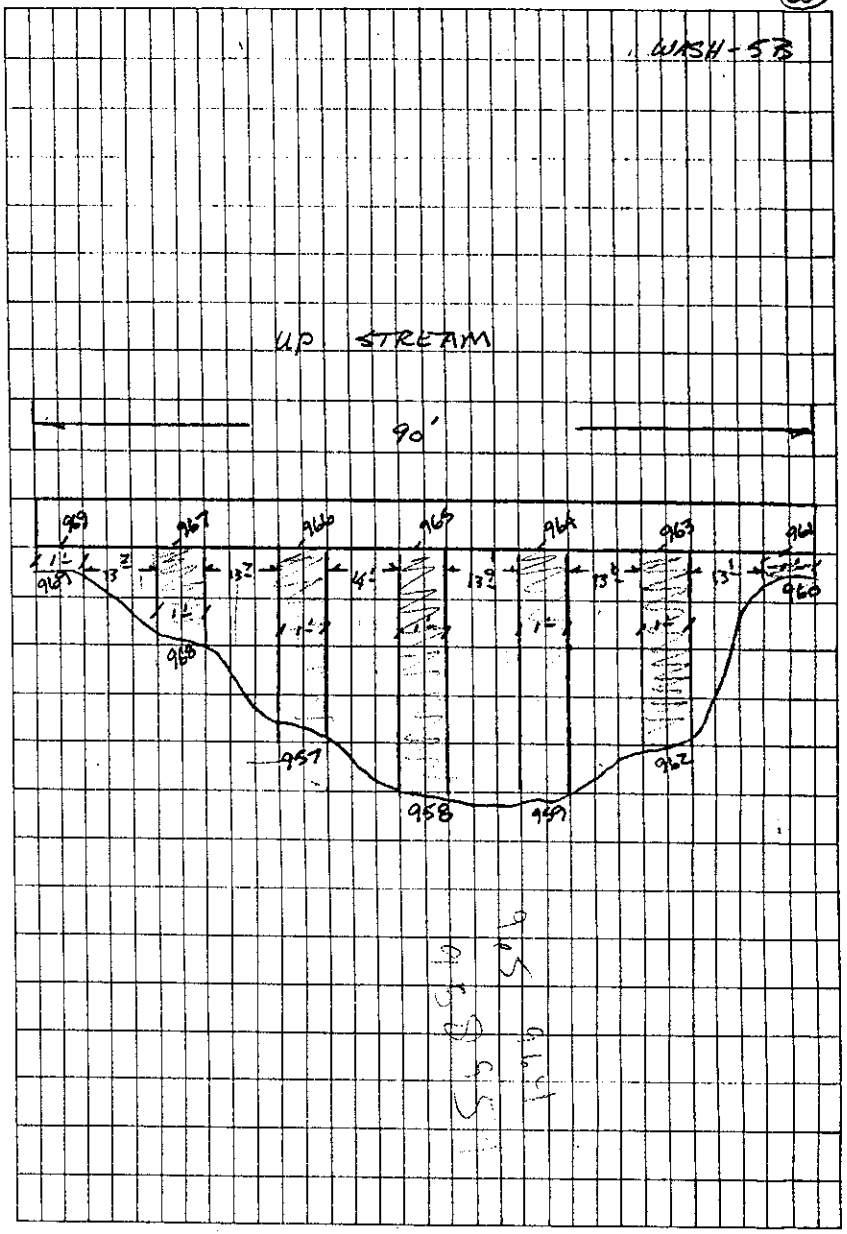
Pt #	HR	DESC	Pt #	HR	DESC
948	13.40	NG			
949	13.40	NG			
950	13.40	NG			
951	25.42	NG			
952	25.42	NG			
953	25.42	NG			
954	25.42	NG			
955	25.42	NG			
956	25.42	NG			
957	25.42	NG			
958	25.42	NG			
959	25.42	NG			
960	13.40	NG			
961	13.40	Pier Top			
962	13.40	NG			
963		Pier Top			
964		Pier Top			
965		Pier Top			
966		Pier Top			
967		Pier Top			
968		NG			
969	13.40	NG/Pier Top			
970					

6-14-00

GB
DD Ø

28

WASH-5B



T ⊥ #49 5.61

BS # 48 4.92

97.73

PT #	HR	DESC	PT #	HR	DESC
100	4.87	℄ Road E.	124	25.42	℄ Luke Wash
101		℄	125		
102			126		
103			127	25.42	℄ Luke Wash(S)
104			128		℄ Luke Wash(N)
105			129		
106			130		
107			131		
108			132		
109			133		
110			134		
111			135		
112			136		
113			137	25.42	WASH
114			138		
115			139		
116			140		
117		℄	41		
118	4.87	℄ Road W.	142		
119	25.42	℄ Luke Wash(S)	143		
120			144		
121			145		
122			146		
123	25.42	WASH	147		

6-16-00

GB 47 ⌀

DDT

(29)

NAME DOBBINS

LUKE WASH

℄ LUKE WASH

137

NTS

ASSUMED
N 5000
E 5000
BE 100.

℄ DOBBINS

REBAR ∠-CP-48 — ASSUMED N30-00-00W — ∠CP-49 REBAR

100 — 70 — 777.05 — 118

70

119

TB# 47 5.58 455.17 101.17

BS# 46 4.92

PT #	HR	DESC.
140	4.87	℄
141		
142		
143		
144		
145		
146		
147		
148		
149		
150		
151		
152		
153		
154		
155		
156		
157		
158		
159		
160	4.87	℄
161		
162		

6-16-00

GBMØ
DAT

(30)

N
NTS

℄ DOBBINS

140 TO 160

ASSUMED 5000 CU. YD.
5000
ON CP. 47

GPS FOR DOBBINS RD

SESSION "D"

UNIT # 3 @ # 116 HI = 1.720 START = 8:27 OFF = 10:07

UNIT # 2 @ # 118 HI = 1.964 START ~ 8:54 OFF = 10:26

PT #	INSTR	HR	TIME ON	TIME OFF	EPOCHS
119	ROVER	2.037	9:08	9:18	120
48			9:29	9:10	12
49			9:33	9:34	12
47			9:37	9:38	12
46			9:40	9:41	12
105	ROVER	2.037	9:47	9:57	120

6-20-00

GB
DD Ø

(31)

SEE PG 18 FOR DESC

SEE PG 18 FOR DESC

SEE PG 18 FOR DESC

SET REBAR ON SOUTH SHOULD ON DOBBINS

" " " " " " "

" " " " " " "

" " " " " " "

SEE PG 10 FOR DESC

1678

UNIT "A" @ PT 3 HI 1678 MTRS
UNIT "B" @ PT 101 HI 2
ROVER HT 1831 MTRS 60 FT
START PT # 0170

0170 BCHH MAR. CO. DOT ± .5 MI
N. OF I-10 ON 355TH AVE

0171 DCF MAR. CO DOT. 1 MI N. OF I-10

0172 BCHH GLO @ 355TH AV. & IND. SCH

0173 BC HH MAR. CO DOT 0.5 MI N OF IND. SCH.
@ CAMPBELL & 355TH AV.

0174 BCHH GLO ± 2.5 MI NO. OF I-10
0.5 MI NO. OF PT. 0173

22-JUNE-2000
E. PUCKETT
G. ANKRUM
J. RIDDLE
CLOUDY - 2T RAIN DRZY
80's

NAD 83 State Plane Coordinates (1992 Adjustment)
NAVD 88 Elevations

PEC Point Number	Horizontal Coordinates	Elevation	Section Data	Description
2	864854.382 440591.869	923.635		Set 5/8" Rebar
3	876317.418 420883.253	978.497		Set 5/8" Rebar
46	860689.789 438640.221	886.759		Set 5/8" Rebar
47	860696.697 438185.125	885.505		Set 5/8" Rebar
48	860711.177 431149.274	889.183		Set 5/8" Rebar
49	860708.334 431926.330	891.28		Set 5/8" Rebar
50	900658.433 422550.655	1099.108		PK Nail in Pvmt
51	900711.681 422355.442	1099.449		PK Nail in Pvmt
52	899864.035 425421.824	1095.86		PK Nail in Pvmt
53	899821.462 425575.206	1094.993		PK Nail in Pvmt
54	899797.751 425583.013	1094.570		Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-250' west of 355th Avenue alignment; stamped "5345+62.25 ELEV 1092.81 Wash-4"
55	899417.790 427036.178	1095.837		PK Nail

56	899398.755 427027.016	1092.851	Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-1200' east of 355th Avenue alignment; stamped "5360+50 ELEV 1091.16 Wash-3"
57	899359.353 427248.150	1096.742	PK Nail
58	898290.583 431116.398	1083.734	PK Nail
59	898246.280 431120.358	1077.707	Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-5300' east of 355th Avenue alignment; stamped "ELEV 1076.02 Wash-2"
60	898238.924 431302.416	1083.684	PK Nail
61	898179.493 431385.540	1076.831	Fd Brass Cap in top of concrete box culvert headwall on southside of Interstate 10, +/-5600' east of 355th Avenue alignment; stamped "ELEV 1075.17 Wash-1"
62	898404.465 431371.428	1078.862	Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-5600' east of 355th Avenue alignment
63	898503.025 431054.397	1078.852	Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-5200' east of 355th Avenue alignment
64	899585.184 427078.622	1093.533	Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-1250' east of 355th Avenue alignment
65	899984.424 425634.507	1095.571	Fd Brass Cap in top of concrete box culvert headwall on northside of Interstate 10, +/-200' west of 355th Avenue alignment
100	875599.276 422042.977	959.081	Set 5/8" Rebar
101	874560.368 423713.729	951.693	Set 5/8" Rebar
102	870847.236 430463.255	938.205	Set 5/8" Rebar
103	870449.083 431148.313	936.043	Set 5/8" Rebar

104	866081.409 438773.67	910.837	Set 5/8" Rebar
105	865795.501 439182.803	909.678	Set 5/8" Rebar
106	864427.935 441381.038	922.293	RR Spike in Pvmt
107	865961.850 438982.675	910.883	Maricopa County Highway Department Brass Cap flush w/pavement @ intersection of Baseline Road and Salome Highway
108	871327.370 429472.596	944.938	RR Spike in Pvmt
109	871979.041 428195.836	954.826	Nail in Pothole
110	873428.906 425581.564	959.528	Brass Cap in Handhole @ intersection of 355th Avenue and Salome Highway
111	876696.272 420331.141	981.388	Brass Cap in Handhole in center of Salome Highway, +/ 2.35 miles southeasterly of Wintersburg Road, +/-5.3' northwesterly of center of dirt road
112	883304.804 409811.267	1010.984	Brass Cap flush w/pavement @ intersection of Salome Highway and Wintersburg Road
113	879563.052 465308.505	993.133	NGS Brass Cap "BXK 'C'"
114	883425.519 465454.601	1017.641	NGS Brass Cap "BXK 'A'"
115	862911.339 483954.193	876.424	NGS Brass Cap "ARCHES"
116	870054.053 432399.289	957.815	United States Geological Survey Brass Cap, +/-200' north of Salome Highway, +/-1.45 miles northwesterly of Baseline Road; stamped "J 13"
117	863593.178 441412.498	919.738	United States Geological Survey Brass Cap, +/-650' south of Salome Highway, +/-3300' southeasterly of Baseline Road; stamped "H 322"

118	855805.183 435105.172	872.625		Set 5/8" Rebar
119	852414.637 427343.847	860.089		Set 5/8" Rebar
120	852496.123 427147.974	867.024		Set 5/8" Rebar
121	854480.572 431570.411	862.392		Set 5/8" Rebar
122	854320.549 431166.611	862.871		Set 5/8" Rebar
123	854645.734 432265.479	859.678		United States Geological Survey Brass Cap, +/-100' south of Southern Pacific Railroad tracks, +/-3 miles southwesterly of Salome Highway; stamped "M 10"
124	854578.826 432034.658	856.808		Set 5/8" Rebar
125	855345.384 433984.949	865		Set 5/8" Rebar
126	856381.762 436443.696	890.951		Set 5/8" Rebar
127	856809.824 437457.344	871.129		Set 5/8" Rebar
170	903062.639 425859.192	1116.909	E¼ Corner Section 36 T2N R6W	Maricopa County Department of Transportation Brass Cap in Handhole in center of 355th Avenue, +/-½ mile north of Interstate 10
171	905705.151 425884.353	1125.417	NE Corner Section 36 T2N R6W	Maricopa County Department of Transportation Brass Cap in Handhole in center of 355th Avenue, +/-1 mile north of Interstate 10

RENBERG - PHOENIX HWY.
NOPAH - EAST & WEST
MARICOPA COUNTY

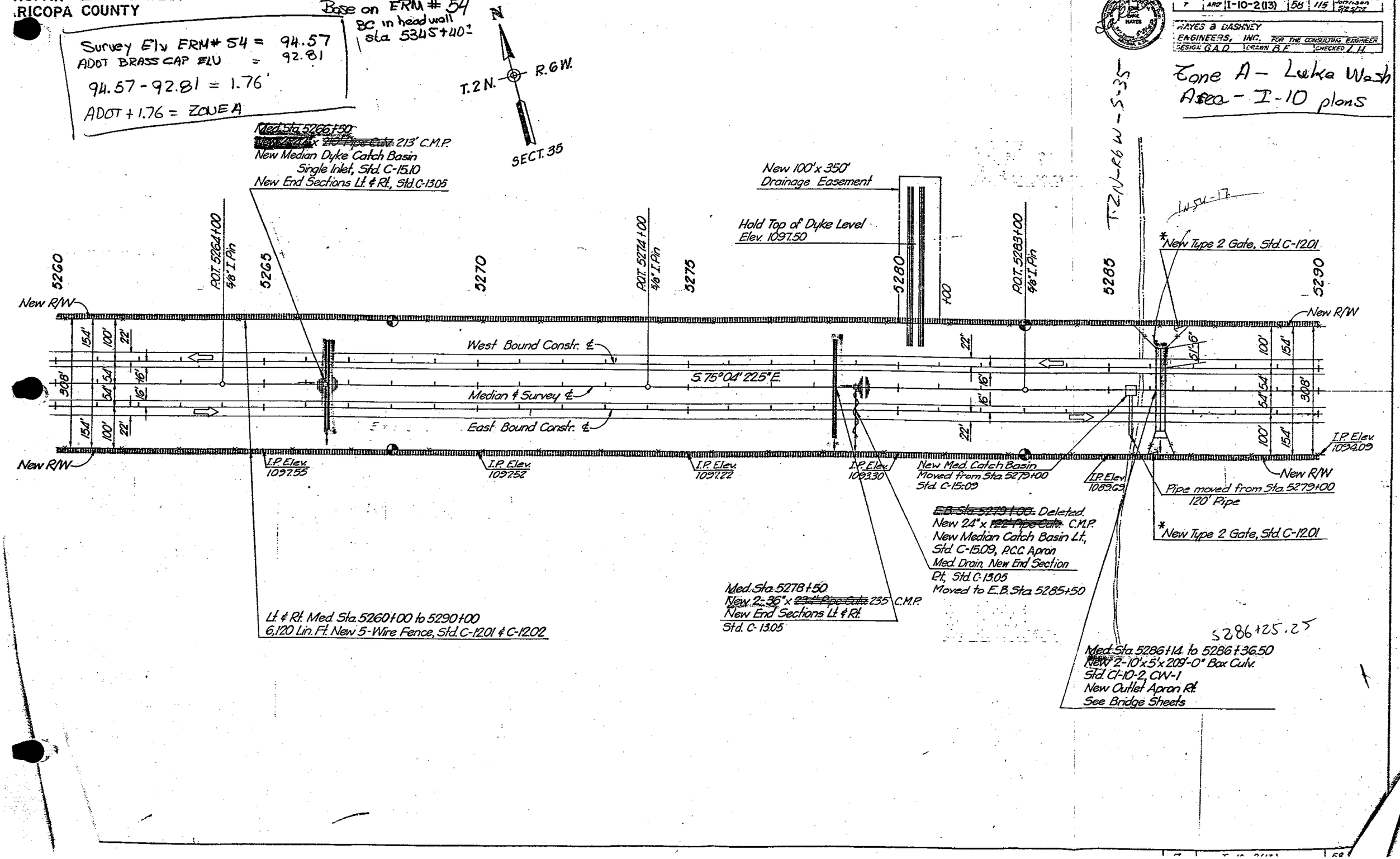
ADOT Datum + 1.72' = ZONE A DATUM
Base on ERM # 54
BC in headwall
sta 5345+40±

Survey Elv ERM# 54 = 94.57
ADOT BRASS CAP ELV = 92.81
94.57 - 92.81 = 1.76'
ADOT + 1.76 = ZONE A

B.P.R. REGIO.	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ	I-10-2(13)	58	115	Johnson 5/25/72

HAYES & DASHNEY ENGINEERS, INC. FOR THE CONSULTING ENGINEER
DESIGN G.A.D. DRAWN B.F. CHECKED L.H.

Zone A - Lake Wash Area - I-10 plans



EHRENBERG - PHOENIX HWY.
TONOPAH - EAST & WEST
MARICOPA COUNTY

STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
ARIZ.	I-10-2(13)	59	115	Johnson Engineering

WILS & CUSHNEY ASSOCIATES, INC. DBA THE CHAS. THOS. JACKSON
GAD CHKD. S.H. DESIGNED J.H.

B.M. #527 - 150' Rt. Sta. 5270+00
5/8" I. Pin Elev. 1097.51

B.M. #526 - 150' Rt. Sta. 5260+00
5/8" I. Pin Elev. 1095.78

B.M. #528 - 150' Rt. Sta. 5280+00
5/8" I. Pin Elev. 1093.40

D.A. Lt. 0.142 Sq. Mi.
C: 0.6, Req. 18.0 Sq. Ft.

D.A. Lt. 0.096 Sq. Mi.
C: 0.6, Req. 13.5 Sq. Ft.

D.A. Lt. 1.80 Sq. Mi.
C: 0.4 Req. 79.0 Sq. Ft.

38' ROADWAY E.B. & W.B.

Flow

W.B.

601' New ~~550'~~ Grader Ditch Lt., Std. C-3.01

New 10'x3'x 250' Channel Lt.
Std. C-3.01
360 C.Y. Excav.

735' New ~~700'~~ Grader Ditch Lt., Std. C-3.01

New 10'x3'x 400' Wing Dyke Lt.
Type "B" Std. C-3.01
880 C.Y. Emb.

528' New ~~450'~~ Grader Ditch Lt., Std. C-3.01

348' New ~~350'~~ Grader Ditch Lt. Std. C-3.01

1104.50
Corr. -0.23

FUTURE
W.B. Fin. & Grade

+0.1154%

-0.1096%

-0.1096%

Median Grade
54' Rt. W.B. 5262+00
Elev. 1098.66

Ground Line

Median Grade

1098.43

800' V.C.
SD_S = 1,000'+

17,674.8 C.Y. Borrow from Pit # 7408
1,410' Rt. Sta. 5302+00

102.20

Excav.	87.3
25% Shr.	21.8
Borrow	17,674.8
15% Shr.	2,651.2
Emb.	14,097.4
Grd. Comp.	1,097.9
Str. Excav.	67.0
Chan. Excav.	74.6
25% Shr.	35.4

Med. Sta. 5266+50
New 2.42'x ~~2.13~~ CMP
New Med. Dyke Catch Basin
Single Inlet Std. C-15.10
~~2.5~~ C.Y. Spec. Backfill
~~1.4~~ C.Y. Str. Excav.
New End Sections, L.F.R., Std. C-3.06

Excav.	1,343.3
25% Shr.	335.8
Emb.	1,049.9
Grd. Comp.	221.1
Chan. Excav.	351.4
25% Shr.	87.9

B.P. 543
~~2.98~~ C.Y. Str. Excav.
~~1.43~~ C.Y. Chan. Excav.
155.98

B.P. 100

Med. Sta. 5270+50
New 2.56'x ~~2.13~~ CMP
~~2.5~~ C.Y. Spec. Backfill
~~1.4~~ C.Y. Str. Excav.
~~1.0~~ C.Y. Drain. Excav.
New End Sections, L.F.R., Std. C-3.06

1101.23

1110

1100

1090

1095.99

TF Elev. 1090.38
Slope: 0.3385% Rt.
Q_{50} = 6290 cfs
HW = 1095.34

787.62

50,953.9 C.Y. Borrow from Pit # 7408
1,400' Rt. Sta. 5302+00

New 15'x5'x40' Dyke
Type "M" Std. C-3.01
16 C.Y. Emb.

New 6'x2'x30' Dyke
Type "M" Std. C-3.01
2.5 C.Y. Emb.

New 20'x2'x25' Dyke
Type "M" Std. C-3.01
3.5 C.Y. Emb.

E.B.

1104.50
Corr. -0.23

FUTURE
E.B. Fin. & Grade

-0.1096%

1100.23

800' V.C.
SD_S = 1,000'+

16,098.0 C.Y. Borrow from Pit # 7408
1,400' Rt. Sta. 5302+00

139.79

Excav.	149.4
25% Shr.	37.4
Borrow	16,098.0
15% Shr.	2,414.7
Emb.	12,899.9 (Incl. Dykes)
Grd. Comp.	1,165.4
Str. Excav.	90.0
Chan. Excav.	270.0
25% Shr.	90.0

B.P. 1801.03

Excav.	1,310.5
25% Shr.	327.5
Emb.	1462
Grd. Comp.	836.8

B.P. 100

Deleted
E.B. Sta. 5279+00
New 24" x 122' Pipe ~~CMP~~ CMP
New Med. Catch Basin, L.F.
Std. C-15.09, Med. Drain, Rectangular
~~6.5~~ C.Y. Spec. Bck. Fill
~~18~~ C.Y. Str. Excav.
New End Section, R.F., Std. C-3.06
Moved to E.B. Sta. 5285+50

Excav.	188.0
25% Shr.	47.0
Borrow	45,941.3
15% Shr.	6,891.2
Emb.	36,506.8 (Incl. Dykes)
Grd. Comp.	2,778.0
Str. Excav.	125.0
25% Shr.	31.3

TF Elev. 1090.02
Slope: 0.3385% Rt.

97.84

45,941.3 C.Y. Borrow from Pit # 7408
1,400' Rt. Sta. 5302+00

1110

1100

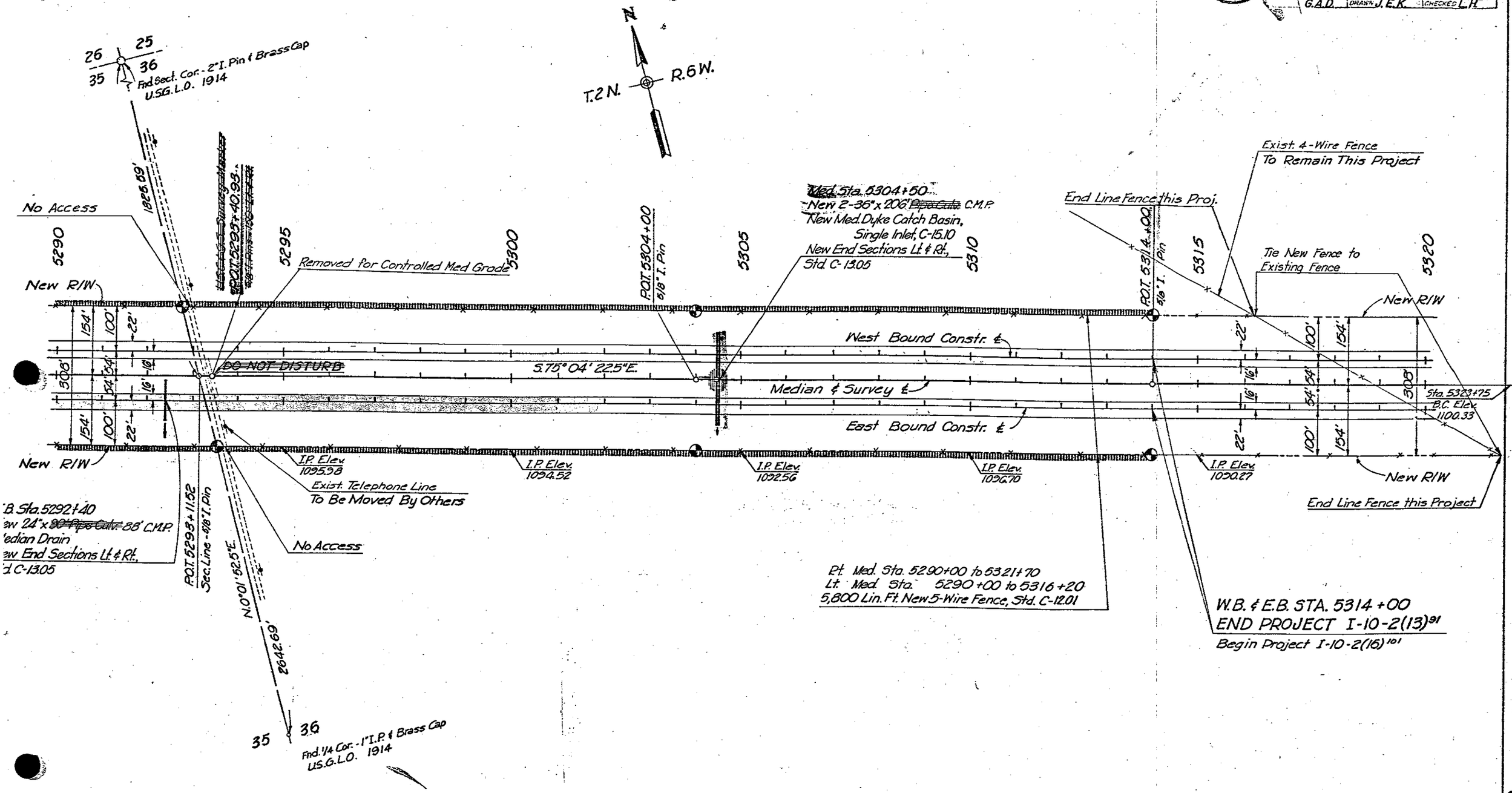
1090

5260 61 62 63 64 5265 66 67 68 69 5270 71 72 73 74 5275 76 77 78 79 5280 81 82 83 84 5285 86 87 88 89 5290

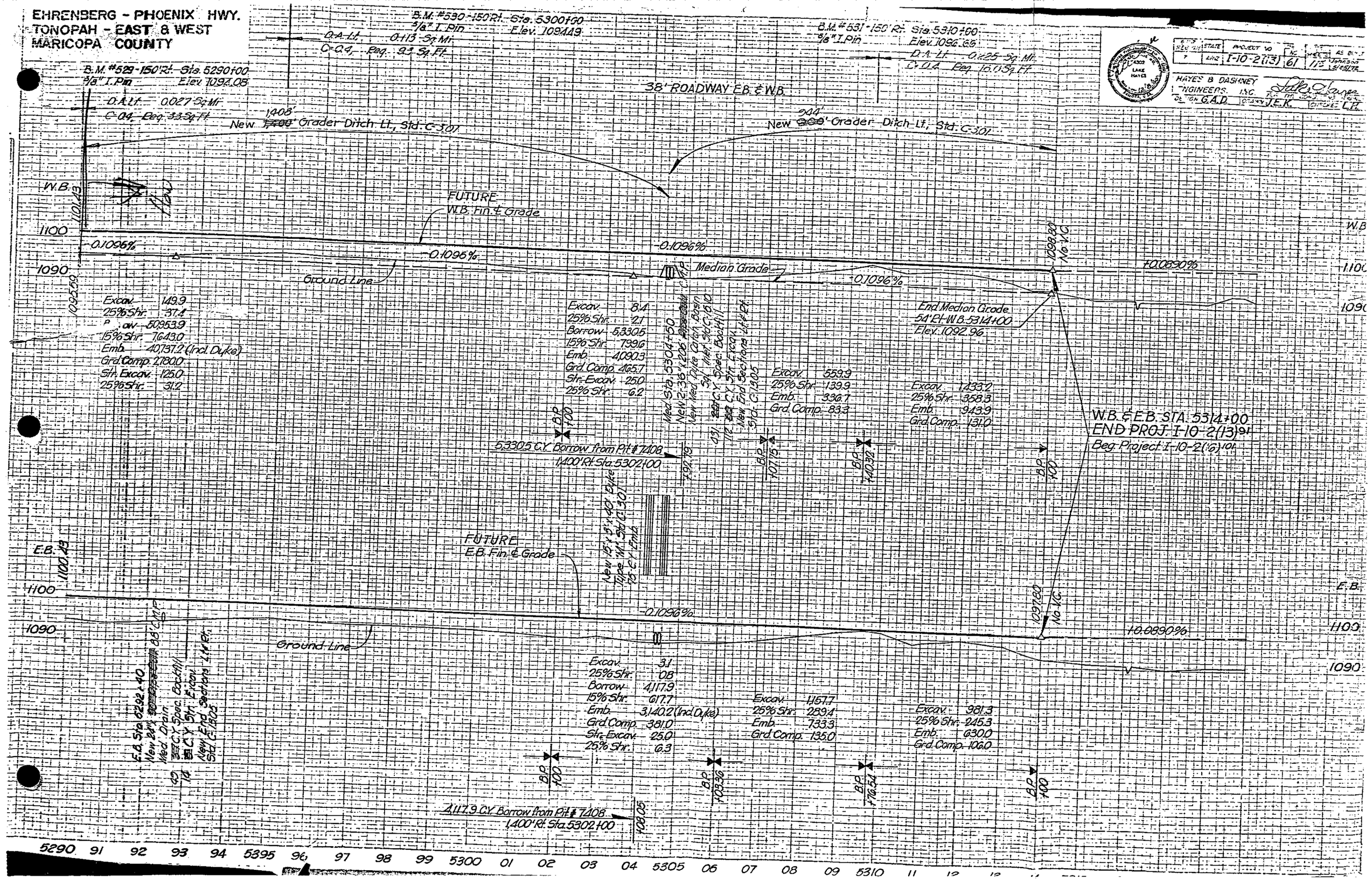
IRENBERG - PHOENIX HWY.
ONOPAH - EAST & WEST
ARICOPA COUNTY

B.P.R. REGION	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ	I-10-2(13)	60	115	Johnson 5/25/72

YES & DASHNEY
INEERS, INC. FOR THE CONSULTING ENGINEER
G.A.D. DRAWN J.E.K. CHECKED L.H.



EHRENBERG - PHOENIX HWY.
TONOPAH - EAST & WEST
MARICOPA COUNTY

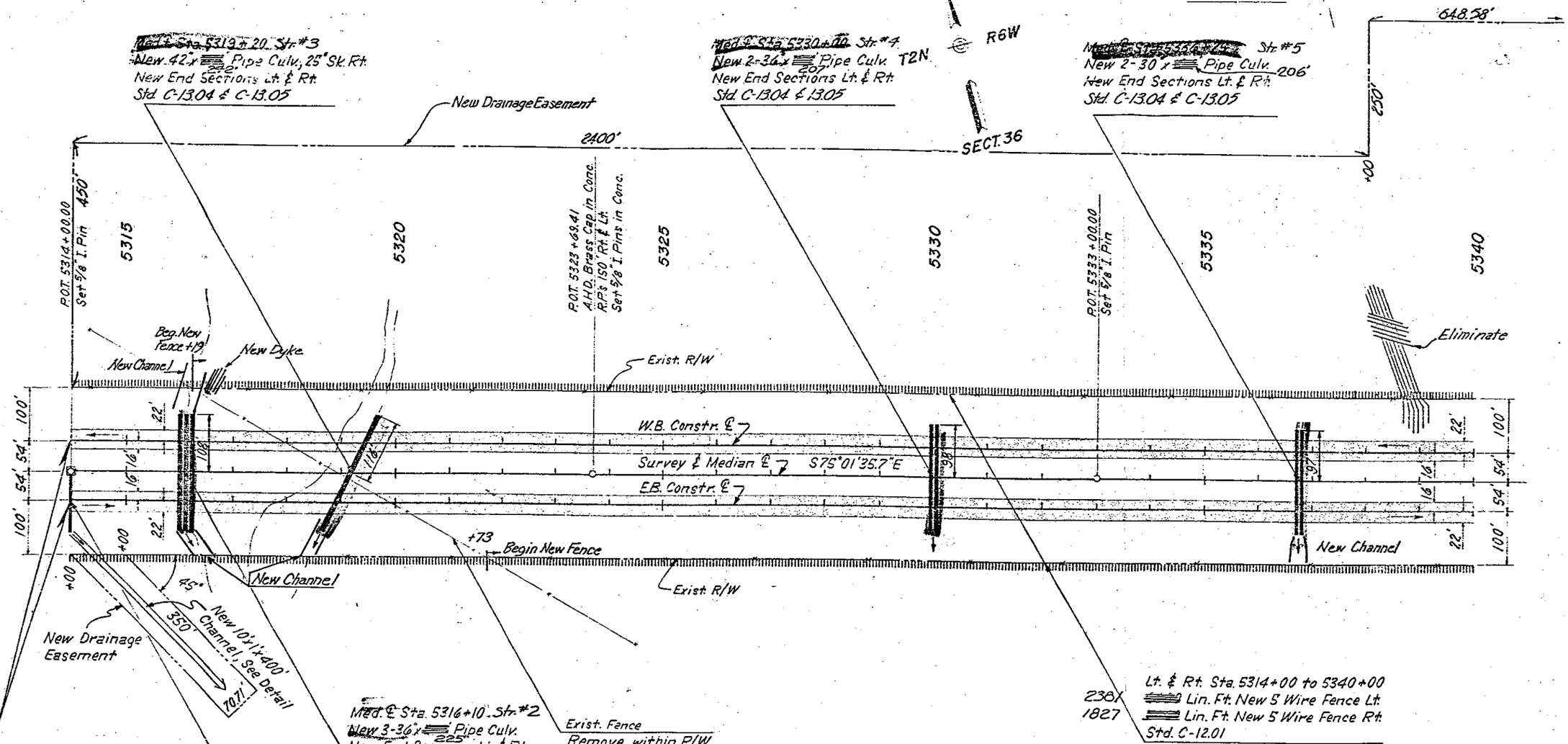


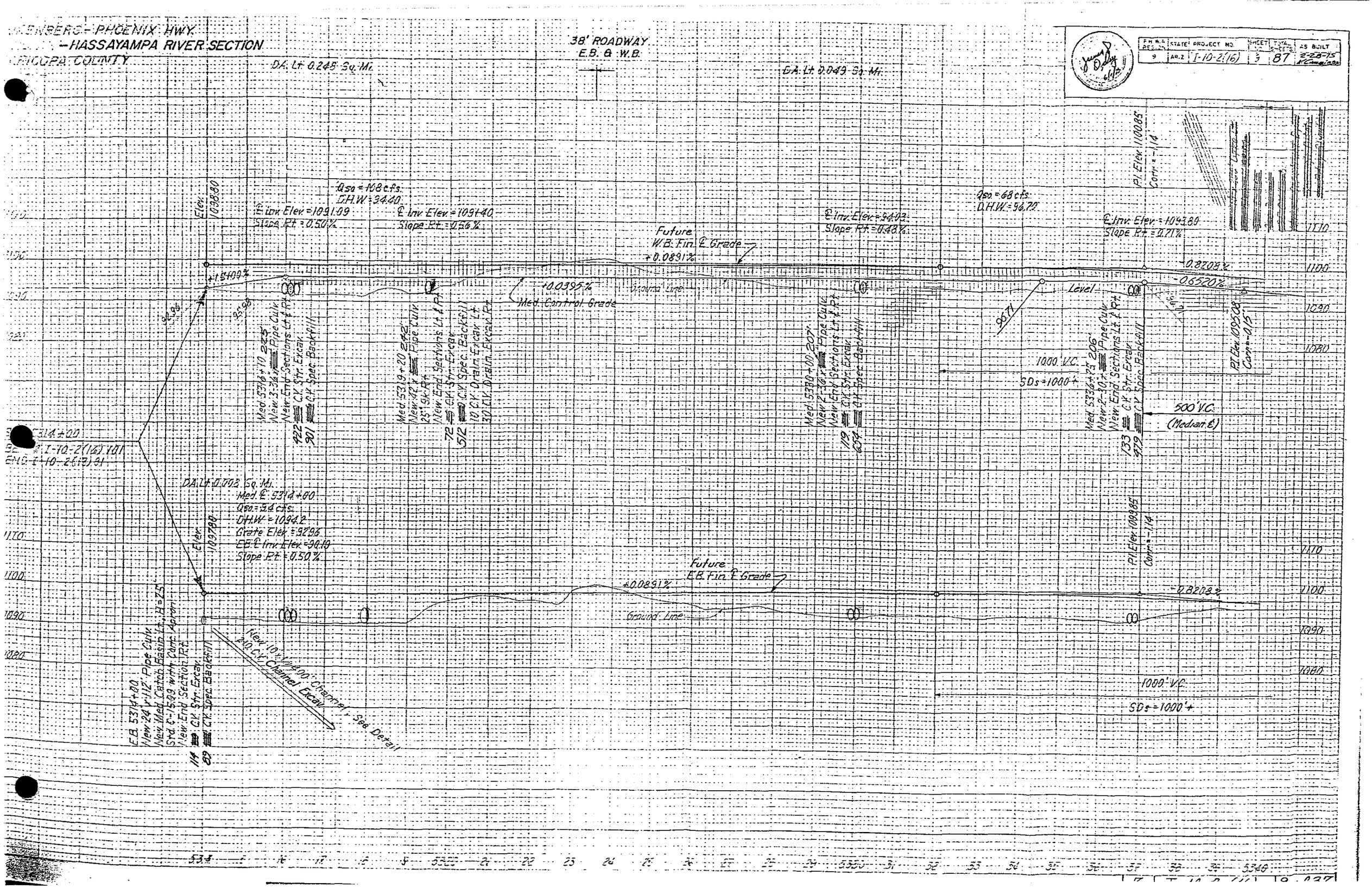
STATE	PROJECT NO			
ARIZ	I-10-2(13)	61	113	

HAYES & DASHNEY ENGINEERS, INC.
DESIGN G.A.D. DRAWN J.E.K. CHECKED C.R.

EHRENBERG - PHOENIX HWY.
TONOPAH - HASSAYAMP RIVER SECTION
MARICOPA COUNTY

FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	AZ	I-10-2(16)	8	87	2-25-75

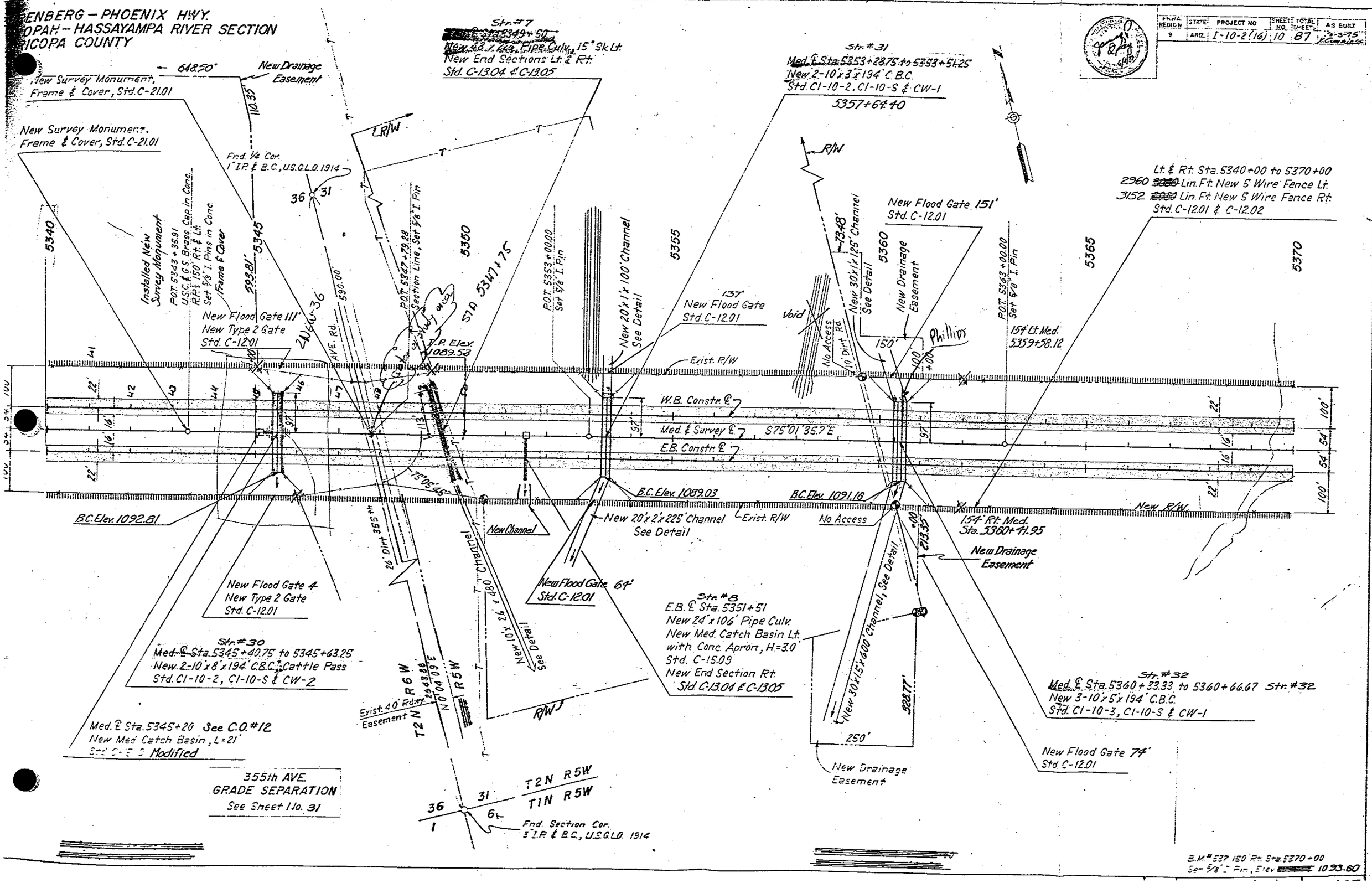


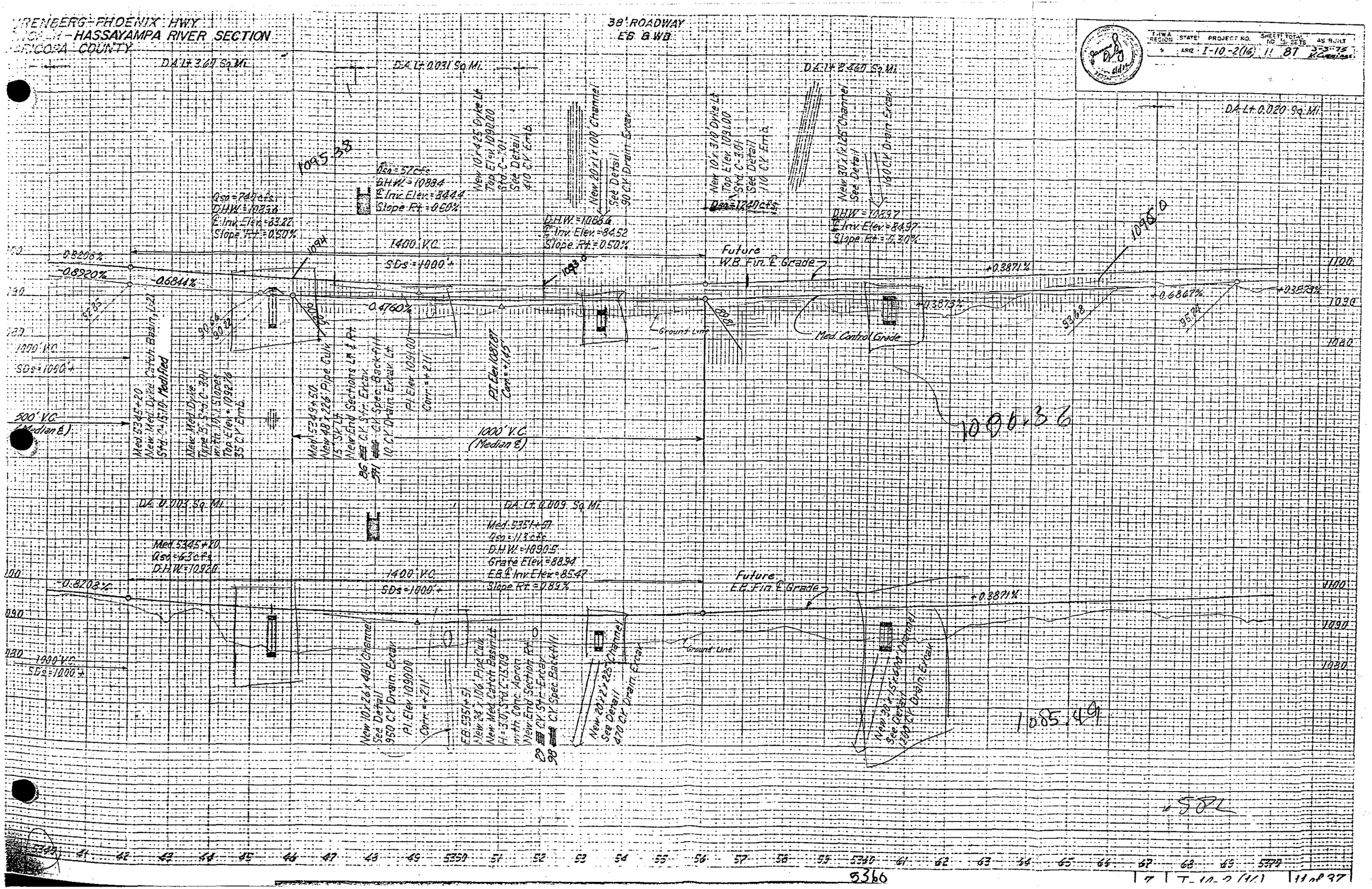


FH.W.A. DES.	STATE	PROJECT NO.	SHEET	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	3	87	2-28-75

ENBERG – PHOENIX HWY.
OPAH – HASSAYAMPA RIVER SECTION
ICOPA COUNTY

FHWA REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	10	87	2-3-75




GLENDALE-PHOENIX HWY.
HASSAYAMPA RIVER SECTION
MARICOPA COUNTY
38' ROADWAY
E.B. & W.B.
FHWA REGION 9
STATE ARIZ
PROJECT NO. I-10-2(16)
SHEET NO. 11
TOTAL SHEETS 87
AS BUILT 3-3-75
D.A. Lt. 3.67 Sq. Mi.
D.A. Lt. 0.031 Sq. Mi.
D.A. Lt. 2.460 Sq. Mi.
D.A. Lt. 0.020 Sq. Mi.
D.A. 0.003 Sq. Mi.
D.A. Lt. 0.009 Sq. Mi.
Qsd = 57 cfs
D.H.W. = 1088.4
E Inv. Elev. = 84.44
Slope Rt. = 0.60%
Qsd = 740 cfs
D.H.W. = 1092.6
E Inv. Elev. = 83.22
Slope Rt. = 0.50%
New 10' x 425' Dyke Lt.
Top Elev. 1090.00
Std. C-301
See Detail
410 C.Y. Emb.
New 20' x 1' x 100' Channel
See Detail
90 C.Y. Drain. Excav.
D.H.W. = 1088.6
E Inv. Elev. = 84.52
Slope Rt. = 0.50%
New 10' x 310' Dyke Lt.
Top Elev. 1091.00
Std. C-301
See Detail
110 C.Y. Emb.
Qsd = 1240 cfs
New 30' x 1.25' Channel
See Detail
160 C.Y. Drain. Excav.
D.H.W. = 1092.7
E Inv. Elev. = 84.97
Slope Rt. = 0.30%
1400' V.C.
SDs = 1000'+
Future W.B. Fin. E Grade
Future E.B. Fin. E Grade
Med. Control Grade
Ground Line
-0.8208%
-0.8920%
-0.6844%
-0.4760%
+0.3871%
+0.3813%
+0.6867%
+0.3873%
1000' V.C.
SDs = 1000'+
500' V.C. (Median ℄)
Med. 5345+20
New Med. Dyke, Catch Basin, I-21
Std. C-310 Modified
New Med. Dyke
Pipe 35' Std. C-301
with 10:1 Slopes
Top Elev. = 1092.76
35 C.Y. Emb.
Med. 5348+50
New 48' x 226' Pipe Culv.
15' Std. Lt. New End Sections Lt. & Rt.
C.Y. Str. Excav.
C.Y. Spec. Backfill
10 C.Y. Drain. Excav. Lt.
Pl. Elev. 1091.00
Corr. = +2.11'
Pl. Elev. 1087.87
Corr. = +1.45'
1000' V.C. (Median ℄)
Med. 5345+20
Qsd = 63 cfs
D.H.W. = 1092.0
Med. 5351+91
Qsd = 113 cfs
D.H.W. = 1090.5
Grate Elev. = 88.94
E.B. ℄ Inv. Elev. = 85.47
Slope Rt. = 0.89%
New 10' x 26' x 480' Channel
See Detail
950 C.Y. Drain. Excav.
Pl. Elev. 1090.00
Corr. = +2.11'
E.B. 5351+51
New 24' x 106' Pipe Culv.
New Med. Catch Basin Lt.
H = 3.0', Std. C-310
with Conc. Apron
New End Section Rt.
C.Y. Str. Excav.
C.Y. Spec. Backfill
New 20' x 2' x 235' Channel
See Detail
470 C.Y. Drain. Excav.
New 30' x 1.5' x 270' Channel
See Detail
1400 C.Y. Drain. Excav.
1085.49
1086.36
1088.0
1093.35
1094
1093.0
1096.0
1100
1090
1080
5341
41
42
43
44
45
46
47
48
49
5350
51
52
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54
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56
57
58
59
5340
61
62
63
64
65
66
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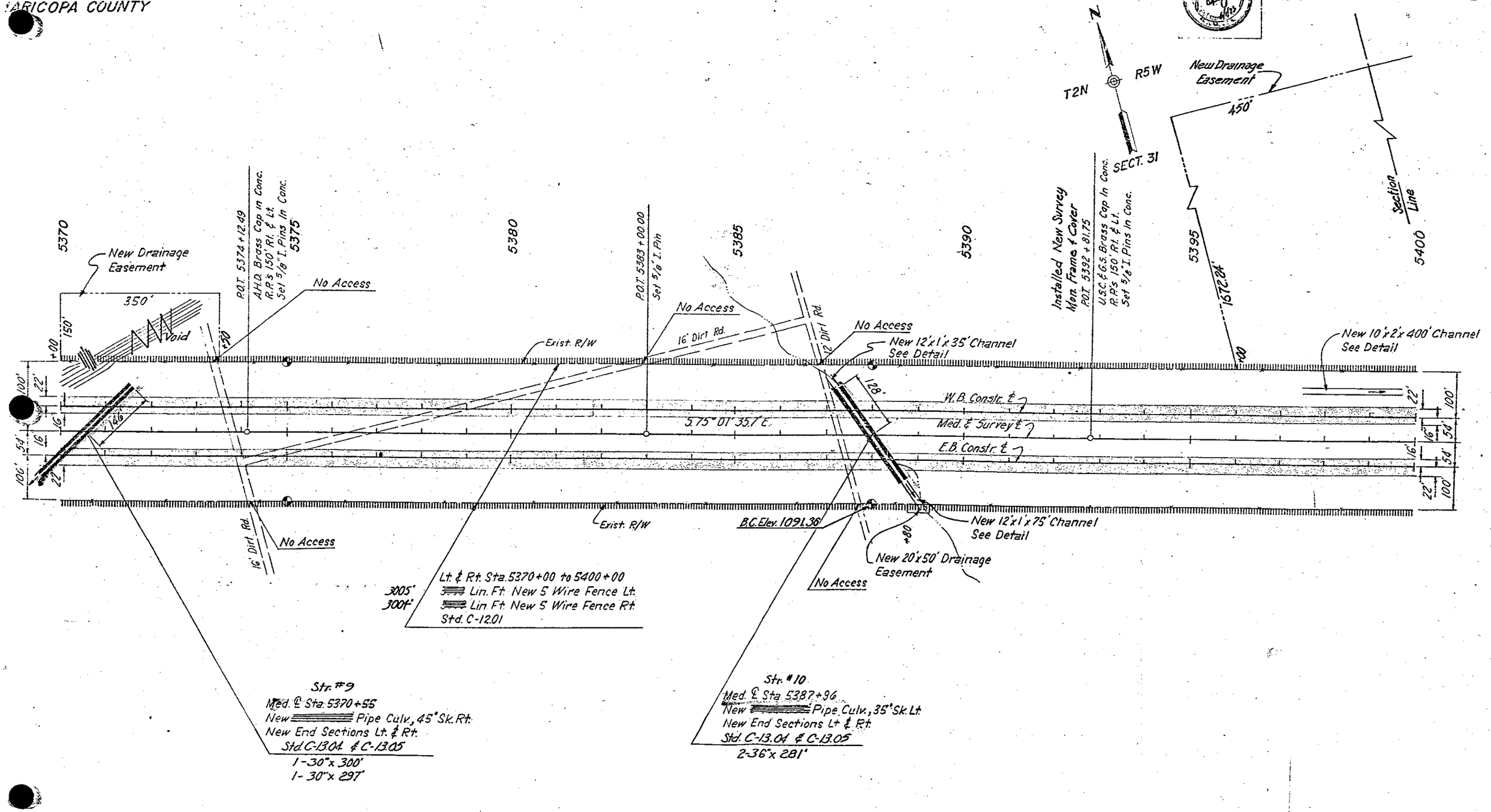
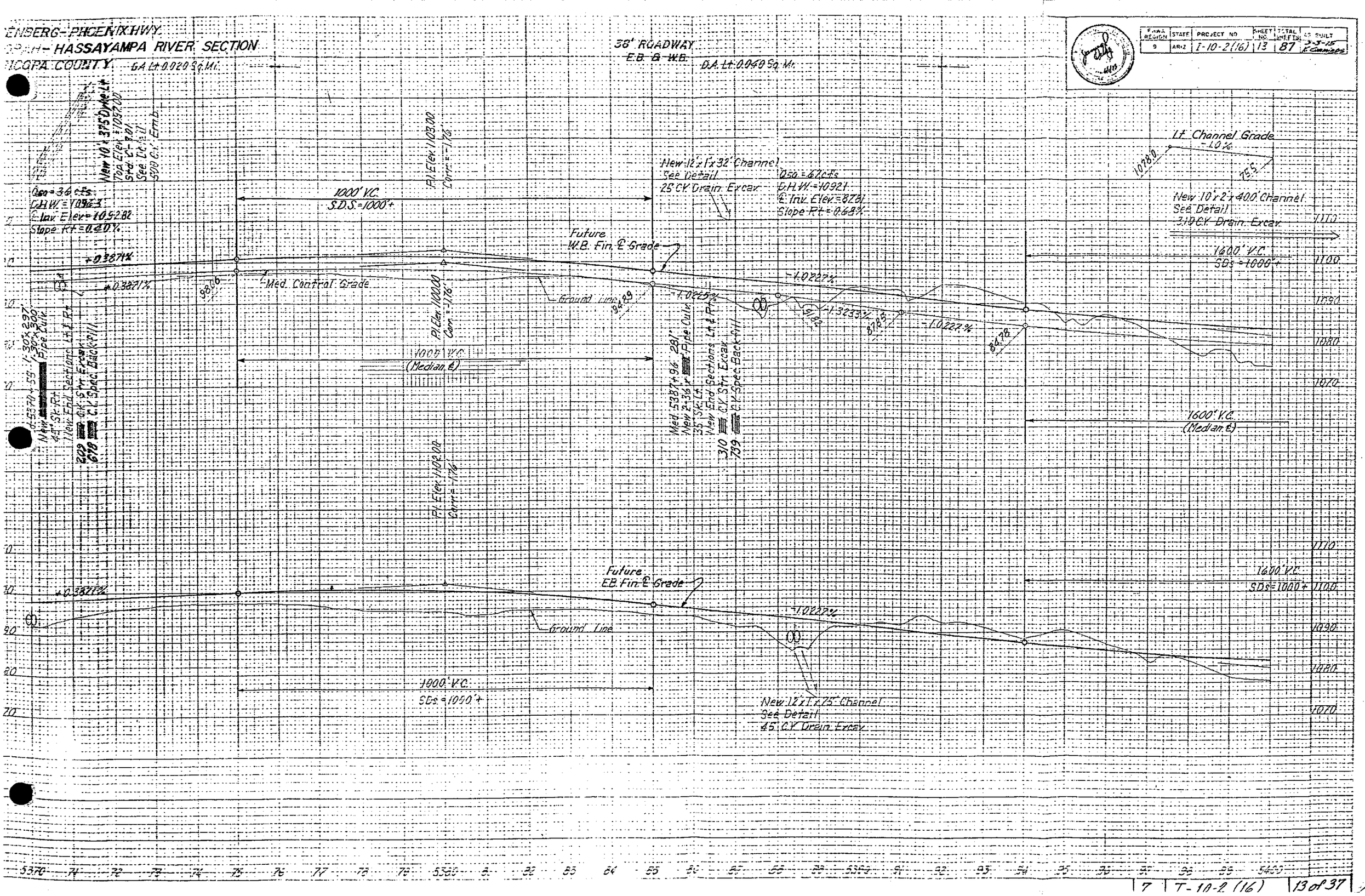
68
69
5370
5360
7
I-10-2(16)
11 of 87

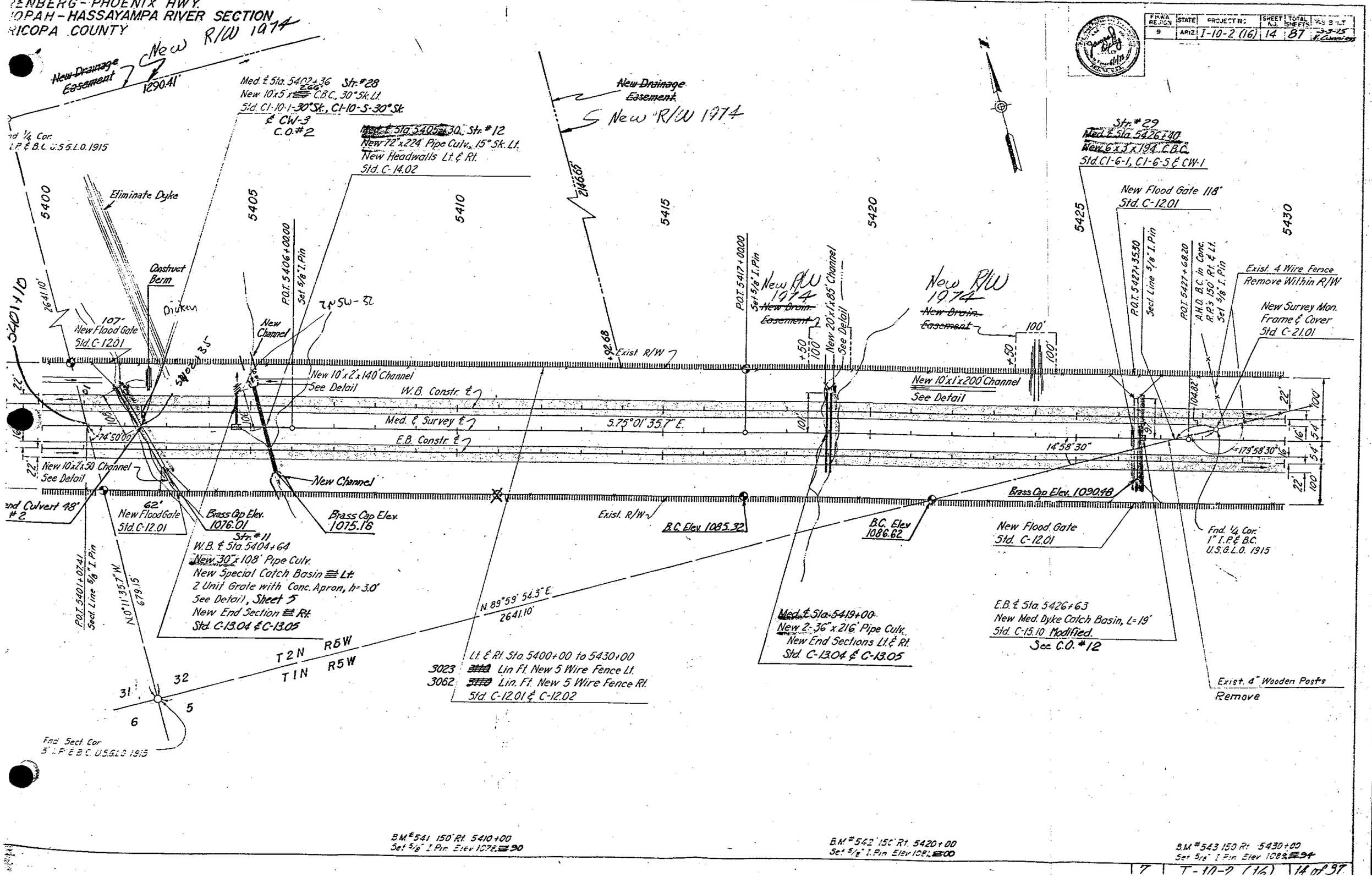
HRENBERG — PHOENIX HWY.
ONOPAH - HASSAYAMPA RIVER SECTION
ARICOPA COUNTY

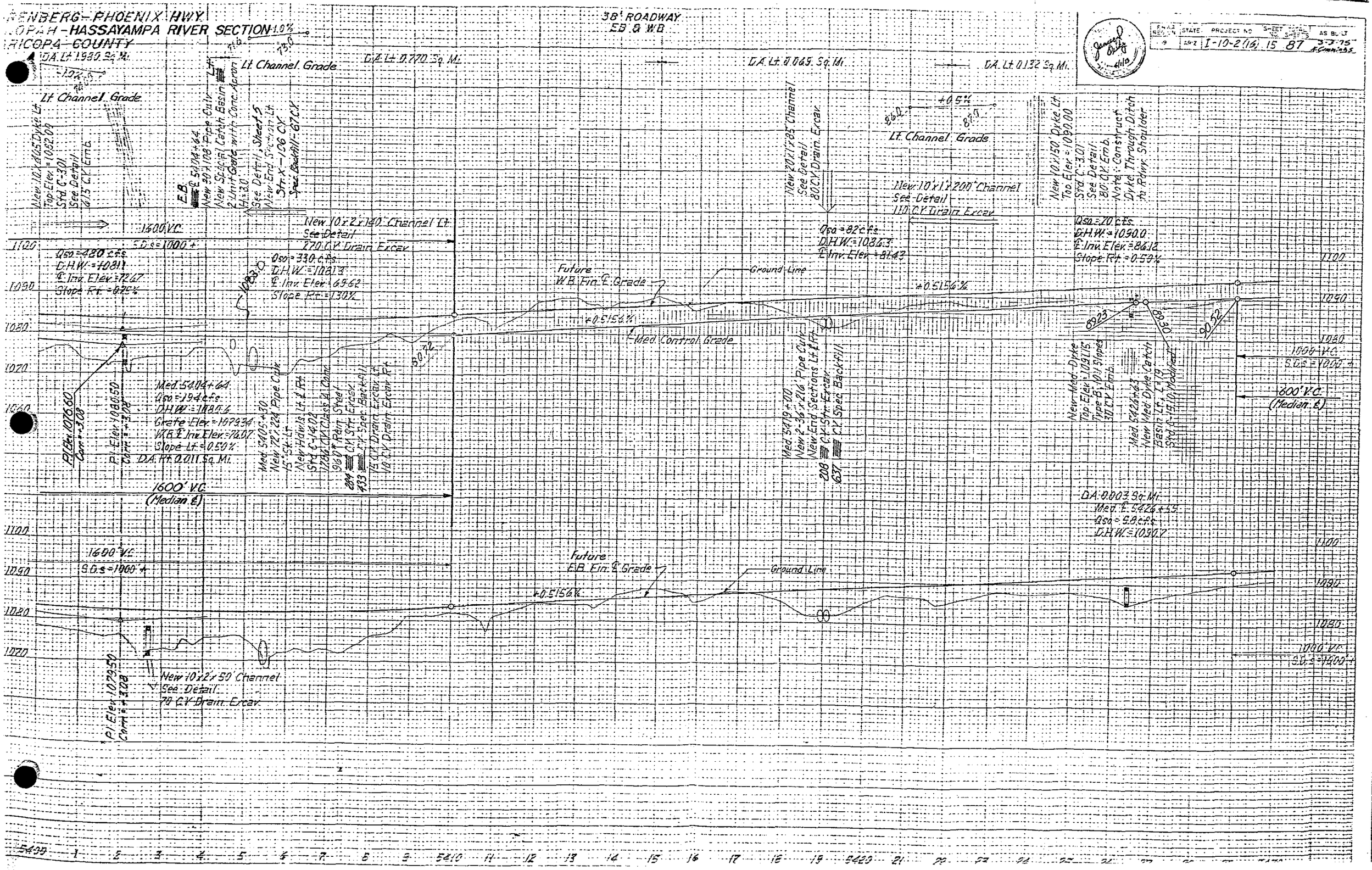
FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	12	87	R. Cummings



FORM REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	I-10-2(16)	13	87	2-3-15




ENBERG - PHOENIX HWY.
OPAH - HASSAYAMPA RIVER SECTION
RICOPA COUNTY
FHWA REGION 9
STATE ARIZ
PROJECT NO. I-10-2 (16)
SHEET NO. 14
TOTAL SHEETS 87
New R/W 1974
New Drainage Easement
1290.41'
Med. ℄ Sta. 5402+36 Str. #28
New 10'x5' x 266' C.B.C., 30° Sk. Lt.
Std. C1-10-1-30° Sk., C1-10-S-30° Sk.
℄ CW-3
C.O. #2
Med. ℄ Sta. 5405+30. Str. #12
New 72" x 224' Pipe Culv., 15° Sk. Lt.
New Headwalls Lt. & Rt.
Std. C-14.02
New Drainage Easement
New R/W 1974
Str. #29
Med. ℄ Sta. 5426+40
New 6'x3'x194' C.B.C.
Std. C1-6-1, C1-6-S & CW-1
New Flood Gate 118'
Std. C-12.01
Eliminate Dyke
Construct Berm
Dikes
107' New Flood Gate Std. C-12.01
New Channel
P.O.T. 5406+00.00
Set 5/8" I. Pin
P.O.T. 5417+00.00
Set 5/8" I. Pin
New R/W 1974
New Drain. Easement
New 20'x1'x85' Channel
See Detail
New R/W 1974
New Drain. Easement
100'
P.O.T. 5427+35.50
Sect. Line 5/8" I. Pin
P.O.T. 5427+68.20
A.H.D. B.C. in Conc.
R.P.'s 150' Rt. & Lt.
Set 5/8" I. Pin
Exist. 4 Wire Fence
Remove Within R/W
New Survey Mon. Frame & Cover
Std. C-21.01
Exist. R/W
New 10'x2'x140' Channel
See Detail
W.B. Constr. ℄
Med. ℄ Survey ℄
E.B. Constr. ℄
S 75°01' 35.7" E.
New 10'x1'x200' Channel
See Detail
14°58'30"
179°58'30"
New 10'x2'x50 Channel
See Detail
New Channel
Brass Cap Elev. 1090.48
Culvert 48'
#2
62' New Flood Gate Std. C-12.01
Brass Cap Elev. 1076.01
Brass Cap Elev. 1075.16
Exist. R/W
B.C. Elev. 1085.32
B.C. Elev. 1086.62
New Flood Gate Std. C-12.01
Fnd. 1/4 Cor. 1" I.P. & B.C. U.S.G.L.O. 1915
Str. #11
W.B. ℄ Sta. 5404+64
New 30" x 108' Pipe Culv.
New Special Catch Basin ≡ Lt.
2 Unit Grate with Conc. Apron, h=3.0'
See Detail, Sheet 5
New End Section ≡ Rt.
Std. C-13.04 & C-13.05
N 89°59' 54.3" E.
2641.10'
Med. ℄ Sta. 5419+00
New 2-36" x 216' Pipe Culv.
New End Sections Lt. & Rt.
Std. C-13.04 & C-13.05
E.B. ℄ Sta. 5426+63
New Med. Dyke Catch Basin, L=19'
Std. C-15.10 Modified.
See C.O. #12
Lt. & Rt. Sta. 5400+00 to 5430+00
3023 Lin. Ft. New 5 Wire Fence Lt.
3062 Lin. Ft. New 5 Wire Fence Rt.
Std. C-12.01 & C-12.02
Exist. 4" Wooden Posts
Remove
P.O.T. 5401+07.41
Sect. Line 5/8" I. Pin
N 0°11'35.7" W.
679.15'
T2N R5W
T1N R5W
Fnd. Sect. Cor. 3" I.P. & B.C. U.S.G.L.O. 1915
B.M. #541 150' Rt. 5410+00
Set 5/8" I. Pin Elev. 1078.90
B.M. #542 150' Rt. 5420+00
Set 5/8" I. Pin Elev. 1081.00
B.M. #543 150' Rt. 5430+00
Set 5/8" I. Pin Elev. 1082.34
7 | I-10-2 (16) | 14 of 87


ENBERG-PHOENIX HWY.
OPAH-HASSAYAMPA RIVER SECTION
ICOPA COUNTY
STATE PROJECT NO
I-10-2(16) 15 87
AS BUILT
38' ROADWAY
EB & WB
D.A. Lt. 1.930 Sq. Mi.
D.A. Lt. 0.770 Sq. Mi.
D.A. Lt. 0.065 Sq. Mi.
D.A. Lt. 0.132 Sq. Mi.
Lt. Channel Grade
New 10'x 2'x 140' Channel Lt.
See Detail
270 C.Y. Drain Excav.
Q50 = 330 c.f.s.
D.H.W. = 1081.3
℄ Inv. Elev. = 1069.62
Slope Rt. = 1.30%
Q50 = 420 c.f.s.
D.H.W. = 1081.1
℄ Inv. Elev. = 1072.47
Slope Rt. = 0.70%
1600' V.C.
S.O.S. = 1000 +
Future
W.B. Fin. ℄ Grade
Ground Line
+0.51564%
Med. Control Grade
New 10'x 1'x 200' Channel
See Detail
110 C.Y. Drain Excav.
Q50 = 82 c.f.s.
D.H.W. = 1086.3
℄ Inv. Elev. = 1081.42
+0.5%
New 10'x 1'x 85' Channel
See Detail
80 C.Y. Drain. Excav.
New 10'x 150' Dyke Lt.
Top Elev. = 1090.00
Sta. C-3.01
See Detail
80 C.Y. Emb.
Note: Construct Dyke Through Ditch to Rdwy. Shoulder
Q50 = 70 c.f.s.
D.H.W. = 1090.0
℄ Inv. Elev. = 1086.12
Slope Rt. = 0.59%
New Med. Dyke
Top Elev. = 1091.15
Type B1 Dit Slopes
37 C.Y. Emb.
Med. 5426+63
New Med. Dyke Catch Basin Lt. L-19
Std. C-15.10 Modified
Med. 5419+00
New 2-36"x 216' Pipe Culv.
New End Sections Lt. & Rt.
C.Y. Str. Excav.
C.Y. Spec. Backfill
Med. 5404+64
Q50 = 194 c.f.s.
D.H.W. = 1080.6
Grate Elev. = 1079.34
V.C.℄ Inv. Elev. = 1076.07
Slope Lt. = 0.50%
D.A. Rt. 0.011 Sq. Mi.
P.I. Elev. 1076.60
Curve = 308
P.I. Elev. 1080.50
Curve = 378
1600' V.C.
(Median ℄)
800' V.C.
(Median ℄)
D.A. 0.003 Sq. Mi.
Med. ℄ 5426+55
Q50 = 5.8 c.f.s.
D.H.W. = 1090.1
Future
E.B. Fin. ℄ Grade
New 10'x 2'x 50' Channel
See Detail
70 C.Y. Drain. Excav.
P.I. Elev. 1079.50
Curve = 378

ENBERG – PHOENIX HWY.
PAH-HASSAYAMPA RIVER SECTION
COPA COUNTY

FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	16	87	7-3-75

Arlington school Rd
T.I. 339 Ave app.

Sta. 5430+00 to Sta. 5442+00
Lin. Ft. New 5 Wire Fence
Std. C-12.01 & C-12.02
Sheets 25 & 27 For T.I. Fencing

R/W 1974

~~New Drain. Easement~~

150'

450'

5430

5435

5440

5445

5450

5455

5460

P.O.T. 5442+00.00
Set 5/8" I. Pin

2643.47' to 1/4 Cor.

T2N R5W

T1N R5W

Deleted

To Wickenberg

Fnd. Section Corner
3" I.P. & B.C. U.S.G.L.O. 1915

32 33 4 5

150'

Str. #16
Med. ℄ Sta. 5453+40
New 36" x 234' Pipe Culv., 23° Sk. Lt.
New End Sections Lt. & Rt.
Std. C-13.04 & C-13.05

264.06

734.12

P.O.T. 5455+83.31
U.S.C. & G.S. B.C. in Conc.
R.P.'s 150' Rt. & Lt.
T -- Set 5/8" I. Pins in Conc.

New Survey Monument Frame & Cover

Exist. 4 Wire Fence
Remove within R/W

No Access

+00

S 89° 58' 35.7" E.

Exist. Grader Road

Exist. R/W

No Access

Exist. R/W

20' Grader Road

Ramp "A" ℄

Control Grade Between W.B. ℄ & Ramp "A" ℄

W.B. Constr. ℄

S 75° 01' 35.7" E.

Med. ℄ Survey ℄

I.P. Elev. 1092.36

E.B. Constr. ℄

I.P. Elev. 1089.36

Control Grade Between W.B. ℄ & Ramp "C" ℄

22'

16'

118'

112'

54'

16'

54'

22'

I.P. Elev. 1089.87

Exist. R/W

Ramp "B" ℄

Control Grade Between E.B. ℄ & Ramp "B" ℄

Note: Exist. road to remain serviceable during construction.

N 74° 49' 45" E

Control Grade Between E.B. ℄ & Ramp "D" ℄

No Access

Rt. Sta. 5430+00 to Sta. 5438+00
800 Lin. Ft. New 5 Wire Fence
Std. C-12.01 & C-12.02
See Sheets 25 & 27 For T.I. Fencing

Str. #14
Med. ℄ Sta. 5438+00
New 48" x 228' Pipe Culv.
New End Sections Lt. & Rt.
Std. C-13.04 & C-13.05

Exist. R/W

Exist. 20' Grader Road

℄ 26' Grader Road

Exist. 50' Grader Road

New Survey Mon. Frame & Cover
Std. C-21.01

See Sheet 29
Str. #18

To Buckeye

N 07° 11' 50.7" W

150'

Fnd. 1/4 Corner
1" I.P. & B.C. U.S.G.L.O. 1915

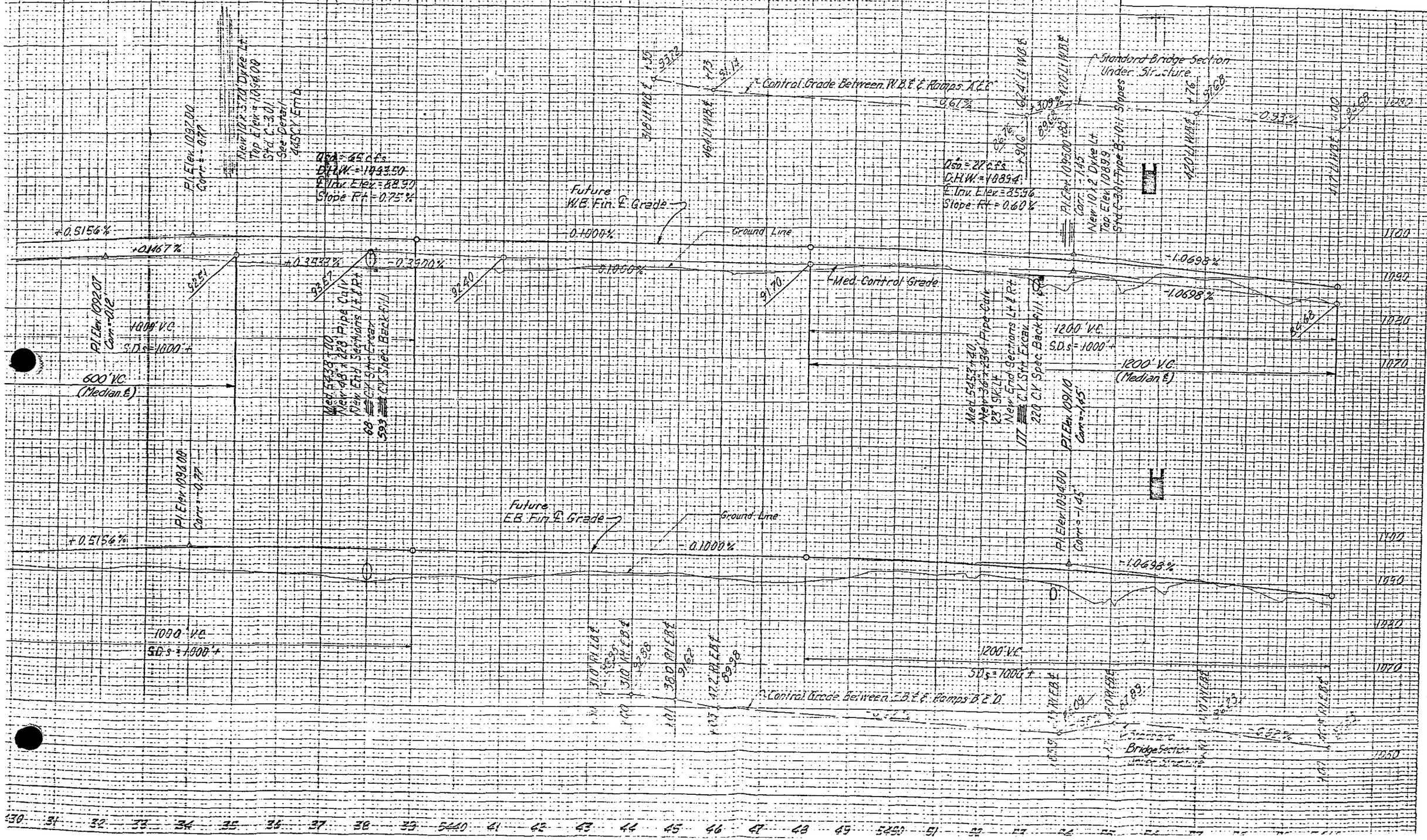
HASSAYAMPA ROAD INTERCHANGE
See Sheets 24-30

BM # 544 150' Rt. 5440+00
Set 5/8" I. Pin Elev. 1088.00

NBERG - PHOENIX HWY.
PAH - HASSAYAMPA RIVER SECTION
COPA COUNTY

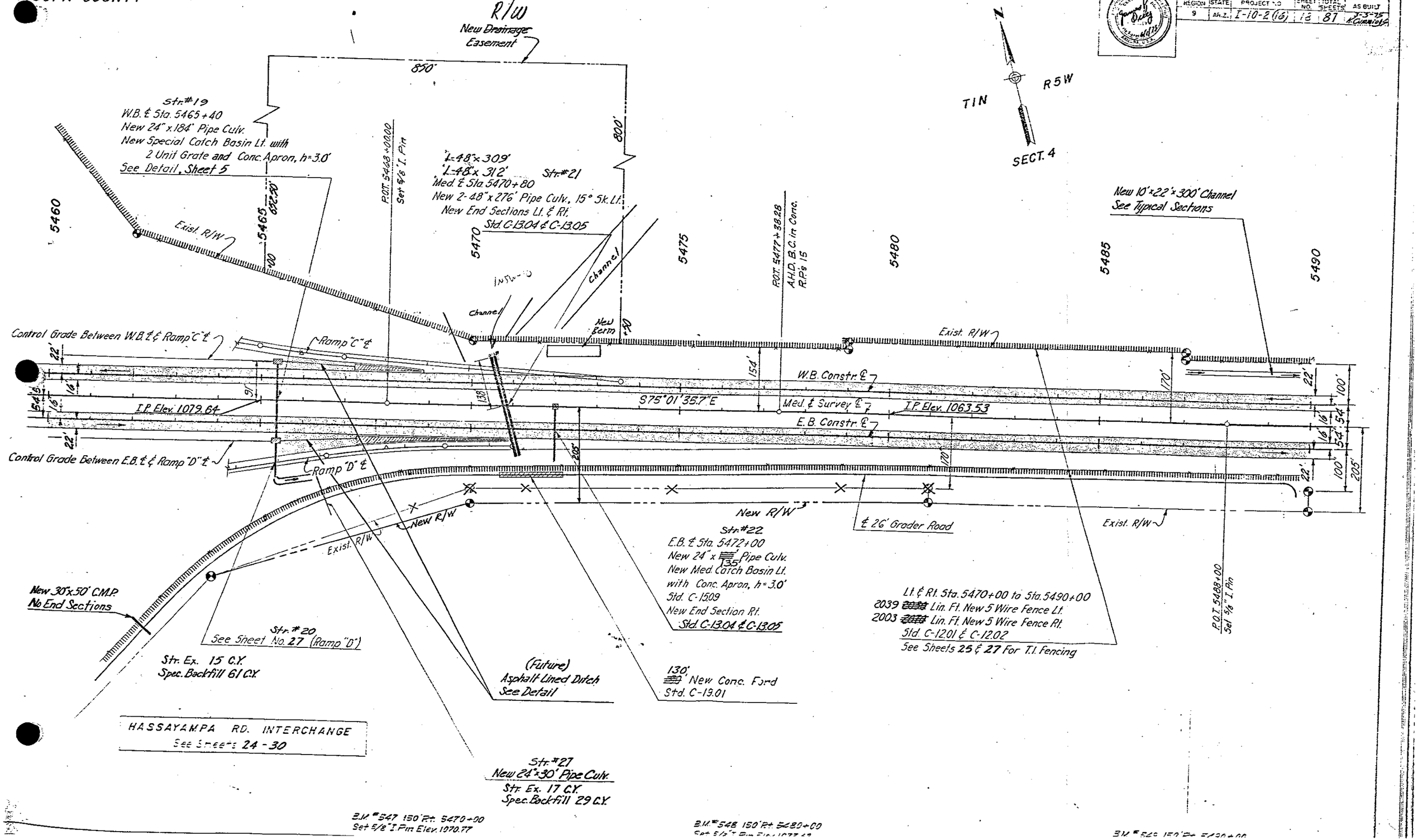
38' ROADWAY
EB & WB

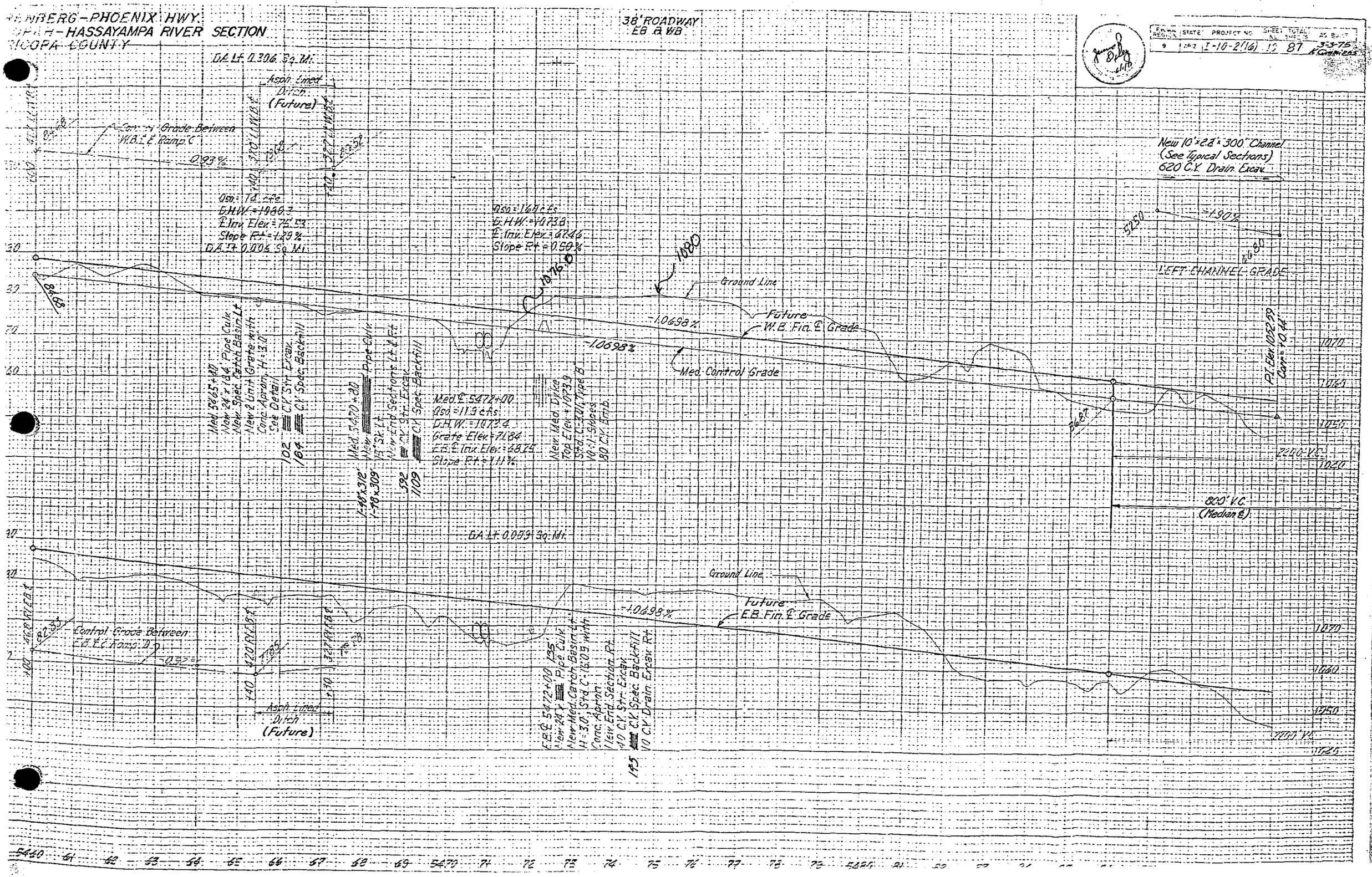
FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	17	87	3-3-75



GREENBERG-PHOENIX HWY.
NOPAH- HASSAYAMPA RIVER SECTION
MARICOPA COUNTY

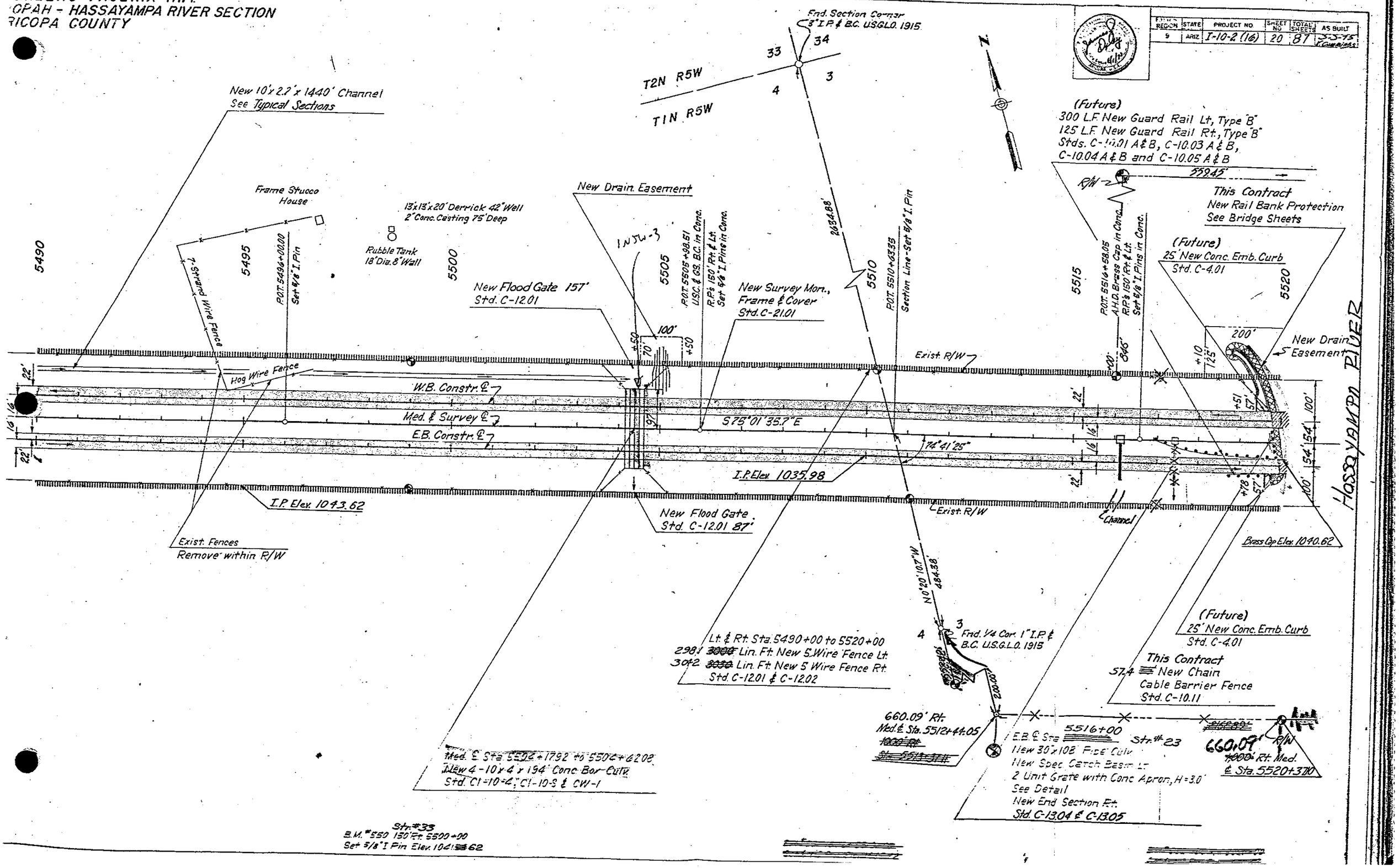
FEDERAL REGION	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	13	87	7-3-75 K.Cummins

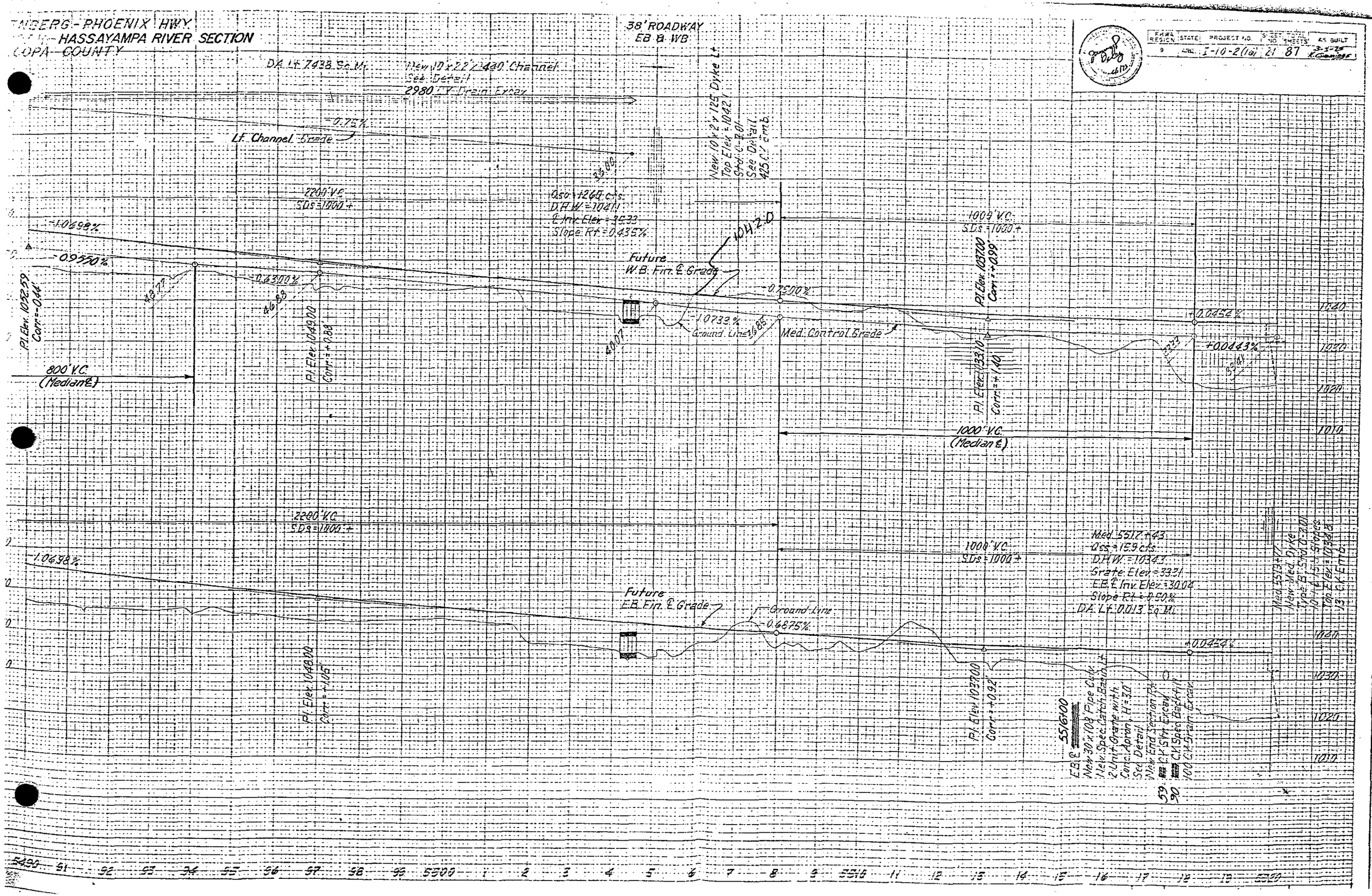



HAMBERG-PHOENIX HWY.
PHOENIX-HASSAYAMPA RIVER SECTION
MARICOPA COUNTY
38' ROADWAY
EB & WB
STATE PROJECT NO. SHEET TOTAL AS BUILT
I-10-2(16) 15 87 3-3-75
D.A. Lt. 0.306 Sq. Mi.
Asph. Lined Ditch (Future)
Control Grade Between W.B. & E. Ramp C
0.93%
Qsd = 14 cfs
D.H.W. = 1066.3
E. Inv. Elev. = 75.53
Slope Rt. = 1.29%
D.A. Rt. 0.006 Sq. Mi.
Qsd = 168 cfs
D.H.W. = 1073.8
E. Inv. Elev. = 67.46
Slope Rt. = 0.50%
New 10' x 2.0' x 300' Channel (See Typical Sections)
620 C.Y. Drain. Excav.
-1.90%
5250
LEFT CHANNEL GRADE
1080
1076.0
Ground Line
-1.0698%
Future W.B. Fin. ℄ Grade
Med. Control Grade
Pt. Elev. 1052.39
Curve = 10.44'
Med. 5425+00
New 24" x 164' Pipe Culv.
New Spec. Catch Basin Lt.
New 2 Unit Grate with Conc. Apron, H=2.0'
See Detail
C.Y. Str. Excav.
C.Y. Spec. Backfill
Med. 5420+00
New 24" x 80' Pipe Culv.
New 14" Sx Lt.
New End Sections Lt. & Rt.
C.Y. Str. Excav.
C.Y. Spec. Backfill
Med. ℄ 5472+00
Qsd = 11.9 cfs
D.H.W. = 1072.4
Grate Elev. = 71.84
E.B. ℄ Inv. Elev. = 68.75
Slope Rt. = 1.11%
New Med. Dike
Top Elev. = 1073.9
Std. C-324, Type B
10:1 Slopes
80 C.Y. Emb.
1-48" x 312'
1-48" x 309'
592
1109
1070
1060
1050
1040
1020
7200' V.C.
800' V.C. (Median ℄)
D.A. Lt. 0.039 Sq. Mi.
Ground Line
Future E.B. Fin. ℄ Grade
-1.0698%
Control Grade Between E.B. & E. Ramp D
0.93%
Asph. Lined Ditch (Future)
E.B. ℄ 5422+00
New 24" x 135' Pipe Culv.
New Med. Catch Basin Lt.
H=3.0', Std. C-1609 with
Conc. Apron
New End Section Rt.
10 C.Y. Str. Excav.
C.Y. Spec. Backfill
10 C.Y. Drain. Excav. Rt.
1070
1060
1050
1040
7000' V.C.
5440 61 62 63 64 65 66 67 68 69 5470 71 72 73 74 75 76 77 78 79 5425

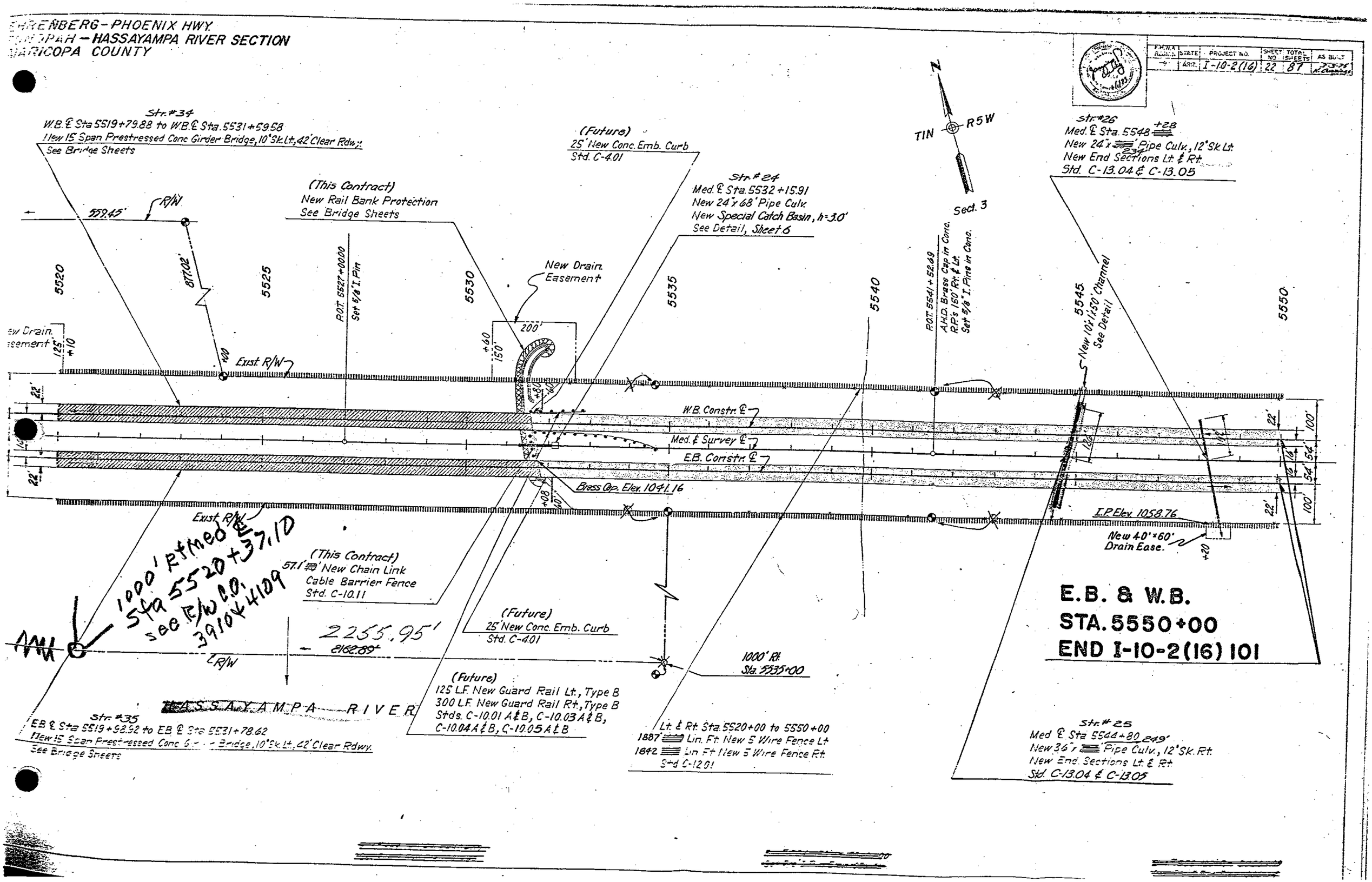
RENBERG - PHOENIX HWY.
OPAH - HASSAYAMPA RIVER SECTION
RICOPA COUNTY

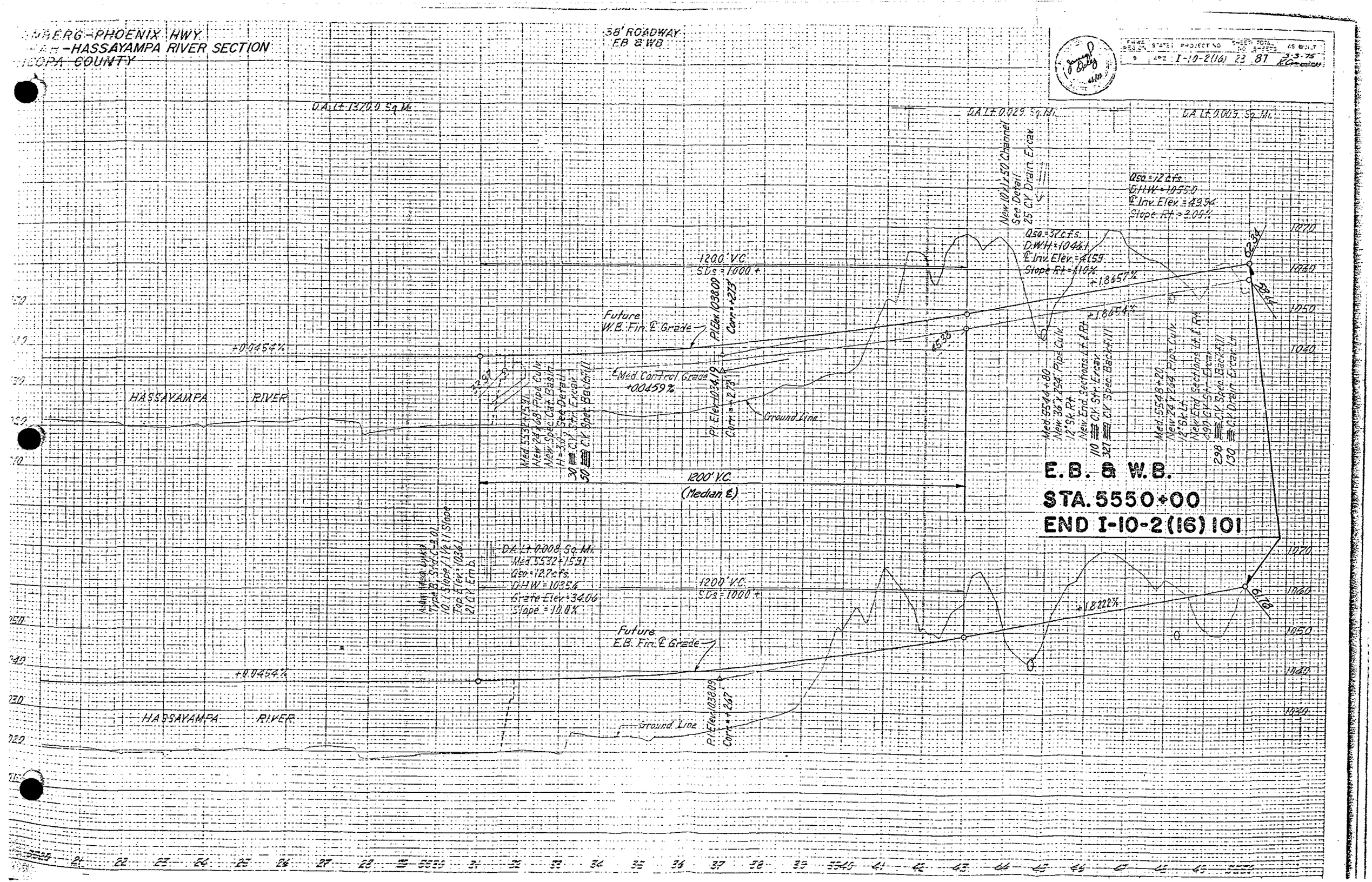
REGION	STATE	PROJECT NO	SHEET NO	TOTAL SHEETS	AS BUILT
9	ARIZ	I-10-2 (16)	20	87	5-5-75





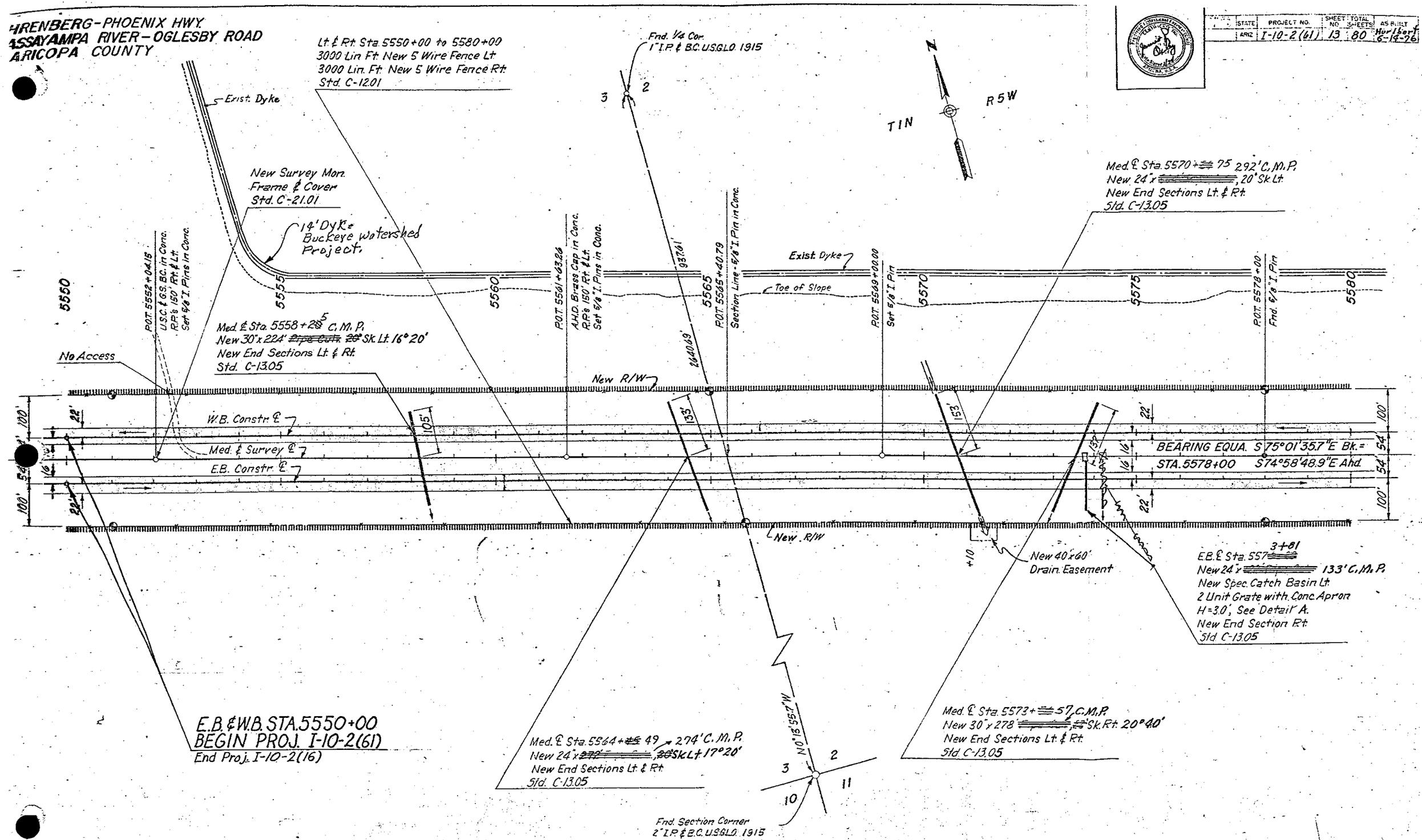
FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(16)	21	87	3-5-75 K. Cummings

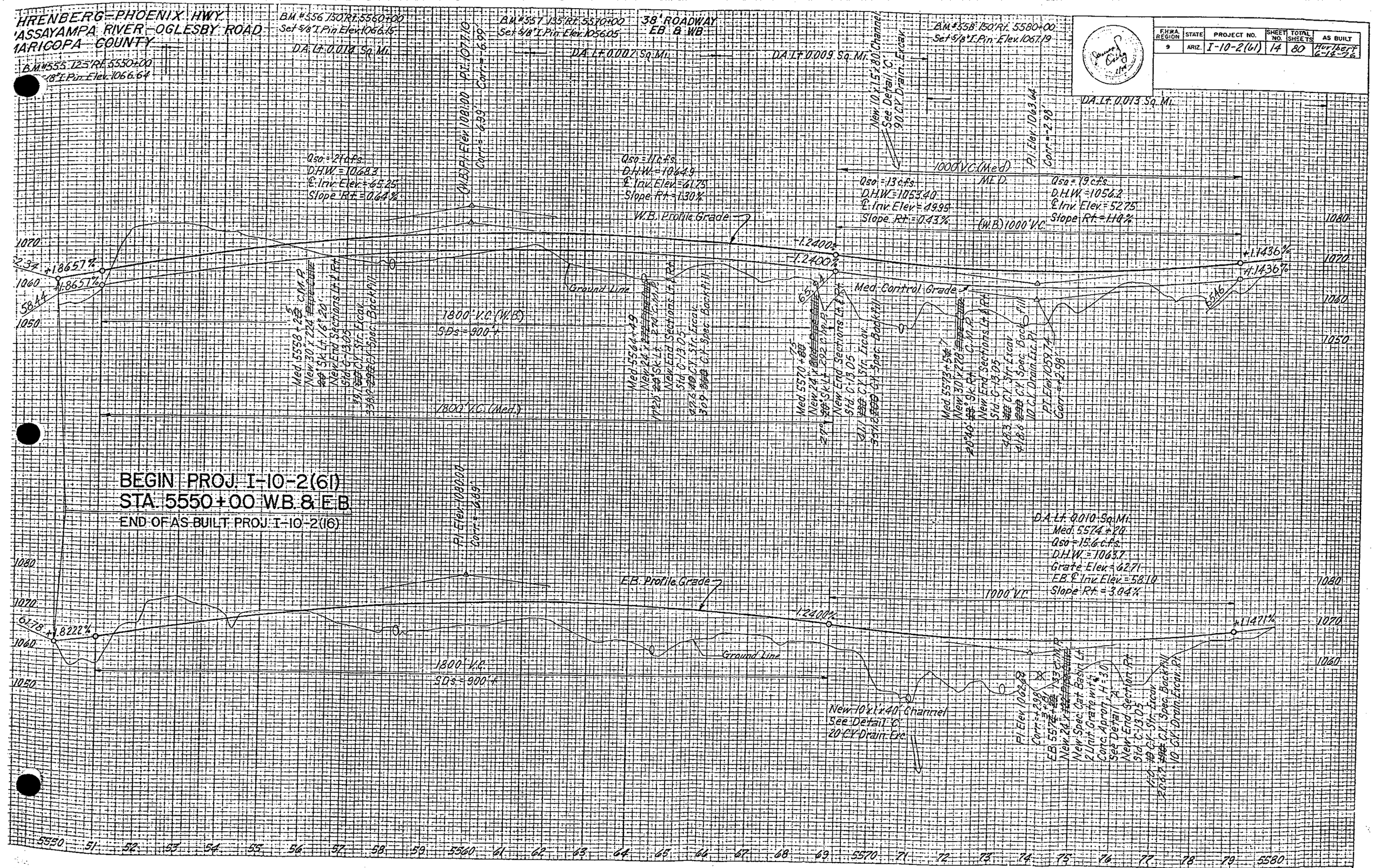

PHOENIX HWY.
HASSAYAMPA RIVER SECTION
MARICOPA COUNTY
F.H.W.A. Region | STATE | PROJECT NO. | SHEET NO | TOTAL SHEETS | AS BUILT
ARIZ. | I-10-2(16) | 22 | 87
Str. #34
W.B. ℄ Sta 5519+79.88 to W.B. ℄ Sta. 5531+59.58
1 New 15' Span Prestressed Conc Girder Bridge, 10' Sk. Lt., 42' Clear Rdwy.
See Bridge Sheets
(This Contract)
New Rail Bank Protection
See Bridge Sheets
(Future)
25' New Conc. Emb. Curb
Std. C-4.01
Str. #24
Med. ℄ Sta. 5532+15.91
New 24" x 68' Pipe Culv.
New Special Catch Basin, h=3.0'
See Detail, Sheet 6
TIN
R5W
Sect. 3
Str. #26
Med. ℄ Sta. 5548 +28
New 24" x 234' Pipe Culv., 12' Sk. Lt.
New End Sections Lt. & Rt.
Std. C-13.04 & C-13.05
559.45'
R/W
877.02'
5520
5525
5530
5535
5540
5545
5550
P.O.T. 5527+00.00
Set 5/8" I. Pin
New Drain. Easement
200'
150'
New Drain. Easement
125'
Exist. R/W
P.O.T. 5541+52.69
A.H.D. Brass Cap in Conc.
R.P.'s 150' Rt. & Lt.
Set 5/8" I. Pins in Conc.
New 10' x 150' Channel
See Detail
W.B. Constr. ℄
Med. & Survey ℄
E.B. Constr. ℄
Brass Cap. Elev. 1041.16
I.P. Elev. 1058.76
New 40' x 60' Drain Ease.
22'
100'
54'
16'
1000' Rt Med ℄
Sta 5520+37.10
see R/W C.O.
3910 & 4109
(This Contract)
57.1' New Chain Link
Cable Barrier Fence
Std. C-10.11
2255.95'
2162.89'
℄ R/W
(Future)
25' New Conc. Emb. Curb
Std. C-4.01
1000' Rt.
Sta. 5535+00
(Future)
125 L.F. New Guard Rail Lt., Type B
300 L.F. New Guard Rail Rt., Type B
Stds. C-10.01 A & B, C-10.03 A & B,
C-10.04 A & B, C-10.05 A & B
HASSAYAMPA RIVER
Str. #35
EB ℄ Sta 5519+98.92 to EB ℄ Sta 5531+78.62
New 15' Span Prestressed Conc Girder Bridge, 10' Sk. Lt., 42' Clear Rdwy.
See Bridge Sheets
Lt. & Rt. Sta. 5520+00 to 5550+00
1887 Lin. Ft. New 5 Wire Fence Lt.
1842 Lin. Ft. New 5 Wire Fence Rt.
Std. C-12.01
E.B. & W.B.
STA. 5550+00
END I-10-2(16) 101
Str. #25
Med ℄ Sta 5544+80 249'
New 36" x Pipe Culv., 12' Sk. Rt.
New End. Sections Lt. & Rt.
Std. C-13.04 & C-13.05


-PHOENIX HWY.
-HASSAYAMPA RIVER SECTION
COUNTY
38' ROADWAY
EB & WB
STATE PROJECT NO
I-10-2(16)
23
81
AS BUILT
D.A. (±) 1370.0 Sq. Mi.
D.A. (±) 0.029 Sq. Mi.
D.A. (±) 0.005 Sq. Mi.
New 10'(H) x 50' Channel
See Detail
25' C.Y. Drain. Excav.
Q50 = 12 c.f.s.
D.H.W. = 1055.0
℄ Inv. Elev. = 4954
Slope Rt. = 2.05%
Q50 = 37 c.f.s.
D.H.W. = 1046.1
℄ Inv. Elev. = 4155
Slope Rt. = 1.16%
1200' V.C.
SDs = 1000 +
Future
W.B. Fin. ℄ Grade
P.I. Elev. 1038.09
Corr. = +2.73
+0.0454%
Med. Control Grade
+0.0459%
Ground Line
HASSAYAMPA RIVER
Med. 5544+80
New 36" x 254' Pipe Culv.
12' Sk. Rt.
New End Sections Lt. & Rt.
110 C.Y. Str. Excav.
327 C.Y. Spec. Backfill
Med. 5548+20
New 24" x 244' Pipe Culv.
12' Sk. Lt.
New End Sections Lt. & Rt.
490 C.Y. Str. Excav.
298 C.Y. Spec. Backfill
130 C.Y. Drain. Excav. Lt.
Med. 5552+75.91
New 24" x 168' Pipe Culv.
New Spec. Cat. Basin
H = 3.0'
See Detail
30 C.Y. Str. Excav.
50 C.Y. Spec. Backfill
1200' V.C.
(Median ℄)
E.B. & W.B.
STA. 5550+00
END I-10-2(16) 101
+1.8657%
+1.8654%
+1.8222%
6.38
6.34
6.18
D.A. (±) 0.008 Sq. Mi.
Med. 5532+15.91
Q50 = 12.7 c.f.s.
D.H.W. = 1035.6
Grate Elev. = 34.06
Slope = 10.0%
Main Wash Bridge
Type B, Std. C-2.01
10.1' Slope (1:6.1) Slope
Top Elev. = 1036.1
21 C.Y. Str. Ex.
1200' V.C.
SDs = 1000 +
Future
E.B. Fin. ℄ Grade
P.I. Elev. 1038.09
Corr. = +2.67
+0.0454%
Ground Line
HASSAYAMPA RIVER
1070
1060
1050
1040
1030
1020
1010
1000
5520
21
22
23
24
25
26
27
28
29
5530
31
32
33
34
35
36
37
38
39
5540
41
42
43
44
45
46
47
48
49
5550

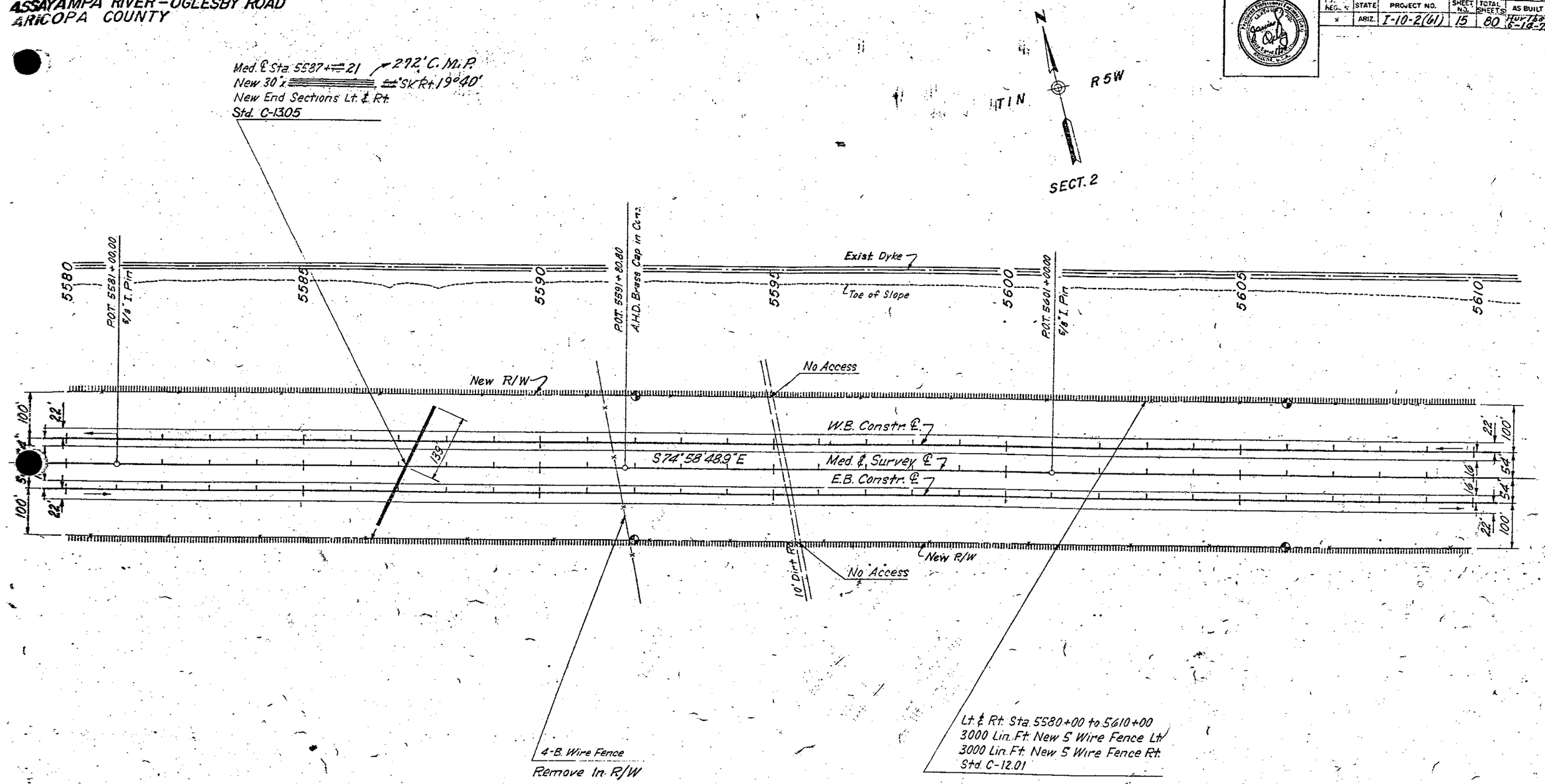
HRENBERG-PHOENIX HWY.
ASSAYAMPA RIVER-OGLESBY ROAD
ARICOPA COUNTY

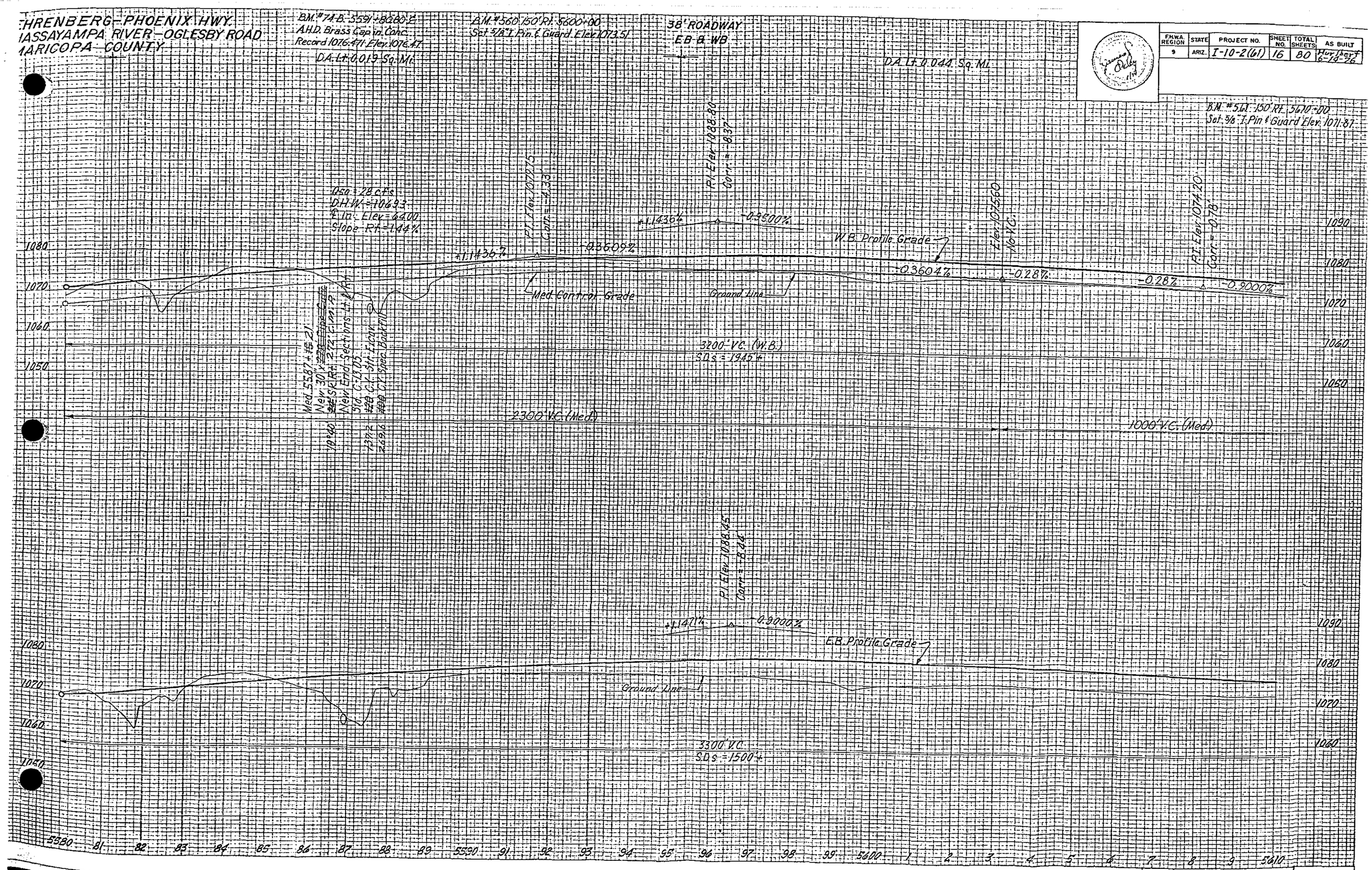
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
ARIZ	I-10-2(61)	13	80	Hurlbert 6-14-76




HRENBERG-PHOENIX HWY.
ASSAYAMPA RIVER-OGLESBY ROAD
ARICOPA COUNTY
B.M.#555 125'Rt. 5550+00
Set 5/8" I.Pin Elev. 1066.64
B.M.#556 150'Rt. 5560+00
Set 5/8" I.Pin Elev. 1066.15
D.A. Lt. 0.012 Sq. Mi.
B.M.#557 135'Rt. 5570+00
Set 5/8" I.Pin Elev. 1056.05
38' ROADWAY
EB & WB
D.A. Lt. 0.007 Sq. Mi.
D.A. Lt. 0.009 Sq. Mi.
B.M.#558 150'Rt. 5580+00
Set 5/8" I.Pin Elev. 1067.19
D.A. Lt. 0.013 Sq. Mi.
FHWA REGION 9
STATE ARIZ.
PROJECT NO. I-10-2(61)
SHEET NO. 14
TOTAL SHEETS 80
AS BUILT Hurlbert 6-14-76
Qso = 21 c.f.s.
D.H.W. = 1068.3
℄ Inv. Elev. = 65.25
Slope Rt. = 0.64%
(W.B.) PI. Elev. 1069.00
Corr. = -6.99
PI. Elev. 1077.16
Corr. = -6.99
Qso = 11 c.f.s.
D.H.W. = 1064.9
℄ Inv. Elev. = 61.75
Slope Rt. = 1.30%
W.B. Profile Grade
1000' V.C. (Med)
MED.
Qso = 13 c.f.s.
D.H.W. = 1053.40
℄ Inv. Elev. = 49.95
Slope Rt. = 0.43%
(W.B.) 1000' V.C.
Qso = 19 c.f.s.
D.H.W. = 1056.2
℄ Inv. Elev. = 52.75
Slope Rt. = 1.10%
PI. Elev. 1063.64
Corr. = -2.98
New 10'x1.5'x80' Channel
See Detail 'C'
90 C.Y. Drain. Excav.
-1.2400%
+1.8657%
+1.1436%
Ground Line
Med. Control Grade
1800' V.C. (W.B.)
S.D.s. = 900'+
1800' V.C. (Med.)
BEGIN PROJ. I-10-2(61)
STA. 5550+00 W.B. & E.B.
END OF AS BUILT PROJ. I-10-2(16)
PI. Elev. 1080.02
Corr. = -2.89
E.B. Profile Grade
1000' V.C.
+1.8222%
+1.1471%
1800' V.C.
S.D.s. = 900'+
D.A. Lt. 0.010 Sq. Mi.
Med. 5574+20
Qso = 15.6 c.f.s.
D.H.W. = 1063.7
Grate Elev. = 62.71
EB ℄ Inv. Elev. = 58.10
Slope Rt. = 3.04%
New 10'x1'x40' Channel
See Detail 'C'
20 C.Y. Drain. Exc.
PI. Elev. 1062.97
Corr. = -2.98
1080
1070
1060
1050
5550
51
52
53
54
55
56
57
58
59
5560
61
62
63
64
65
66
67
68
69
5570
71
72
73
74
75
76
77
78
79
5580

FED. REG. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
*	ARIZ.	I-10-2(61)	15	80	Hurt Leary 6-18-76

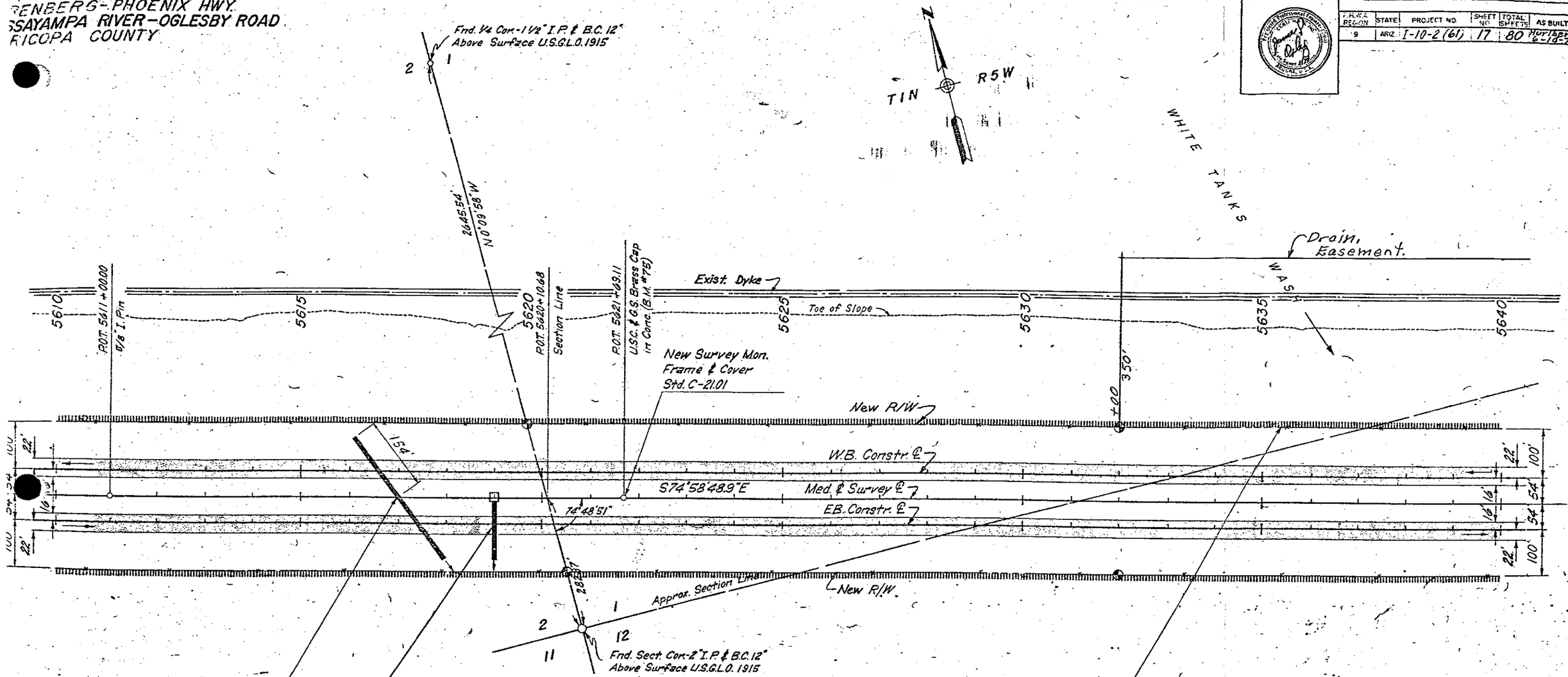




F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(61)	16	80	Hurlbert 6-19-76

RENBERG-PHOENIX HWY.
SSAYAMPA RIVER-OGLESBY ROAD
RICOPA COUNTY

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(61)	17	80	6-18-76



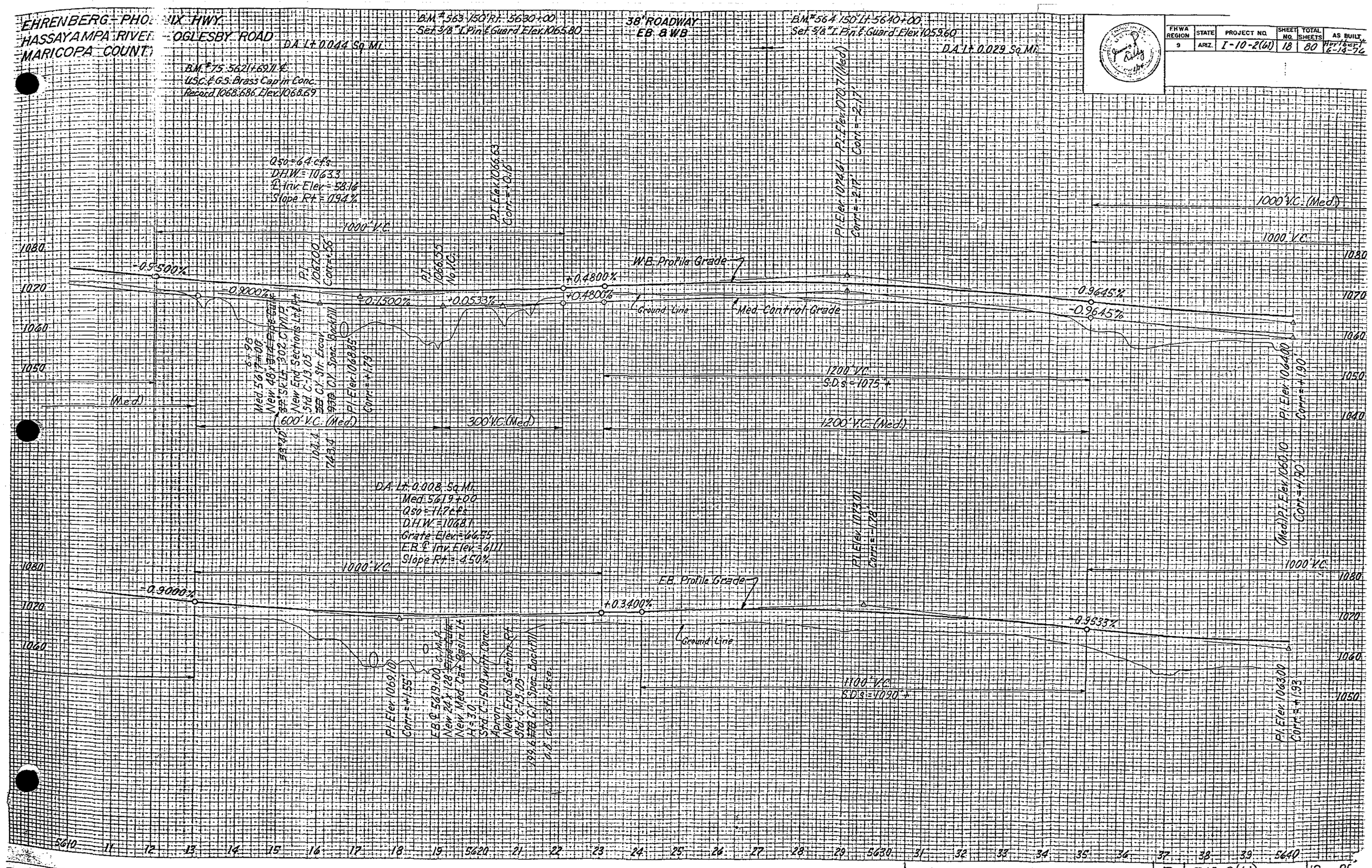
EB. ℄ Sta. 5619+00
New 24" x 128' ═══ C.M.P.
New Med. Catch Basin Lt., H=3.0'
Std C-15.09 with Conc. Apron
New End Section Rt.
Std. C-13.05

Lt. & Rt. Sta. 5610+00 to 5640+00
3000 Lin. Ft. New 5 Wire Fence Lt.
3000 Lin. Ft. New 5 Wire Fence Rt.
Std. C-12.01

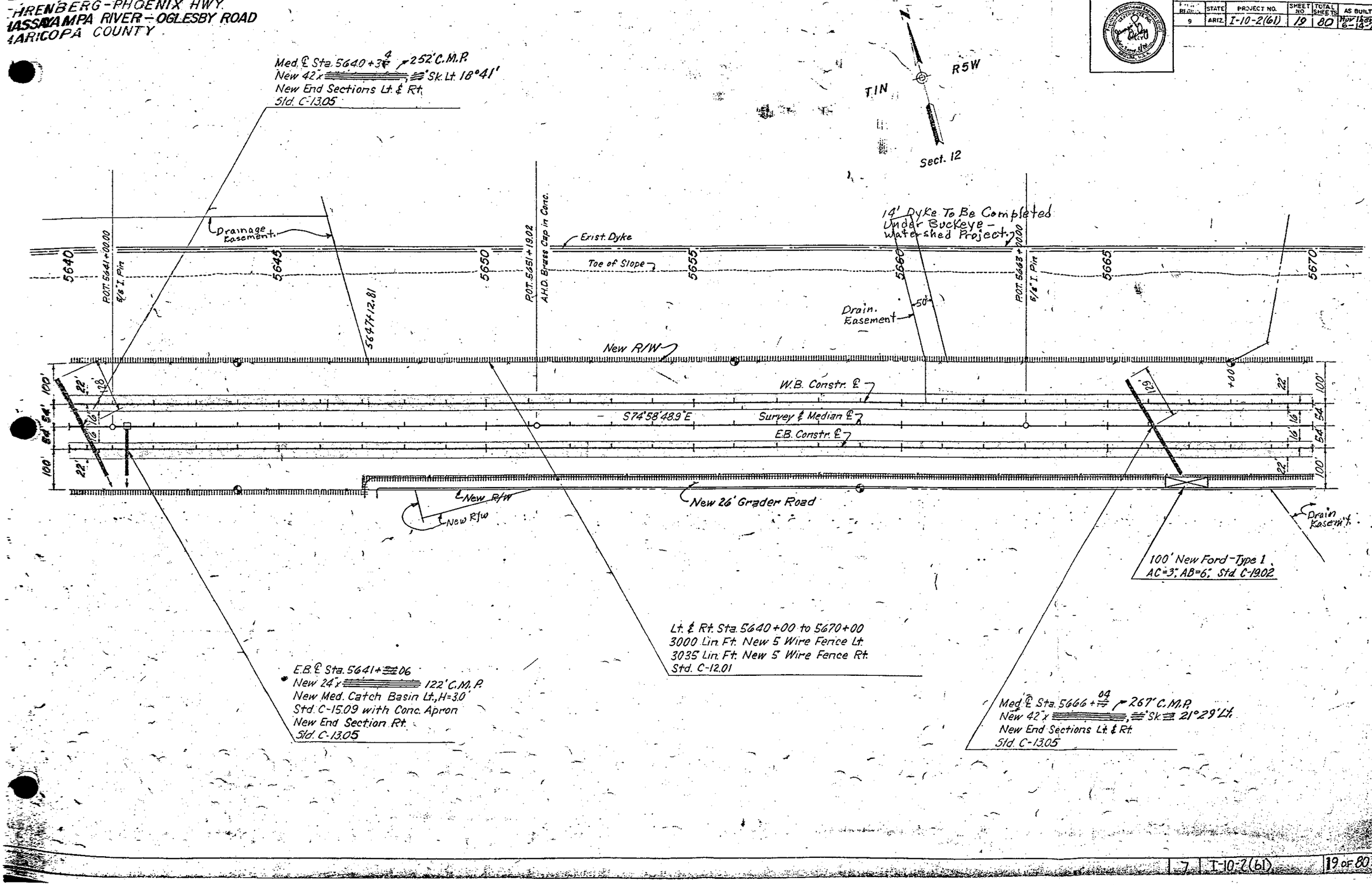
Med. ℄ Sta. 561 6+98 ═══ → 302' C.M.P.
New 48" x ═══, ~~57°~~ Sk. ~~=~~ 33°40' Lt.
New End Sections Lt. & Rt.
Std. C-13.05

EHRENBERG - PHOENIX HWY.
HASSAYAMPA RIVER - OGLESBY ROAD
MARICOPA COUNTY

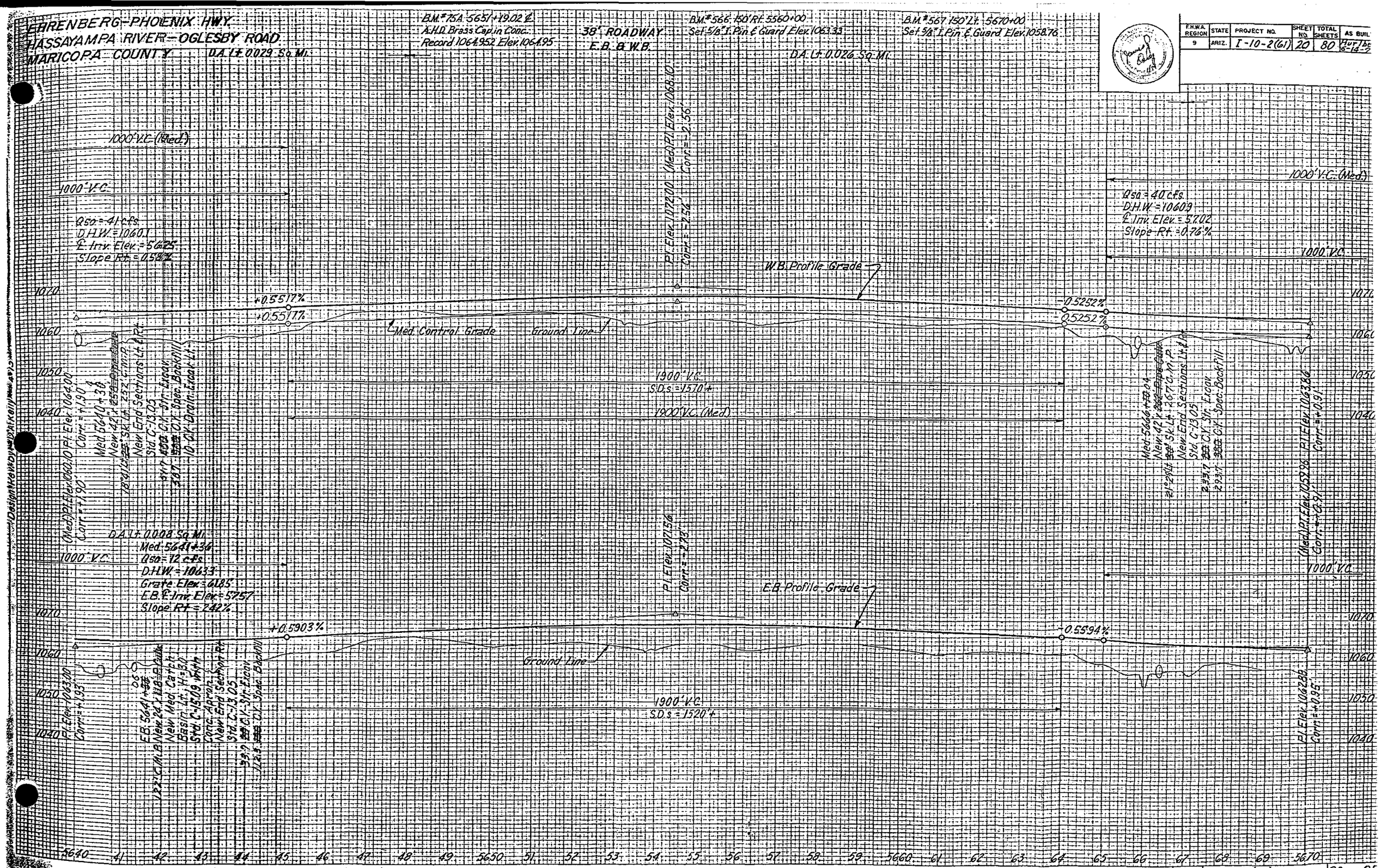
FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(61)	18	80	Hurlbert 6-14-76



FED. REG.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(61)	19	80	Hor. Incorp. 6-14-76



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	I-10-2(61)	20	80	Hur Dec 6-14-72



APPENDIX D. HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION

D.1. Precipitation Data

The methodology used to develop the hydrology for this project does not required any precipitation data.

D.2. Physical Parameters Calculations

Table D-1 lists the basin areas that were used for determining the peak flows.

D.3. Hydrograph Routing Data

The methodology used to develop the hydrology for this project does not required any routing data.

D.4. Reservoir Routing Data

The methodology used to develop the hydrology for this project does not required any reservoir routing data.

D.5. Flow Splits and Diversion Data

Flow Splits and Diversion were not considered in developing the Hydrology for this project. However, these parameters were considered during the hydraulic analysis.

D.6. Hydrologic Calculations

Table D-2 lists the areas that contributed runoff through each concentration point. **Table D-3** lists the runoff for Wash T1S-R6W-S13 (Phillips South Wash) from **Figure 2B**. The corresponding peak flows were calculated according to the method described in **Section 4- Hydrology**.

Table D-1
Basin Areas

Basin ID	Area s-ft	Area Acres	Area s-miles
1	25,306,851	581	0.908
2	31,855,170	731	1.143
2A	1,754,495	40	0.063
2B	16,091,257	369	0.577
2C	14,009,418	322	0.503
3	35,798,208	822	1.284
3A	11,433,080	262	0.410
3B	14,850,614	341	0.533
3C	9,514,515	218	0.341
4	31,900,532	732	1.144
5	14,835,226	341	0.532
6	75,383,527	1,731	2.704
6A	14,018,549	322	0.503
6B	13,277,006	305	0.476
6C	8,216,052	189	0.295
6D	4,240,957	97	0.152
6E	9,438,619	217	0.339
6F	21,382,899	491	0.767
6G	4,809,445	110	0.173
7	65,952,557	1,514	2.366
8	15,067,652	346	0.540
9	62,062,529	1,425	2.226
9A	24,376,486	560	0.874
9B	8,726,648	200	0.313
9C	28,959,395	665	1.039
10	33,164,265	761	1.190
11	11,491,508	264	0.412
12	53,158,085	1,220	1.907
13	22,661,704	520	0.813
14	64,371,582	1,478	2.309
14A	44,528,721	1,022	1.597
14B	12,916,483	297	0.463
14C	6,926,378	159	0.248
15	38,779,303	890	1.391
15A	23,671,218	543	0.849
15B	15,108,085	347	0.542
16	8,720,989	200	0.313
17	21,463,250	493	0.770
18	33,974,797	780	1.219
19	22,214,481	510	0.797
20	14,292,768	328	0.513
21	24,630,028	565	0.883
21A	3,032,458	70	0.109
21B	10,173,267	234	0.365
21C	11,424,303	262	0.410
22A	5,727,230	131	0.205
22B	2,790,737	64	0.100
23	7,591,127	174	0.272
24	15,968,893	367	0.573
25	6,693,951	154	0.240
40	21,174,639	486	0.760
41	33,396,534	767	1.198
42	14,155,360	325	0.508
43	42,644,746	979	1.530
44	65,638,270	1,507	2.354

Table D-1
Basin Areas

Basin ID	Area s-ft	Area Acres	Area s-miles
45	137,098,096	3,147	4.918
46	43,600,104	1,001	1.564
47	80,154,530	1,840	2.875
47A	30,053,731	690	1.078
47B	50,100,799	1,150	1.797
48	17,429,759	400	0.625
50	75,351,705	1,730	2.703
51	57,909,033	1,329	2.077
51A	32,672,072	750	1.172
51B	25,236,961	579	0.905
52	8,759,240	201	0.314
53	39,260,625	901	1.408
53A	17,945,547	412	0.644
53B	21,315,078	489	0.765
54	15,643,677	359	0.561
55	5,265,552	121	0.189
55A	2,398,409	55	0.086
55B	2,867,143	66	0.103
56	31,421,870	721	1.127
57	20,567,505	472	0.738
58	25,341,074	582	0.909
59	77,324,681	1,775	2.774
59A	27,389,486	629	0.982
59B	49,935,195	1,146	1.791
60	13,161,943	302	0.472
61	37,151,984	853	1.333
61A	32,616,891	749	1.170
61B	4,535,093	104	0.163
62	63,523,417	1,458	2.279
62A	3,498,438	80	0.125
62B	46,121,651	1,059	1.654
62C	13,903,328	319	0.499
63	18,935,665	435	0.679
64	59,854,661	1,374	2.147
64A	13,825,292	317	0.496
64B	46,029,369	1,057	1.651
65	8,127,157	187	0.292
66	20,334,237	467	0.729
67	17,187,432	395	0.617
70	16,215,186	372	0.582
71	18,678,876	429	0.670
72	12,578,181	289	0.451
100	12,158,040	279	0.436
101	27,575,946	633	0.989
102	17,487,507	401	0.627
103	23,130,300	531	0.830
104	28,202,205	647	1.012
105	23,241,019	534	0.834
106	15,589,052	358	0.559
107	18,990,482	436	0.681
108	7,179,775	165	0.258
300	5,714,321	131	0.205
301	9,989,656	229	0.358
CAP shute	324,000,000	7,438	11.622

FinalBasinAreas_10_2.wb3

Table D.2
Flow Calculations

(listed from south to north, west to east)

Wash	Basin ID No.	Conc. Point	Location	Area [sqmls]	100 yr Flow [cfs]
T1S-R5W-S29	44,43,42,41,40	44	Arlington Canal	6.349	2990
T1S-R5W-S29W	42,41	43L	Ray Rd. Align.	1.706	1250
	42,41,44,43	43C	Ray Rd. Align.	5.590	2750
T1S-R5W-S29E	44	42	Southern Pac R/R	2.354	1550
	44.43	43R	Extension	3.884	2160
	44,43,42,41	43C	Extension	5.590	2750
T1S-R5W-S17	10,12,48	45L	Van Buren	3.722	2100
	10,12,48,47A,16	45C	Van Buren	5.112	2590
	10,12,48,47,16	46	Lower Buckeye	6.910	3160
	10,12,48,47,16,46	47	Salome Highway	8.474	3620
	10,12,48,47,16,46,45	48	Southern Pac R/R	13.391	4900
T2N-R6W-S35	10	25	Indian School Rd	1.190	990
	10,12	26	I-10	3.096	1860
T1N-R6W-S11	16	63	I-10	0.313	410
	16,47A	45R	Van Buren	1.391	1090
T2N-R6W-S36	4	21	Glendale Ave	1.144	960
	4,8	22	Bethany Home Rd.	1.685	1240
	4,8,11	23	Indian School Rd	2.097	1430
	4,8,11,15A	24L	I-10	2.946	1800
	4,8,11,15(15A,15B)	24	I-10	3.488	2010
	4,8,11,15,55B	55L	McDowell	3.591	2050
T2N-R6W-S36W	15B	24R	I-10	0.542	590
T1S-R5W-S32	Phillips,59	59C	Broadway Align.	18.537	6930
(LUKE WASH)	Phillips,59,51B	50R	Salome Highway	22.216	7650
	Phillips,59,51	50C	Salome Highway	23.388	7880
	Phillips,59,51,50	49	Southern Pac R/R	26.091	8390
T1N-R5W-S32	51A	50L	Salome Highway	1.172	980
T1N-R6W-S12	53A	54L	Van Buren	0.644	660
T1S-R6W-S13	1,2,5,9,7,17	20	I-10	7.944	3470
(PHILLIPS SOUTH)	1,2,5,9,7,17,55A	55R	McDowell	8.030	3490
	1,2,5,9,7,17,55A,(4,8,11,15,55B)	55C	McDowell	11.621	4460
	1,2,5,9,7,17,55A,(4,8,11,15,55B),54	54R	Van Buren	12.182	4600
	1,2,5,9,7,17,4,8,11,15,55,54,53A	54C	Van Buren	12.826	4760
	1,2,5,9,7,17,4,8,11,15,55,54,53	53L	Lower Buckeye	13.591	4950
	1,2,5,9,7,17,4,8,11,15,55,54,53,Dickey	53C	Confluenc Dickey	19.398	6260
	1,2,5,9,7,17,4,8,11,15,55,54,53,Dickey,52	59L	Broadway Align.	19.712	6330
T2N-R5W-S31W	1	6L	Dunlap	0.908	820
(PHIILLIPS NORTH)	1,2	6	Dunlap	2.050	1410
	1,2,5	17	Glendale Ave	2.583	1650
	1,2,5,9A	18L	Bethany Home Rd.	3.457	2000
	1,2,5,9A,9B	18	Bethany Home Rd.	3.770	2120
	1,2,5,9(9A,9B,9C)	19R	Indian School Rd	4.809	2490
	1,2,5,9,7	19C	Indian School Rd	7.174	3240
	1,2,5,9,7,17	20	I-10	7.944	3470
T2N-R5W-S19	7	19L	Indian School Rd	2.366	1550
T2N-R5W-S08	9B	18R	Bethany Home Rd.	0.313	410

Table D.2
Flow Calculations

(listed from south to north, west to east)

Wash	Basin ID No.	Conc. Point	Location	Area [sqmls]	100 yr Flow [cfs]
T3N-R5W-S31	2B	5L	Peoria Ave.	0.577	610
T3N-R5W-S30	2C	5R	Peoria Ave.	0.503	560
	2B,2C	5C	Peoria Ave.	1.080	920
	2(2A,2B,2C)	6R	Peoria Ave.	1.143	960
T1N-R6W-S05	13,18,19	28C	I-10 Dickey/2n5w 32	2.828	1750
(DICKEY SOUTH)	13,18,19,58,22A	51	Van Buren	3.943	2180
	13,18,19,58,22A,57	52	Buckeye Rd.	4.681	2440
	13,18,19,58,22A,57,56	53R	Lower Buckeye	5.808	2820
T2N-R5W-S31	13	27	Indian School Rd	0.813	770
(DICKEY NORTH)	13,18	28L	I-10	2.032	1400
	13,18,19	28C	I-10 Dickey/2n5w 32	2.828	1750
T1N-R5W-S30	22B,59A	60	Buckeye Align.	1.083	930
	22B,59A,59B	59R	Broadway Align.	2.874	1770
T2N-R5W-S32	19	28R	I-10	0.797	760
	13,18,19	28C	I-10 Dickey/2n5w 32	2.828	1750
T1S-R5W-S08	60	61	Southern Pac R/R	0.472	530
T1S-R5W-S09	67,66,65	35R	Baseline	1.637	1220
	67,66,65,64B	35C	Baseline	3.289	1930
	67,66,65,64	36	Salome Highway	3.784	2120
	67,66,65,64,62C,62A,63	56	Baseline	5.088	2580
	67,66,65,64,63,62	37	Southern Pac R/R	6.742	3110
	67,66,65,64,63,62,61A	62L	Southern Pac R/R	6.905	3160
	67,66,65,64,63,62,61	62	Southern Pac R/R	7.214	3250
T1N-R5W-S33W	63	57	Baseline	0.679	680
	63,62A	56L	Dobbins Rd.	0.805	760
T1N-R5W-S33N	64B	35L	Baseline	1.651	1220
T1N-R5W-S28W	67	34L	Southern Rd.	0.617	640
	67,66	34	Southern Rd.	1.346	1070
T1S-R5W-S09W	61A	62R	I-10	1.170	970
T1N-R5W-S33E	62C	56R	Dobbins Rd.	0.499	550
T1N-R5W-S28E	66	34R	Southern Rd.	0.729	710
	66,67	34C	Southern Rd.	1.346	1070
T1S-R5W-S16	70	38	Elliot Align.	0.582	610
T1S-R5W-S22N	106	39		0.559	600
T1S-RW-S22S	107	40		0.681	680
	107,108	41		0.939	840
T1N-R5W-S22	71	33	Lower Buckeye	0.670	670
T1N-R5W-S15	105	32	Buckeye Rd.	0.834	780
T1N-R5W-S10	23,72	31	I-10	0.723	710
T1N-R5W-S04	24	15L	I-10	0.573	610

Table D.2
Flow Calculations

(listed from south to north, west to east)

Wash	Basin ID No.	Conc. Point	Location	Area [sqmls]	100 yr Flow [cfs]
T2N-R5W-S33E	6E	8R	Peoria	0.339	430
	6E,6A	8C	Peoria	0.841	780
	6E,6A,6G	9L	Northern Ave.	1.014	890
	6E,6A,6G,6B	9C	Northern Ave.	1.490	1140
	6E,6A,6G,6B,6D	10R	Northern Ave.	1.642	1220
	6E,6A,6G,6B,6D,6C	10C	Northern Ave.	1.937	1360
	6	11	Glendale Ave	2.704	1700
	6,14A	70R	Camelback Rd.	4.301	2310
	6,14A,14B	70C	Camelback Rd.	4.765	2470
	6,14	13L	Indian School Rd	5.013	2550
	6,14,21A,21B	13C	Indian School Rd	5.487	2710
	6,14,21	14R	Thomas Rd.	5.897	2840
	6,14,21,20	14C	Thomas Rd.	6.409	3010
	6,14,21,20,25	15R	I-10	6.649	3080
	6,14,21,20,25,24	15C	I-10	7.222	3250
T2N-R5W-S33W	20	14L	Thomas Rd.	0.513	560
T2N-R5W-S21	14B	70L	Camelback Rd.	0.463	530
T2N-R5W-S05E	6C	10L	Northern Ave.	0.295	390
T3N-R5W-S32E	6A	8L	Dunlap	0.503	560
T2N-R5W-S28	21B	12	Camelback Rd.	0.365	450
	21B,21A	13R	Indian School Rd	0.474	540
T2N-R5W-S05W	6B	9R	Northern Ave.	0.476	540
T2N-R5W-S27S	104	72(30L)	Indian School Rd	1.012	890
T2N-R5W-S27N	102	29	Camelback Rd.	0.627	640
	102,103	30(30R)	Indian School Rd	1.457	1130
		30C	Hassayampa Confl.	2.469	1600
T2N-R5W-S04	101	16	Northern Ave.	0.989	870
T3N-R5W-S28S	100	7	Peoria Ave.	0.436	510
T3N-R5W-S28N	Upstream of CAP estimate		CAP Overshute		4460
	3A	3R	Cactus	0.410	4950
	3A,3B	3C	Cactus	0.943	5300
	3(3A,3B,3C)	4	Peoria Ave.	1.284	5500
T3N-R5W-S20	3B	3L	Cactus	0.533	580
T3N-R5W-S21S	300	2	Cactus	0.205	310
T3N-R5W-S21N	301	1	Thunderbird Rd.	0.358	450
Railroad Crossing	Phillips,59,51,50,10,12,48,47,16,46,45	48,49	Railroad	39.482	10030
at T1S-R5W-S32 and					
T1S-R5W-S17					

FinalFlowSummary_9_26.wb3

Table D.3
Flow Calculations

(listed from south to north, west to east)

Wash	Basin ID No.	Conc. Point	Location	Area [sqmls]	100 yr Flow [cfs]
T1S-R6W-S13	1,2,5,9,7,17	20	I-10	7.944	3530
(PHILLIPS SOUTH)	1,2,5,9,7,17,55A	55R	McDowell	8.030	2350
	1,2,5,9,7,17,55A,(4,8,11,15,55B)	55C	McDowell	11.621	2780
	1,2,5,9,7,17,55A,(4,8,11,15,55B),54	54R	Van Buren	12.182	2840
	1,2,5,9,7,17,4,8,11,15,55,54,53A	54C	Van Buren	12.826	2910
	1,2,5,9,7,17,4,8,11,15,55,54,53	53L	Lower Buckeye	13.591	2990
	1,2,5,9,7,17,4,8,11,15,55,54,53,Dickey	53C	Confluenc Dickey	19.398	3520
	1,2,5,9,7,17,4,8,11,15,55,54,53,Dickey,52	59L	Broadway Align.	19.712	3550

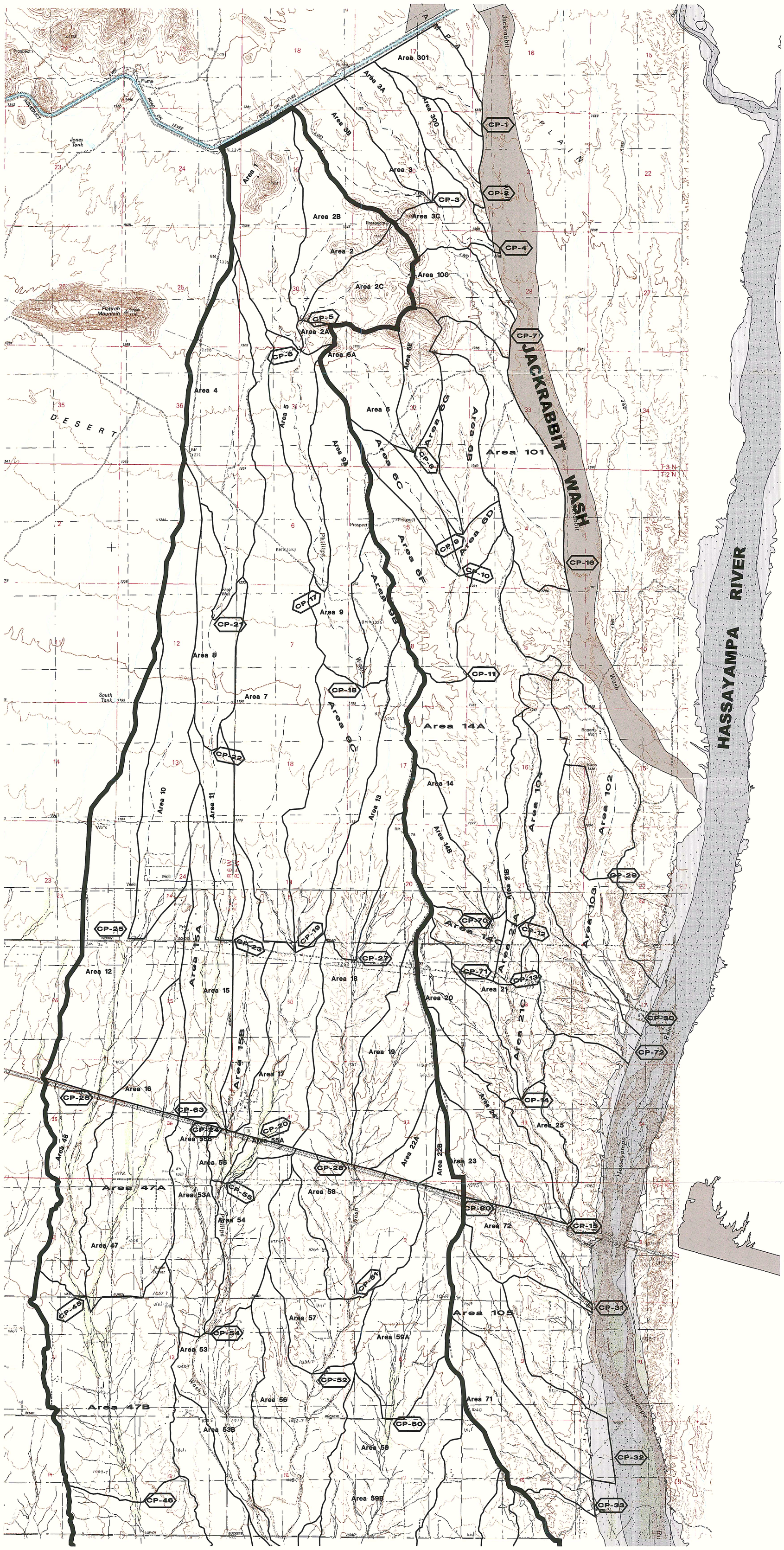
APPENDIX E. HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

The hydraulic calculations have been included under a separate cover titled

VOLUME 2 OF 2

HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

(APPENDIX E).



LEGEND

- WASH BASELINE
- T2N-R5W-S04 — WASH I.D. LABEL
- PROJECT LIMITS
- BASIN BOUNDARIES
- Area 100 — BASIN NUMBER
- CP-1 — CONCENTRATION POINTS
- EXISTING FLOODPLAIN
- EXISTING FLOODWAY
- EXISTING ZONE A

Zone - A floodplain Delineation of Watershed "PP" Luke Wash	Luke Wash FIS Approximated Equivalent Concentration Points
CP-17	S5
CP-25	S10
CP-23	S40
CP-19	C20
CP-26	C245
CP-63	S225
CP-24	C55
CP-20	C35
CP-55	C60
CP-28	C90
CP-60	S135
Others	N/I

2,000 0 2,000 4,000

Entellus™
2255 N. 44th Street Suite 125
Phoenix, AZ 85008.3279
Tel 602.244.2566
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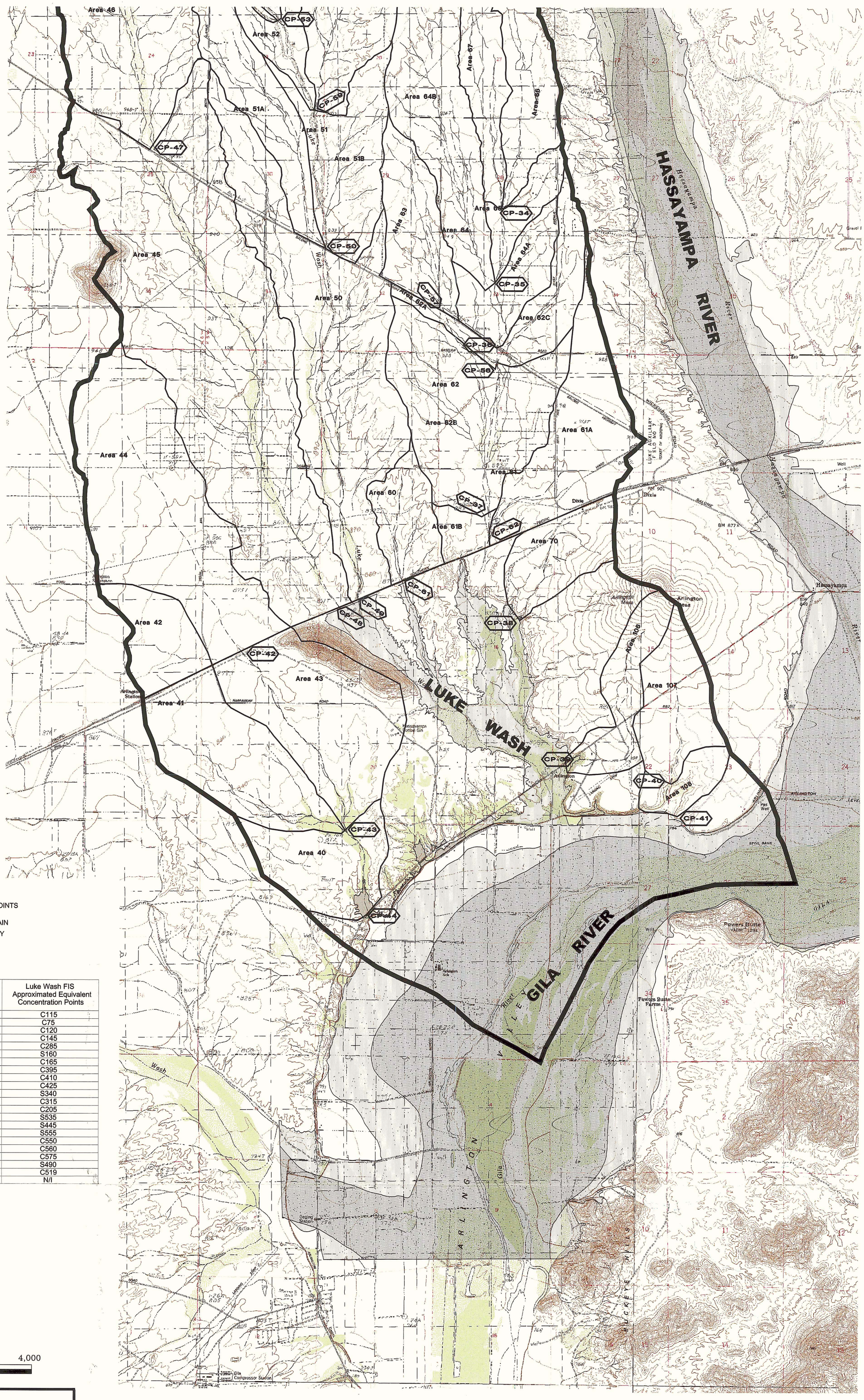
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

PLATE 1

HYDROLOGY MAP

File: plate_1_2.dwg Date: 10/05/2000



LEGEND

- WASH BASELINE
- T2N-R5W-S04 WASH I.D. LABEL
- PROJECT LIMITS
- BASIN BOUNDARIES
- Area 100 BASIN NUMBER
- CP-1 CONCENTRATION POINTS
- EXISTING FLOODPLAIN
- EXISTING FLOODWAY
- EXISTING ZONE A

Zone - A floodplain Delineation of Watershed "PP" Luke Wash	Luke Wash FIS Approximated Equivalent Concentration Points
CP-53R	C115
CP-53L	C75
CP-53C	C120
CP-59	C145
CP-47	C285
CP-50L	S160
CP-50C	C165
CP-36	C395
CP-56	C410
CP-62	C425
CP-61	S340
CP-48	C315
CP-49	C205
CP-42	S535
CP-38	S445
CP-43L	S555
CP-43R	C550
CP-43C	C560
CP-44	C575
CP39	S490
CP-41	C519
Others	N/I

2,000 0 2,000 4,000

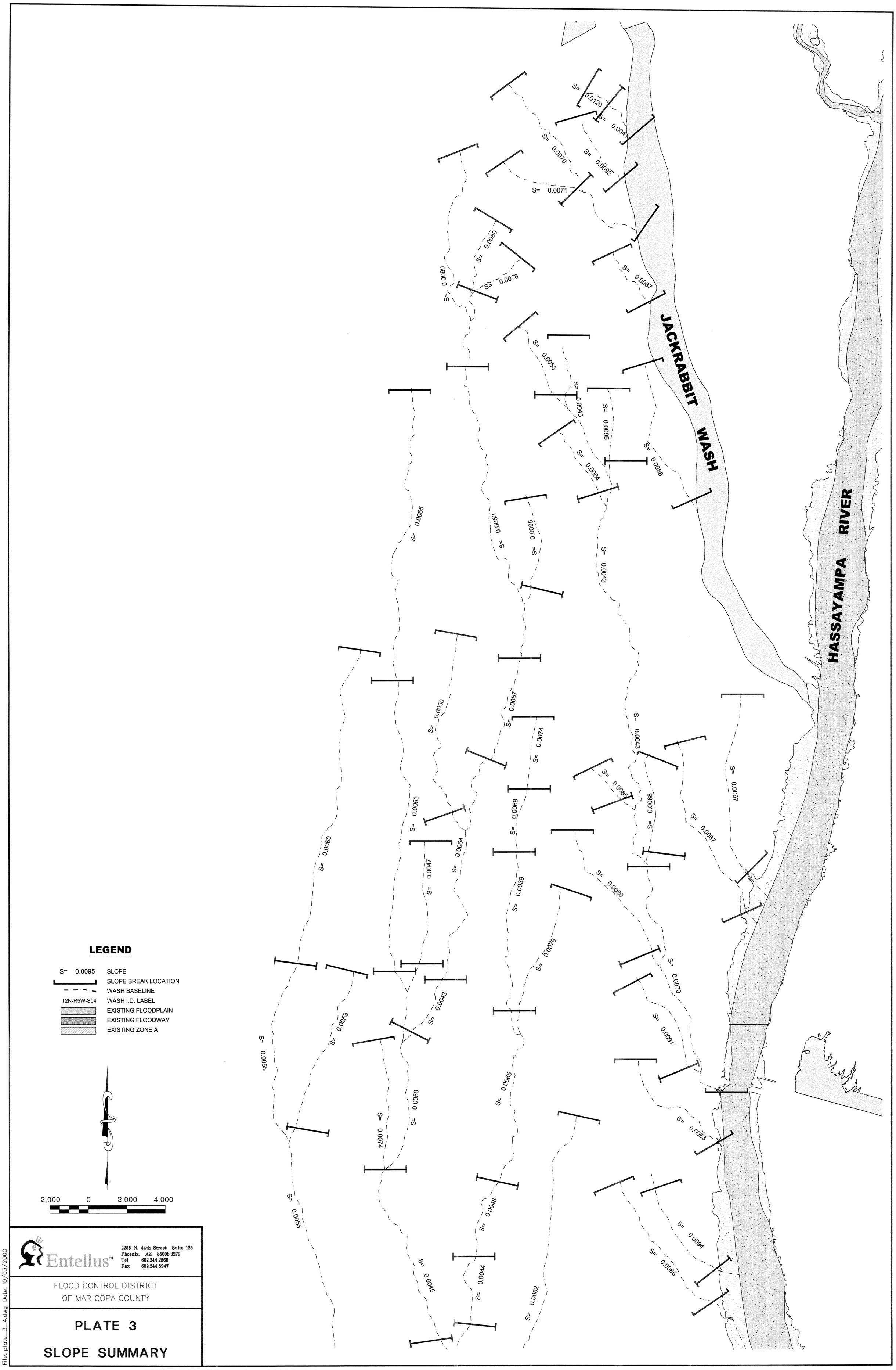
Entellus™
2255 N. 44th Street Suite 125
Phoenix, AZ 85008.3279
Tel 602.244.2566
Fax 602.244.8947

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

PLATE 2

HYDROLOGY MAP

File: plate_1_2.dwg Date: 10/05/2000


JACKRABBIT WASH
HASSAYAMPA RIVER
LEGEND
S= 0.0095 SLOPE
SLOPE BREAK LOCATION
WASH BASELINE
T2N-R5W-S04 WASH I.D. LABEL
EXISTING FLOODPLAIN
EXISTING FLOODWAY
EXISTING ZONE A
2,000 0 2,000 4,000
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FLOOD CONTROL DISTRICT
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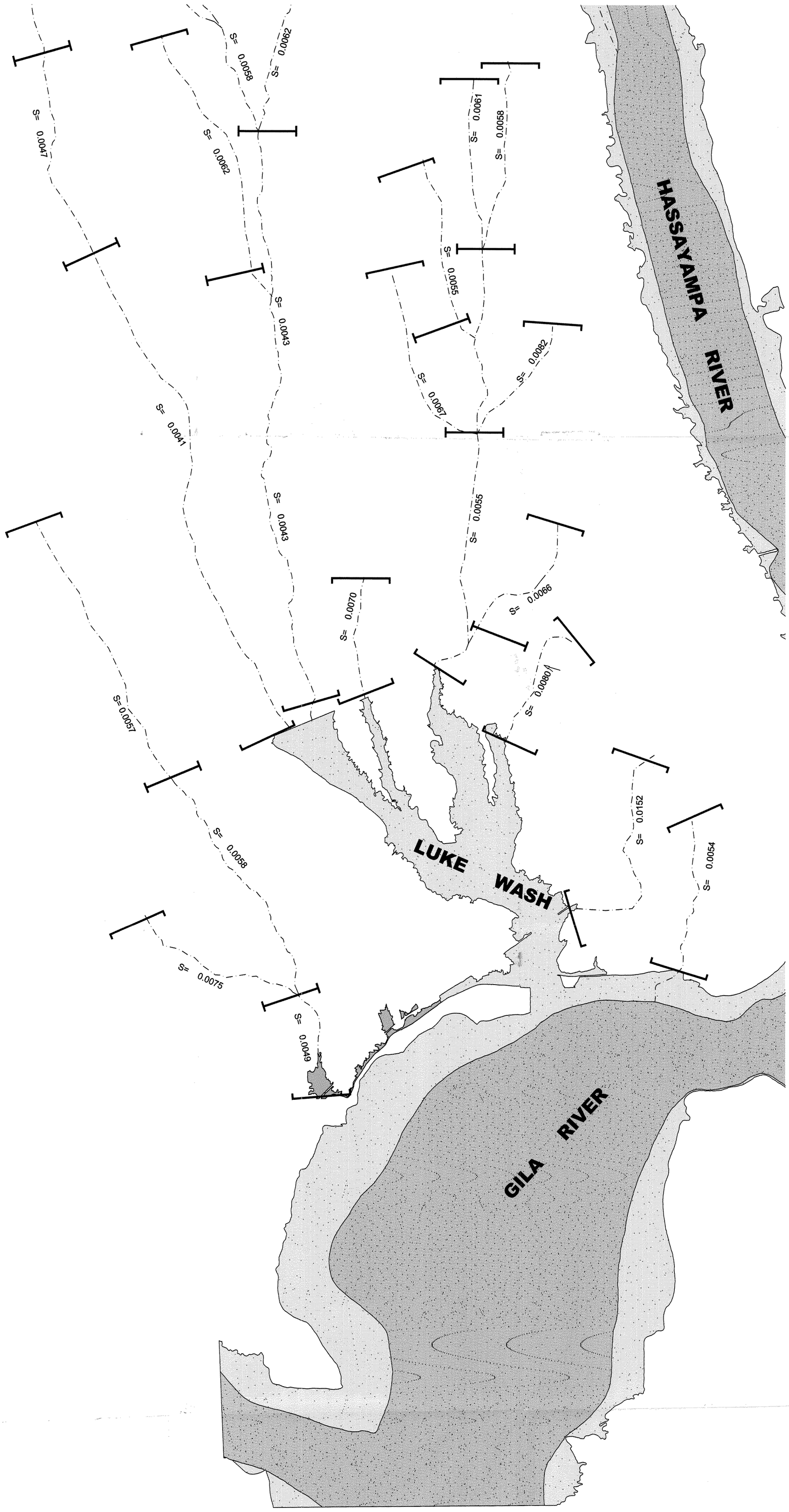
PLATE 3
SLOPE SUMMARY
File: plate_3_4.dwg Date: 10/03/2000



LEGEND

S= 0.0095	SLOPE
	SLOPE BREAK LOCATION
	WASH BASELINE
T2N-R5W-S04	WASH I.D. LABEL
	EXISTING FLOODPLAIN
	EXISTING FLOODWAY
	EXISTING ZONE A

2,000 0 2,000 4,000

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PLATE 4

SLOPE SUMMARY

File: plate_3_4.dwg Date: 10/03/2000