RICK
ENGINEERING COMPANY

Revised June 8, 2020

Nicholas Burton
County of Yolo Planning and Public Works Department
292 West Beamer Street
Woodland, California 95965

SUBJECT: 2-Dimensional Hydraulic Modeling for the Bretton Woods Project
(RICK Engineering Company Job Number 18463)

Dear Mr. Nicholas Burton:

1.0 Introduction

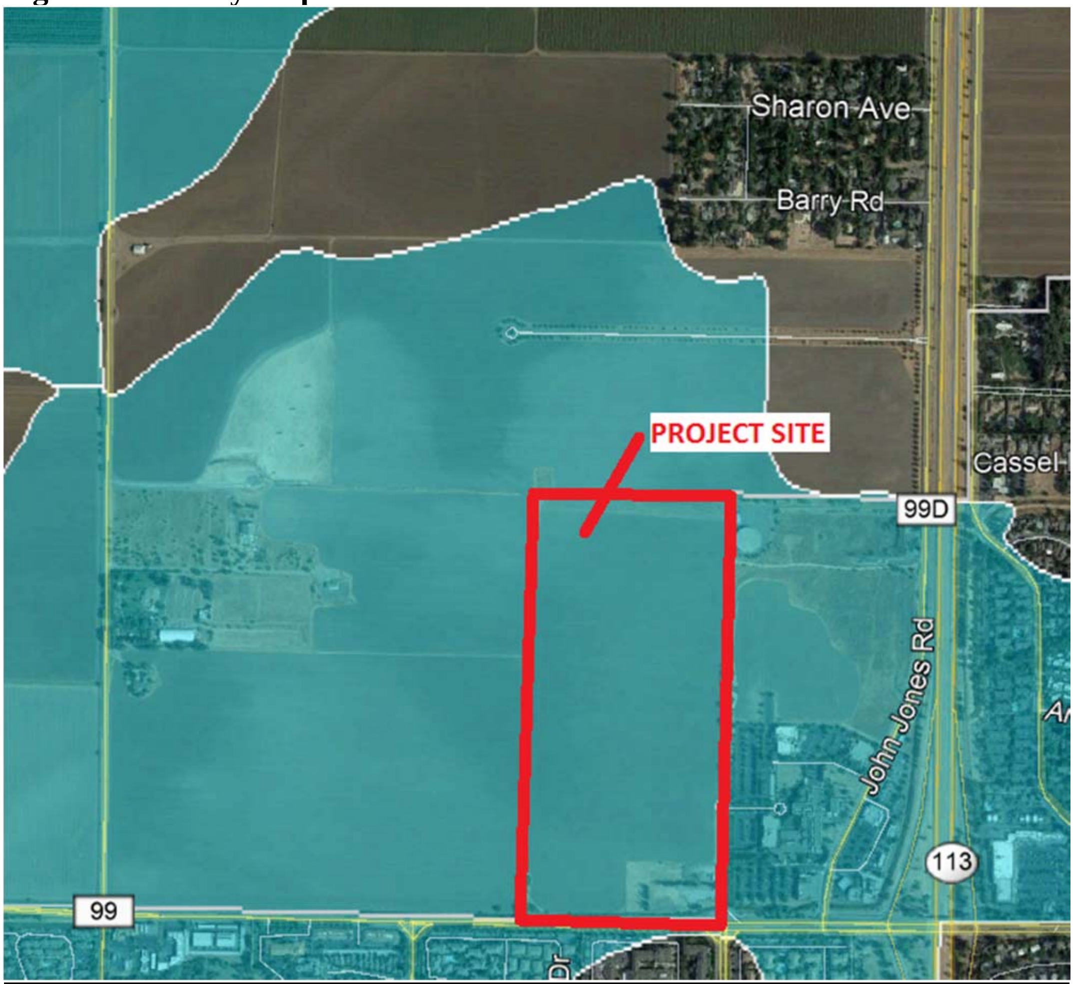
This memorandum presents the results of the hydrologic and 2-Dimensional (2D) hydraulic analysis prepared for the proposed Bretton Woods project in the City of Davis, County of Yolo, California. The proposed project site is shown on the vicinity map in Figure 1, following. The project consists of approximately 75 acres, currently undeveloped, and proposed as an active adult community consisting of 561 units. The project site is located within Federal Emergency Management Agency (FEMA) Zone A flooding per FEMA Flood Insurance Rate Map (FIRM) numbers 06113C0584G and 06113C0592G, both effective June 18, 2010.

The area around the proposed Bretton Woods project site is subject to flooding from the 100-year storm event in the existing and proposed condition. Flow is generally conveyed from the west and north of the site towards Highway 113 to the east. Flows leaving the area are restricted by Covell Boulevard to the south and H-113 to the east. Flow is able to leave the area through a culvert under H-113 and by weir flowing into the sump where Highway 113 passes under Covell Boulevard.

The project proposes to fill the majority of the 75 acre site above the floodplain and construct a channel around the site perimeter to provide conveyance for flood flows around the site. Additionally, the project proposes to construct an offline detention basin to attenuate peak flow and water surface elevation to match the existing condition. Due to the complexity of the flooding in the project vicinity and given that there are existing structures within the 100-year floodplain, the County of Yolo has required the use of a 2D model to analyze the proposed project impacts. In order to comply with the County of Yolo requirements, the analysis included with this memorandum has been completed consistent with the Yolo County City/County Drainage Manual (YCDM), revision dated February 2010.

The project has been required to result in no increase in peak flow or water surface elevation during the most probable 100-year, 24-hour and 100-year, 10-day events on upstream, adjacent, and downstream properties. Additionally, since the existing properties in the Binning Tract north of the project site experience flooding during events having a recurrence less than the most probable 100-year event, the analysis will need to demonstrate that the project will not increase water surface elevations or peak flows during lesser recurrent events resulting in flooding of properties within the Binning Tract. In coordination with the County of Yolo it was determined that three storm events should be modeled, one storm event near the recurrence of incipient flooding within the Binning Tract, one between the incipient flooding event and the most probable 100-year event, and the most probable 100-year event.

Figure 1: Vicinity Map



2.0 Hydrologic Analysis

Hydrology was calculated for the existing and proposed conditions of the 4-, 20-, and 100-year, 10-day storm events as well as the 100-year, 24-hour storm event. Existing hydrology for the area was analyzed utilizing the 100-year, 10-day HEC-1 model provided to RICK by the City of Davis on November 21, 2018 as a basis. The model was then updated to utilize County of Yolo methodology for the storm events listed previously.

The Bretton Woods project is located along Covell Drain within the watershed identified as "CDW3" in the effective HEC-1 analysis. Basin "CDW3" is bounded by H-113 to the east, Covell Boulevard to the south and Road 99 to the west. This is consistent with our review of the watershed around the Bretton Woods site. Covell Drain upstream of H-113 includes approximately 11.4 square miles of watershed area and inflows to the "CDW3" basin at the HEC-1 process ID of "APTOAQ." Covell Drain is part of a larger watershed tributary to the City of Davis including the Willow Slough and Dry Slough watersheds. Covell Drain also includes diversions from these other watersheds during large storm events so all basins with the potential to contribute flow to the project site from upstream of "APTOAQ" were included in the analysis. However, the model was truncated to remove any basins not contributing flow to the project site and basins downstream of basin "CDW3." The workmap provided for the effective HEC-1 model is included in Appendix 1A. This workmap shows the overall watersheds modeled in HEC-1.

The design precipitations used in the HEC-1 models have been revised to use the YCDM methodology. The effective model watersheds were georeferenced and the watersheds were grouped into areas of similar precipitation and area averaging was used to determine the MAP and Cv values. The precipitation values for the HEC-1 models were determined using the Yolo County Precipitation Calculator. Workmaps for the determination of the MAP and Cv values for the existing and proposed condition are included in Appendix 1A. Calculations for the determination of the MAP values, Cv values, and the precipitation calculator are included in Appendix 1B.

The storm distributions used in the HEC-1 models have been revised to use the short duration design storm for the 24-hour storm event and the long duration design storm for the 10-day storm event consistent with the requirements of the YCDM.

The proposed condition hydrology was analyzed just for the proposed condition site. Discussion of how the proposed condition hydrology is incorporated into the proposed 2D HEC-RAS model is discussed in more detail in Sections 3 and 4. The onsite watersheds were delineated and lag times for each basin were calculated per the YCDM travel time component lag time method. HEC-1 models were developed to calculate the hydrographs for each discharge point from the proposed site. A workmap showing the hydrologic basins and flow paths for the proposed project are included in Appendix 1A and calculations for the basin lag times are included in Appendix 1B.

3.0 Hydrologic Results

The hydraulic model discussed in Section 4 of this report utilizes the "APTOAQ" inflow hydrograph and rain on mesh gridded precipitation for basin "CDW3" for the existing and proposed conditions. The proposed condition model also uses the inflow hydrographs for each of the proposed outfall locations "A" through "F." Appendices 2A and 2B include plots of the hydrographs used in the hydraulic models for the existing and proposed conditions respectively. Excel spreadsheets for the existing and proposed condition hydrographs and the conversion from the basin "CDW3" hydrograph to precipitation depth are included with the electronic files in Appendix 6.

The HEC-1 hydrologic models that were utilized for the hydraulic modeling are included with the electronic files in Appendix 6 including the HEC-1 model utilized as the basis of the study, the existing, and the proposed models.

4.0 Hydraulic Analysis

In this study the U.S. Army Corps of Engineers HEC-RAS Water Surface Profiles program version 5.0.7, was utilized to model the existing and proposed conditions of the project in a 2D unsteady state analysis.

Workmaps showing the features discussed below are included in Appendix 3A for the existing condition and Appendix 3B for the proposed condition. The HEC-RAS hydraulic models are included with the electronic files in Appendix 6.

4.1 Topography

The topographic information used to develop the terrain for the HEC-RAS model came from two sources. The site topography, from Highway-113 east of the site to Road 99 west of the site and from Covell Boulevard south of the site to north of the Binning Tract, was provided by Cunningham Engineering and consists of 1ft contours on the NAVD-88 vertical datum collected 2018. Supplemental topography for outside of the site topographic limits consists of LIDAR bare earth data provided by Yolo County on the NAVD-88 vertical datum. All model and result data is on the NAD-83 horizontal datum and the NAVD-88 vertical datum. NAVD-88 elevations are 2.55’ above NGVD-29 elevations.

Additionally, the existing surface was edited to: add the footprints of structures; at the culvert under Highway 113, the road surface east of the culvert entrance was raised to keep flow from short-circuiting the berm at the culverts headwall; and channels were cut in place of modeling culverts in private property or in areas around the periphery of the 2D grid.

The proposed site grading for the perimeter channel and the offline detention basin was utilized for the proposed condition models. The Bretton Woods Phased Tentative Subdivision Map is included for reference in Appendix 5A. As discussed in Section 4.5.1, following, the onsite grading was modified for the 2D model.

4.2 Manning’s n Values

Manning’s n-values were assigned to the model based on aerial imagery and a visit to the site on August 24, 2016. Workmaps are included in Appendix 3C that show the aerial imagery as well as the existing and proposed Manning’s n-values used within the model.

4.3 Breaklines

Breaklines were added to the 2D mesh at the locations where high ground separated areas of low ground. Examples of this include elevated roadways, berms, and ditches. Breaklines force the 2D mesh to capture areas of high ground so that the program does not allow flow to erroneously travel from one side of the high ground to the other.

4.4 Internal Connections

Internal connections were utilized throughout the model to capture the majority of the existing and proposed hydraulic structures within the 2D area. The existing culverts in the models were added based on as-built information and field measurements. As-built plans are included in Appendix 5b. The proposed overflow weir into the offline detention basin and the internal offline detention weirs were also analyzed as internal connections. The workmaps in Appendix 3B show the locations and elevations of the weir geometry utilized in the model.

4.5 Boundary Conditions and Pumps

4.5.1 Inflow:

As discussed in Sections 2 and 3 of the report, flow enters the 2D mesh from two sources in the existing condition. The “APTOAQ” flow hydrograph enters the 2D grid to the west of Road 99. This boundary condition uses normal depth to distribute the flow along the boundary. Additionally, the precipitation depths calculated for “CDW3” are applied as rain on mesh over the 2D grid and storage areas. The HEC-1 model calculated the precipitation losses in the generation of the hydrograph for basin “CDW3.” This hydrograph, including precipitation losses, was converted back to precipitation in inches using the time step and basin area which HEC-RAS applies to the mesh.

In the proposed condition the site grading has been modeled as a large depressed area with a berm around it. This will cause the rain on mesh that lands on the proposed site to be captured and held so it is not double counted. Each of the proposed condition outfall locations, “A” through “F,” are modeled as an individual boundary condition at the cell where the flow is discharged from the site. This is anticipated to be conservative as no storage or conveyance is being accounted for within the streets of the proposed site which are anticipated to be below the water surface elevation in large storm events.

4.5.2 Outflow:

Outflow from the 2D mesh generally occurs along the southeast side of the model. The City of Davis was not able to provide a stage-discharge relationship used for the design of the Covell Drain channel west of Highway-113. Because of this, the boundary condition at the downstream limit of Covell Drain has been modeled as normal depth. This boundary condition is approximately 1,300 feet downstream of the culvert under Highway-113 and approximately 3,000 feet downstream of the proposed improvements. This reach of Covell Drain also includes the culvert under Sycamore Lane as an additional control to ensure that the normal depth starting water surface elevation has negligible impacts on the water surface elevations in the vicinity of the proposed improvements.

Additional normal depth downstream boundary conditions are utilized along the east side of Sycamore Lane, the intersection of Covell Boulevard and Sycamore Lane, and south at Highway-113.

4.5.3 Pumps:

There is a pump within the existing detention basin north of Covell Boulevard and west of Highway-113 and it is anticipated that a pump will be provided in the proposed condition to drain the proposed offline detention basin and the existing pump will be modified or replaced to drain the perimeter channel. Design calculations for the pumps will need to be provided by a pump consultant in a separate report.

A current limitation of HEC-RAS 2D modeling is that pumps cannot be modeled from a 2D cell to a 2D cell. Using internal connections to connect to small storage areas with the pump station between was tested. However, the model uses the nearest edge of the 2D mesh as its headwater reference. Since the existing pump inlet is nearly 300ft from the edge of the mesh, the model will not analyze the pump correctly. Breaking the 2D mesh into multiple smaller 2D areas was also tested. To maintain stability in the model, we typically break the 2D mesh into smaller areas in areas where flow can be represented well by 1D analysis. As mentioned previously, the pump inlet and outlet are well within the 2D mesh, they are located near other hydraulic structures, and they are not in areas that can be represented well with 1D analysis. As a result, the test models went unstable and were not able to execute fully.

The existing and proposed pumps have been analyzed by using a boundary condition with a negative flow at the pumps inflow location and a boundary condition with a positive flow at the pumps outflow location. This method does not allow for the analysis of a pump curve or on/off control information. However, RICK has coordinated with the County and determined that this methodology is adequate as the primary concern for the model is at peak flows. The County has required that the maximum pump flow rate is 15cfs during storm peaks and this flow rate has been utilized in the models. The pumps will require detailed controls that will be determined for the final design of the pumps.

Calculations for the existing pump flow rate is included in Appendix 3C. The existing pump flow rate was determined from as-built information provided by the City of Davis. The as-built information is included in Appendix 5B.

<u>5.0 February 2019 Storm Event Analysis</u>

The City of Davis provided precipitation data and photos taken of the extent of flooding that occurred during a storm event in late February 2019. There is no flow data available for Covell Drain, so the precipitation data and photos in the project vicinity have been utilized to corroborate the results of the 2D modeling discussed in this study.

The City provided precipitation data for both the UCD Russell Ranch and the UCD Campbell Tract gauges. The gauge locations were plotted against the overall watershed map prepared for the HEC-1 model that is the basis of this analysis. The UCD Campbell Tract gauge is closer geographically to the project site. However, the UCD Russell Ranch gauge is upstream within the watershed tributary to the project site and is anticipated to be more representative of the flow experienced at the site as a result. The gauge locations are shown on maps included in Appendix 7.

The photos provided by the City were taken on the evening of February 27, 2019. The UCD Russell Ranch precipitation data for the month leading up to the 27th was examined. Please refer to the "Russell Ranch Precipitation from 1/20/2019 to 2/28/2019" exhibit in Appendix 7. The gauge data does show rainfall beginning approximately noon on February 25th and continuing through roughly noon on February 27th. Prior to this, the last measured rainfall was on February 17th, roughly eight days earlier with the last significant rainfall occurring on February 15th.

The rainfall from noon on February 25th through the 27th was input into the HEC-1 models and HEC-RAS 2D models discussed previously. Exhibits have been prepared showing the results of the HEC-RAS 2D models for the existing and proposed conditions with annotation for the rough location and direction of the photos to ease comparisons in the results. The results exhibits and photos are provided in Appendix 7. Electronic copies of the modeling and the raw rain gauge data are included with the electronic files in Appendix 6. Comparing the extent of flooding visually, the 2D model developed appears to be reasonably consistent with the photographed flooding.

6.0 Hydraulic Results

As mentioned in Section 1, the project has been required to result in no increase in peak flow or water surface elevation during the most probable 100-year, 24-hour and 100-year, 10-day events on upstream, adjacent, and downstream properties. Additionally, since the existing properties in the Binning Tract north of the project site experience flooding during events having a recurrence less than the most probable 100-year event, the analysis will need to demonstrate that the project will not increase water surface elevations or peak flows during lesser recurrent events resulting in flooding of properties within the Binning Tract. In coordination with the County of Yolo it was determined that three storm events should be modeled, one storm event near the recurrence of incipient flooding within the Binning Tract, one between the incipient flooding event and the most probable 100-year event, and the most probable 100-year event. Table 1, following, summarizes the results of the models for the peak outflow from the model along Covell Drain. Output from the HEC-RAS models for Covell Drain is included in Appendix 4B.

Table 1: Peak Outflows along Covell Drain

Storm Event	Covell Drain Peak Outflow (cfs)	
	Existing	Proposed
4-Year, 10-Day	435.82	420.81
20-Year, 10-Day	738.28	723.35
100-Year, 10-Day	959.90	955.90
100-Year, 24-Hour	389.67	380.45
February 2019	184.94	143.07

To determine the recurrence of incipient flooding within the Binning Tract, the approximate finished floor elevations for the structures along the southern limit of the Binning Tract were surveyed using reflector-less methods from the public rights of way. An exhibit showing the results of the survey is included in Appendix 4A. The existing condition models were then executed for a series of integer year storm events to determine the first storm event that results in a calculated water surface elevation equal to or greater than the lowest finished floor elevation surveyed. In the analysis of the proposed condition, the 4-year storm has been utilized as the storm event near the recurrence of incipient flooding and, as directed by the County, the 20-year storm has been utilized as the between the incipient flooding event and the most probable 100-year event.

As shown in the table, the proposed project results in a reduction of peak flow along Covell Drain for the 4-, 20-, and 100-year; 10-day storm and the 100-year; 24-hour storm events as a result of the proposed project and offline detention basin.

Results exhibits comparing the proposed and existing water surface elevations for the 4-, 20-, and 100-year; 10-day storm and the 100-year; 24-hour storm events are included in Appendix 4A.

The project results in reductions in water surface elevations within the Binning Tract for all modeled storm events, particularly in the smaller, more frequent storm events. The 4-year, 10-day and the 100-year, 24-hour storm events both show a reduction in water surface elevation within the Binning Tract in excess of 0.1'

In general the models demonstrate that post- project water surface elevations are reduced or match within 0.02 foot with the majority of the increases within 0.01 foot or less. Yolo County has chosen to consider this impact to be de minimis for the project. The only areas with an increase of greater than 0.02 foot outside of the project limits do not impact structures and are generally limited to agricultural areas.

Appendix 4A also includes exhibits plotting water surface elevations within the studied limits for the existing 4-, 20-, and 100-year; 10-day storm and the 100-year; 24-hour storm events and includes contours of water surface elevation at 0.1 foot increments.

7.0 Appendices

Appendix 1: Hydrology
- 1A: Hydrologic Workmaps
- 1B: Hydrologic Model Backup

Appendix 2: Hydrologic Results
- 2A: Existing Hydrographs
- 2B: Proposed Hydrographs

Appendix 3: Hydraulics
- 3A: Existing Condition HEC-RAS Workmaps
- 3B: Proposed Condition HEC-RAS Workmaps
- 3C: HEC-RAS Model Backup

Appendix 4: Hydraulic Results
- 4A: Result Exhibits
- 4B: Covell Drain Peak Outflow Hydrographs

Appendix 5: Reference Plans
- 5A: Tentative Map
- 5B: As-Built Plans

Appendix 6: Electronic Files

Appendix 7: February 2019 Storm Analysis

If you have any questions regarding this memorandum or need any additional information about this project, then please contact David Montgomery or myself at (916) 638-8200 or via email at dmontgomery@rickengineering.com and slillibridge@rickengineering.com.

Sincerely,

RICK ENGINEERING COMPANY

M. Scott Lillibridge
R.C.E. #52504, Exp. 12/20
Region Manager

Appendix 1

Hydrology

1A: Hydrologic Workmaps
1B: Hydrologic Model Backup

Appendix 1A

Hydrologic Workmaps

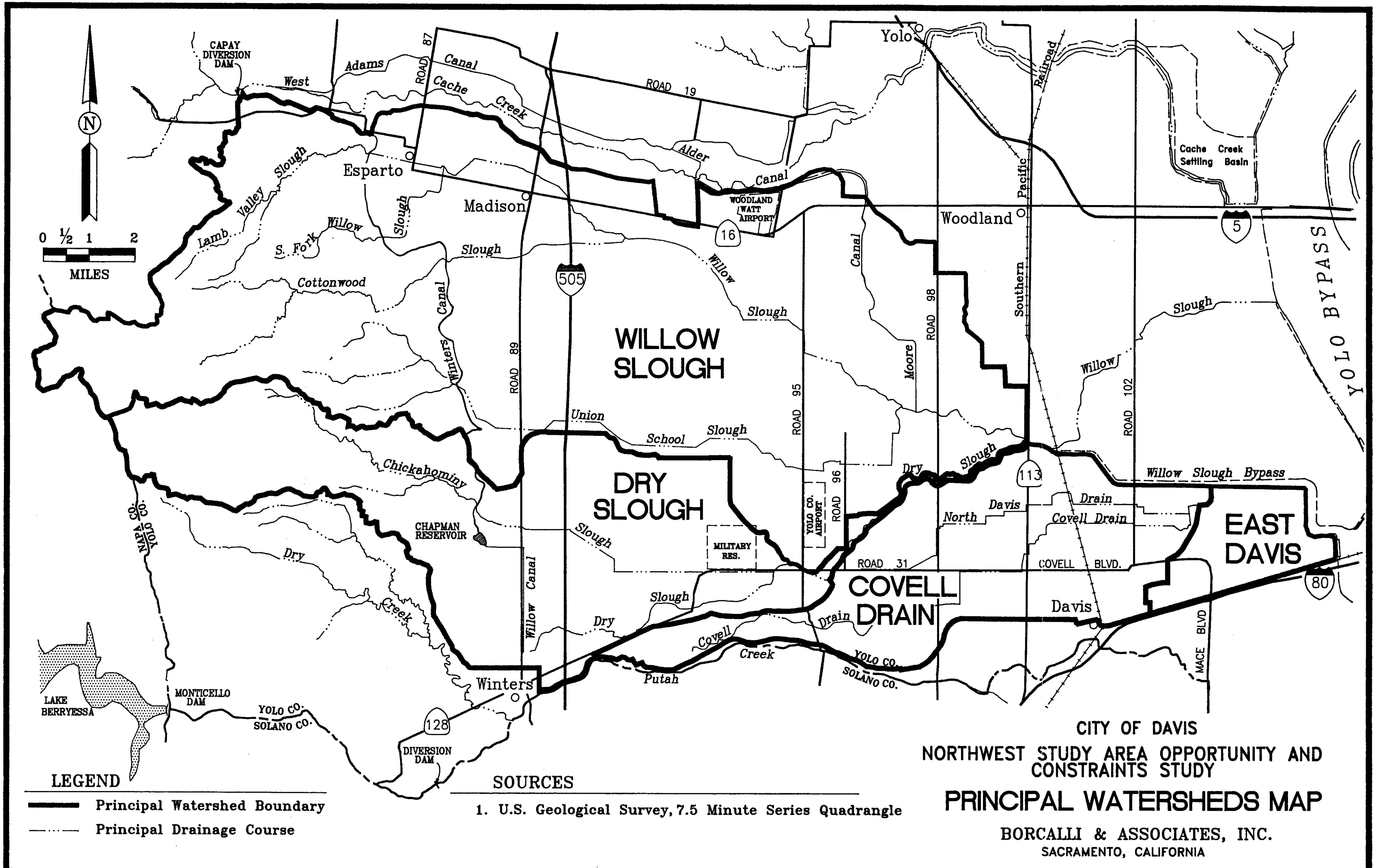
OFFICE COPY

YOLO COUNTY FLOOD CONTROL &
WATER CONSERVATION DISTRICT

COVELL DRAINAGE SYSTEM COMPREHENSIVE DRAINAGE PLAN WMP-93-01-3

SEPTEMBER 1993

BORCALLI & ASSOCIATES
CONSULTING ENGINEERS



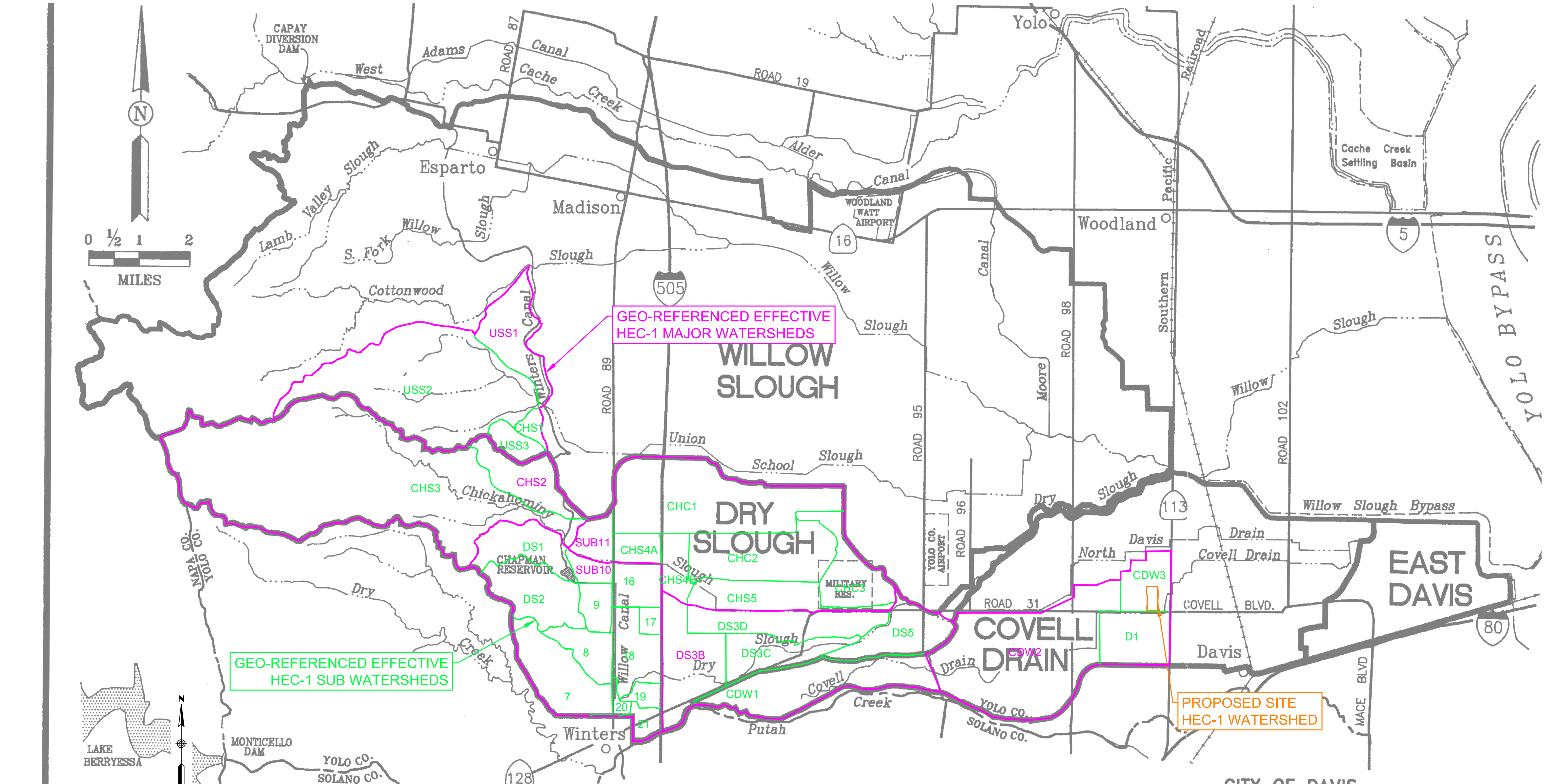
CITY OF DAVIS

NORTHWEST STUDY AREA OPPORTUNITY AND CONSTRAINTS STUDY

PRINCIPAL WATERSHEDS MAP

BORCALLI & ASSOCIATES, INC.
SACRAMENTO, CALIFORNIA

MAP 1



1 1/2 0 1 2 3

GRAPHIC SCALE: 1" = 2 MILES

LEGEND

Principal Watershed Boundary

SOURCES

1. U.S. Geological Survey, 7.5 Minute Series Quadrangle

CITY OF DAVIS

NORTHWEST STUDY AREA OPPORTUNITY AND CONSTRAINTS STUDY

PRINCIPAL WATERSHEDS MAP

PRISM AND MAP CENTROID WORKMAP
FOR
BRETTON WOODS

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J-18463
DATE: MAY 12, 2020

SHEET 1 OF 1

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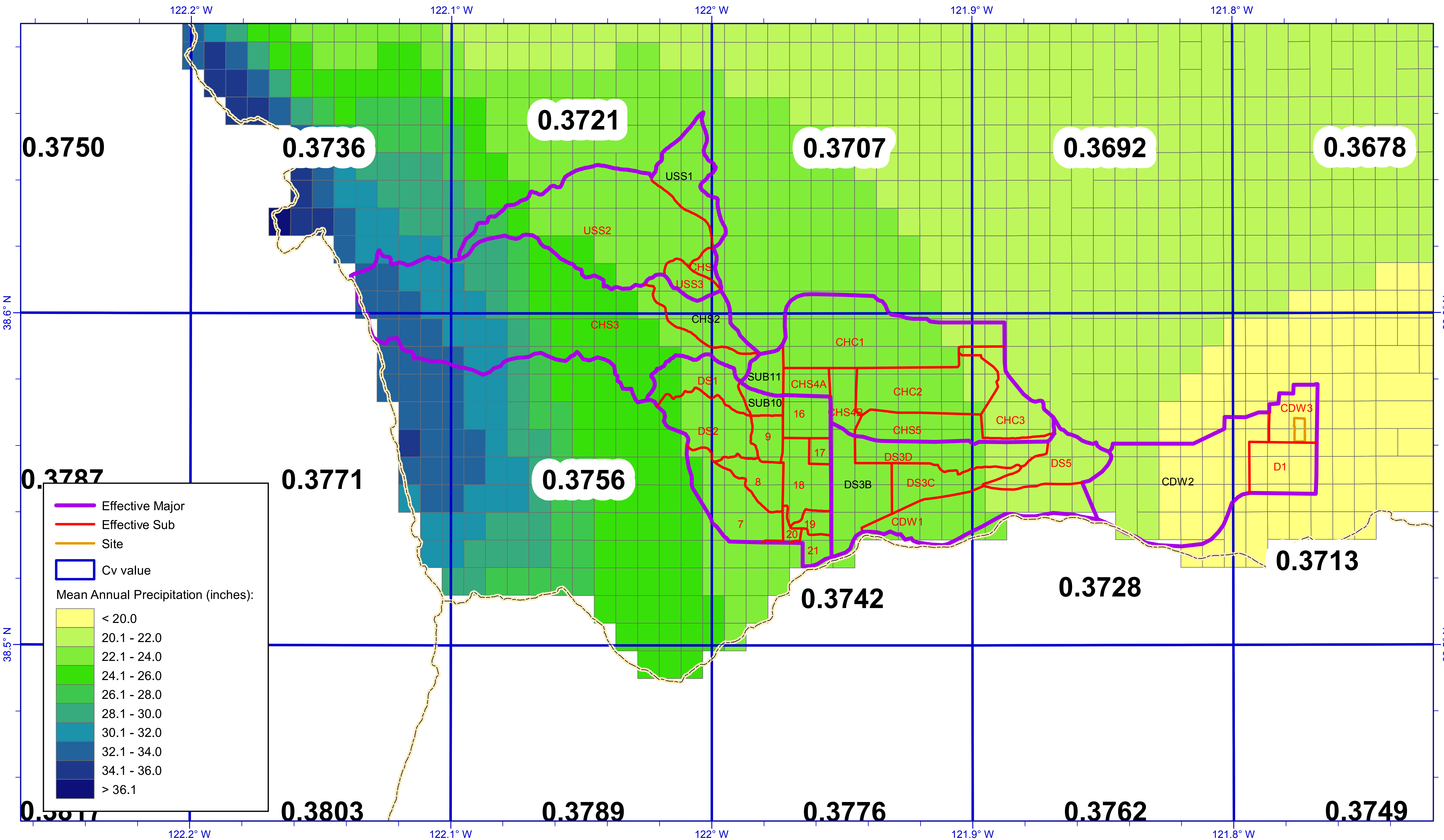
REC_NCS-2.ctb



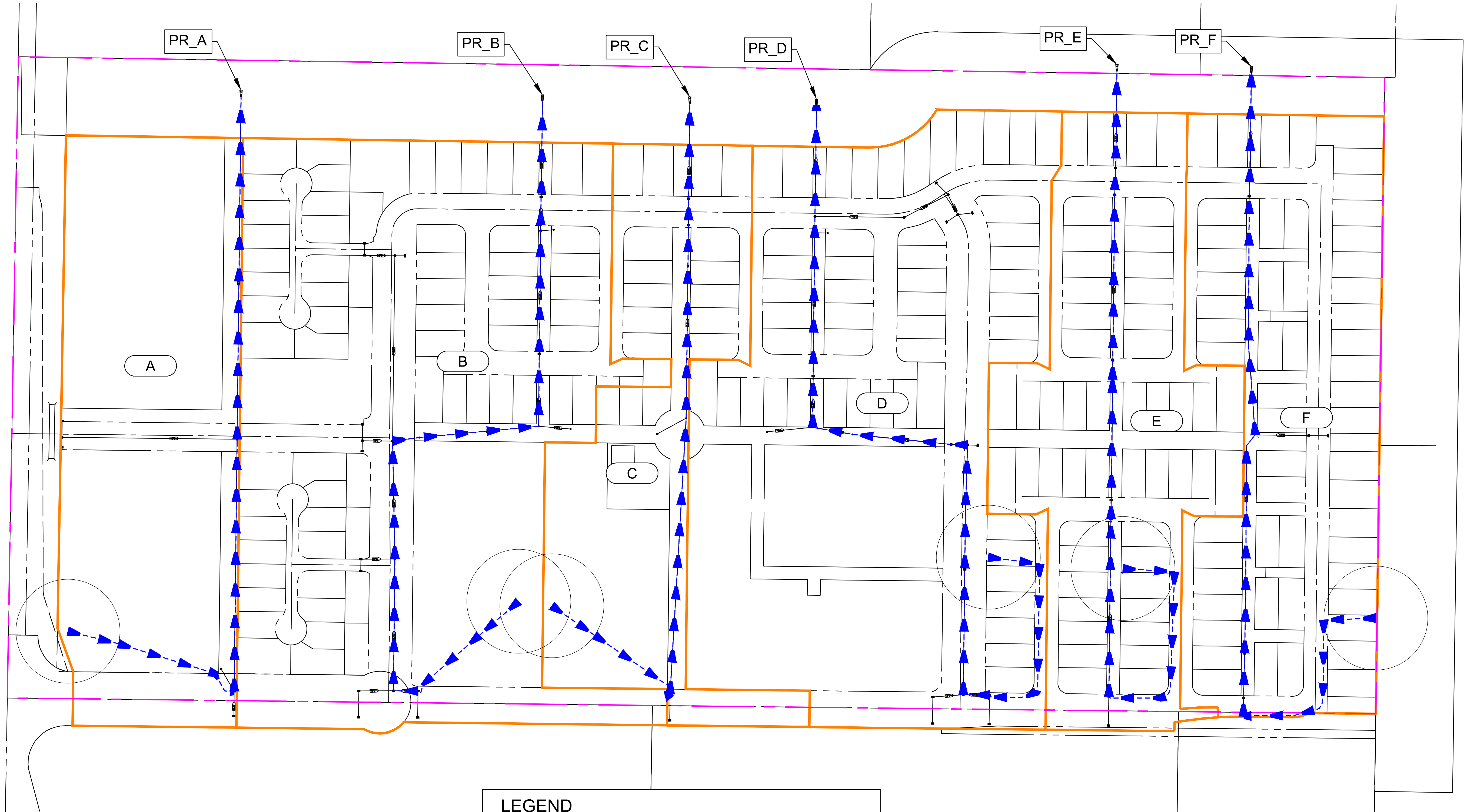
RICK ENGINEERING COMPANY

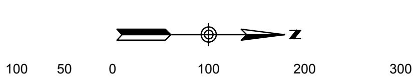
Exhibit Date: 05-12-2020

REC JN: 18463

Sources:
Copyright © 2006, PRISM Group, Oregon State University, http://www.prismclimate.org Map created 17 Sept 2008.
James D. Goodridge, 2008.

PRISM and Cv Values





GRAPHIC SCALE: 1" = 200'

LEGEND

WATERSHED BOUNDARY

PROJECT BOUNDARY

FLOWLINE

(A) BASIN IDENTIFIER

PROPOSED SITE HYDROLOGY WORKAMP
FOR
BRETTON WOODS

SHEET 1 OF 1

J-18463
DATE: FEBRUARY 23, 2020

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Appendix 1B

Hydrologic Model Backup

RICK ENGINEERING COMPANY

Yolo County Precipitation Calculator

Job Name: Bretton Woods
Job Number: 18463
Date: 5/12/2020

Y Intercept	-0.0974
Slope=	0.1212

n=	0.4227

Basin USS1							CV=	0.3721	PRISM=	23.67
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									8.69
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									12.48
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.54	0.86	1.55	2.08	2.47	3.31	4.40	5.95	15.76

Basin CHS2							CV=	0.3742	PRISM=	27.42
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									10.12
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									14.55
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.63	1.01	1.81	2.43	2.89	3.87	5.13	6.95	18.40

Basin SUB11							CV=	0.3737	PRISM=	22.39
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									8.21
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									11.80
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.51	0.82	1.47	1.97	2.34	3.14	4.16	5.63	14.91

Basin SUB10							CV=	0.3745	PRISM=	23.44
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									8.61
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									12.38
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.54	0.86	1.54	2.07	2.46	3.29	4.37	5.92	15.66

Basin DS3B						CV=	0.3736	PRISM=	22.19
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									8.13
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									11.69
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.51	0.81	1.46	1.95	2.32	3.11	4.12	5.58	14.77

Basin CDW2						CV=	0.3722	PRISM=	19.82
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									7.23
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									10.38
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.45	0.72	1.29	1.73	2.06	2.76	3.66	4.95	13.11

Basin Proposed						CV=	0.3713	PRISM=	19.56
	T_i=	0.003472	0.010417	0.041667	0.083333	0.125	0.25	0.4875	1	10
K_j	**PERIOD**	**5M**	**15M**	**1H**	**2H**	**3H**	**6H**	**12H**	**24H**	**10D**
-0.180	**2-YR**									
0.496	**4-YR**									7.13
0.745	**5-YR**									
1.341	**10-YR**									
1.883	**20-YR**									10.22
2.066	**25-YR**									
2.420	**50-YR**									
3.087	**100-YR**	0.45	0.71	1.27	1.71	2.03	2.72	3.60	4.88	12.91

RICK ENGINEERING COMPANY

Area Averaged PRISM Calculator

Job Name: Bretton Woods
Job Number: 18463
Date: 5/11/2020

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		244861475.08	19.82
CDW2	19.69	954567.14	0.08
CDW2	19.65	3804319.16	0.31
CDW2	19.63	1331565.63	0.11
CDW2	19.73	3016263.18	0.24
CDW2	19.67	3951487.35	0.32
CDW2	19.63	6687861.08	0.54
CDW2	19.59	7230140.44	0.58
CDW2	19.56	2091413.94	0.17
CDW2	20.56	692938.63	0.06
CDW2	20.32	3466536.28	0.29
CDW2	20.11	3456339.20	0.28
CDW2	19.94	3445621.52	0.28
CDW2	19.82	3665767.49	0.30
CDW2	19.74	5872415.59	0.47
CDW2	19.68	7230843.15	0.58
CDW2	19.62	7230984.03	0.58
CDW2	19.57	7230984.03	0.58
CDW2	19.54	7230984.03	0.58
CDW2	19.51	1939974.34	0.15
CDW2	20.53	4415119.05	0.37
CDW2	20.27	7231827.78	0.60
CDW2	20.06	7231827.78	0.59
CDW2	19.89	7231827.78	0.59
CDW2	19.78	7231827.78	0.58
CDW2	19.71	7231827.78	0.58
CDW2	19.64	7231827.78	0.58
CDW2	19.57	7231827.78	0.58
CDW2	19.53	7231827.78	0.58
CDW2	19.50	7231827.78	0.58
CDW2	19.47	1826545.77	0.15
CDW2	20.81	2193949.98	0.19
CDW2	20.51	7223014.02	0.61
CDW2	20.03	7232671.68	0.59
CDW2	19.87	7232671.68	0.59
CDW2	19.76	7232671.68	0.58
CDW2	19.68	7232671.68	0.58
CDW2	19.60	4608896.17	0.37
CDW2	19.55	2284619.94	0.18
CDW2	19.50	2357563.92	0.19
CDW2	19.47	2459663.97	0.20
CDW2	19.44	570653.22	0.05
CDW2	20.25	12631267.66	1.04
CDW2	20.02	7184856.22	0.59
CDW2	19.86	7233515.74	0.59
CDW2	19.75	7233515.74	0.58
CDW2	19.67	6084890.71	0.49
CDW2	19.76	1452881.65	0.12
CDW2	19.68	212872.32	0.02
CDW2	19.59	339506.02	0.03

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		429285969.71	27.42
CHS2	26.64	3316.56	0.00
CHS2	25.56	84044.44	0.01
CHS2	23.93	38457.52	0.00
CHS2	31.74	79670.43	0.01
CHS2	30.89	1359891.25	0.10
CHS2	30.13	187517.72	0.01
CHS2	30.14	1314637.23	0.09
CHS2	29.98	923843.29	0.06
CHS2	29.27	4328213.15	0.30
CHS2	28.05	6831870.89	0.45
CHS2	26.33	6870351.98	0.42
CHS2	24.44	5609484.66	0.32
CHS2	24.22	1376772.01	0.08
CHS2	32.70	5637568.11	0.43
CHS2	32.15	7192204.31	0.54
CHS2	31.47	7103109.40	0.52
CHS2	31.01	7225924.72	0.52
CHS2	30.55	7225924.72	0.51
CHS2	29.66	7225924.72	0.50
CHS2	28.92	7225924.72	0.49
CHS2	27.01	7225924.72	0.45
CHS2	25.18	7225924.72	0.42
CHS2	24.45	7216859.30	0.41
CHS2	24.14	4792582.73	0.27
CHS2	24.09	2079967.86	0.12
CHS2	23.93	980706.67	0.05
CHS2	23.80	2877375.69	0.16
CHS2	23.69	2283766.58	0.13
CHS2	23.20	9728.25	0.00
CHS2	33.37	5132767.92	0.40
CHS2	33.14	7226767.56	0.56
CHS2	32.27	7226767.56	0.54
CHS2	31.69	7226767.56	0.53
CHS2	31.15	7226767.56	0.52
CHS2	30.19	7226767.56	0.51
CHS2	29.53	7226767.56	0.50
CHS2	27.74	7226767.56	0.47
CHS2	25.94	7226767.56	0.44
CHS2	24.84	7226767.56	0.42
CHS2	24.36	7226767.56	0.41
CHS2	24.20	7226767.56	0.41
CHS2	24.06	7226767.56	0.41
CHS2	23.91	7226767.56	0.40
CHS2	23.83	7224514.45	0.40
CHS2	23.53	5487291.60	0.30
CHS2	23.32	6405775.28	0.35
CHS2	23.15	1126953.08	0.06
CHS2	33.69	5677217.28	0.45
CHS2	32.98	7163263.68	0.55
CHS2	32.40	7227610.55	0.55
CHS2	31.80	7227610.55	0.54
CHS2	31.28	7227610.55	0.53
CHS2	30.24	7227610.55	0.51
CHS2	28.58	7227610.55	0.48
CHS2	26.61	7227610.55	0.45
CHS2	25.29	7227610.55	0.43
CHS2	24.64	7227610.55	0.41
CHS2	24.38	7227610.55	0.41
CHS2	24.24	7227610.55	0.41
CHS2	24.03	7227610.55	0.40
CHS2	23.93	7227610.55	0.40
CHS2	23.64	7227610.55	0.40
CHS2	23.43	7227610.55	0.39
CHS2	23.25	4625511.26	0.25
CHS2	23.10	133563.59	0.01
CHS2	33.16	1643798.30	0.13
CHS2	32.66	3739608.13	0.28
CHS2	32.16	4853996.43	0.36
CHS2	31.75	6454105.28	0.48
CHS2	30.65	5449860.29	0.39
CHS2	29.17	3020022.79	0.21
CHS2	27.17	2103475.83	0.13
CHS2	25.69	3290550.08	0.20
CHS2	24.96	2821626.31	0.16
CHS2	24.59	3805686.81	0.22
CHS2	24.41	7228453.69	0.41
CHS2	24.17	6946635.71	0.39
CHS2	24.06	3624249.44	0.20
CHS2	23.74	2938526.75	0.16
CHS2	23.53	3126795.83	0.17
CHS2	23.34	6316835.61	0.34
CHS2	23.18	2204534.44	0.12
CHS2	31.77	7141.67	0.00
CHS2	24.73	2902.97	0.00
CHS2	24.50	3856419.35	0.22
CHS2	24.29	4532451.55	0.26
CHS2	23.41	652424.62	0.04
CHS2	23.24	12605.72	0.00
CHS2	24.55	973.65	0.00
CHS2	24.36	3415.95	0.00

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		283331193.18	22.19
DS3B	22.92	185794.93	0.02
DS3B	22.83	380647.09	0.03
DS3B	22.97	782951.65	0.06
DS3B	22.88	6721327.64	0.54
DS3B	22.78	5042174.29	0.41
DS3B	22.69	4234740.95	0.34
DS3B	22.58	4107506.39	0.33
DS3B	22.45	3996498.61	0.32
DS3B	22.29	4130642.52	0.32
DS3B	22.10	3907742.06	0.30
DS3B	21.89	3922747.02	0.30
DS3B	21.64	3937547.12	0.30
DS3B	21.37	4010652.21	0.30
DS3B	21.09	6950756.61	0.52
DS3B	20.82	4399335.24	0.32
DS3B	20.56	1732710.64	0.13
DS3B	23.01	712006.87	0.06
DS3B	22.92	7231827.78	0.59
DS3B	22.83	7231827.78	0.58
DS3B	22.74	7231827.78	0.58
DS3B	22.64	7231827.78	0.58
DS3B	22.51	7231827.78	0.57
DS3B	22.35	7231827.78	0.57
DS3B	22.17	7231827.78	0.57
DS3B	21.94	7231827.78	0.56
DS3B	21.67	7231827.78	0.55
DS3B	21.39	7231827.78	0.55
DS3B	20.53	2816708.73	0.20
DS3B	23.05	638922.56	0.05
DS3B	22.97	7232671.68	0.59
DS3B	22.88	7232671.68	0.58
DS3B	22.78	7232671.68	0.58
DS3B	22.69	7232671.68	0.58
DS3B	22.56	7232671.68	0.58
DS3B	22.40	7232671.68	0.57
DS3B	22.21	7232671.68	0.57
DS3B	21.98	7232671.68	0.56
DS3B	21.71	7232671.68	0.55
DS3B	21.41	7232671.68	0.55
DS3B	21.11	14464499.46	1.08
DS3B	20.81	12270549.48	0.90
DS3B	20.51	9657.66	0.00
DS3B	23.10	668390.57	0.05
DS3B	23.02	7214747.21	0.59
DS3B	22.93	5285607.26	0.43
DS3B	22.83	5416587.48	0.44
DS3B	22.73	6800053.29	0.55
DS3B	22.61	7233515.74	0.58
DS3B	22.46	7033388.34	0.56
DS3B	22.27	4691843.53	0.37
DS3B	22.04	1713028.46	0.13
DS3B	23.15	378954.43	0.03
DS3B	23.06	2893962.48	0.24

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		294095125.68	23.44
SUB10	24.17	281817.98	0.02
SUB10	24.06	3604204.25	0.29
SUB10	23.74	4289926.94	0.35
SUB10	23.53	4101657.86	0.33
SUB10	23.34	911618.09	0.07
SUB10	24.29	2514055.18	0.21
SUB10	24.13	7229296.99	0.59
SUB10	23.83	7229296.99	0.59
SUB10	23.61	7229296.99	0.58
SUB10	23.41	6244562.41	0.50
SUB10	23.24	2930092.63	0.23
SUB10	23.10	1729019.05	0.14
SUB10	22.98	1617364.52	0.13
SUB10	22.88	1273141.52	0.10
SUB10	24.36	213368.39	0.02
SUB10	24.17	5765030.08	0.47
SUB10	23.91	7230140.44	0.59
SUB10	23.67	7230140.44	0.58
SUB10	23.47	7230140.44	0.58
SUB10	23.29	7230140.44	0.57
SUB10	23.15	7230140.44	0.57
SUB10	23.03	7230140.44	0.57
SUB10	22.92	6421598.32	0.50
SUB10	24.22	119008.56	0.01
SUB10	23.97	5474477.82	0.45
SUB10	23.71	7230984.03	0.58
SUB10	23.50	7230984.03	0.58
SUB10	23.33	7230984.03	0.57
SUB10	23.18	7230984.03	0.57
SUB10	23.07	7230984.03	0.57
SUB10	22.97	6448032.39	0.50
SUB10	24.03	4303440.09	0.35
SUB10	23.74	7231827.78	0.58
SUB10	23.53	7231827.78	0.58
SUB10	23.35	7231827.78	0.57
SUB10	23.22	7231827.78	0.57
SUB10	23.11	7231827.78	0.57
SUB10	23.01	6519820.91	0.51
SUB10	24.12	1425831.65	0.12
SUB10	23.78	7007584.86	0.57
SUB10	23.57	7232671.68	0.58
SUB10	23.39	7232671.68	0.58
SUB10	23.26	7232671.68	0.57
SUB10	23.15	7232671.68	0.57
SUB10	23.05	6593749.12	0.52
SUB10	23.85	2734159.16	0.22
SUB10	23.63	7146433.97	0.57
SUB10	23.45	7233515.74	0.58
SUB10	23.31	7233515.74	0.57
SUB10	23.19	7233515.74	0.57
SUB10	23.10	6565125.17	0.52
SUB10	23.71	338652.88	0.03
SUB10	23.52	538233.45	0.04
SUB10	23.37	648190.54	0.05
SUB10	23.25	3195964.84	0.25
SUB10	23.15	5124936.45	0.40

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		365037526.78	22.39
SUB11	22.87	699518.34	0.04
SUB11	22.76	5907612.54	0.37
SUB11	22.66	6415802.44	0.40
SUB11	22.56	6244955.51	0.39
SUB11	22.45	6004270.79	0.37
SUB11	22.33	2726856.55	0.17
SUB11	22.19	249938.89	0.02
SUB11	22.05	1639.91	0.00
SUB11	22.96	1695115.98	0.11
SUB11	22.85	7227610.55	0.45
SUB11	22.75	7227610.55	0.45
SUB11	22.64	7227610.55	0.45
SUB11	22.54	7227610.55	0.45
SUB11	22.42	7227610.55	0.44
SUB11	22.28	7217816.61	0.44
SUB11	22.14	6726680.50	0.41
SUB11	21.98	6277130.71	0.38
SUB11	21.81	6288935.86	0.38
SUB11	21.64	5611194.12	0.33
SUB11	23.18	3996956.93	0.25
SUB11	23.04	6590834.73	0.42
SUB11	22.92	7228453.69	0.45
SUB11	22.82	7228453.69	0.45
SUB11	22.72	7228453.69	0.45
SUB11	22.61	7228453.70	0.45
SUB11	22.50	7228453.69	0.45
SUB11	22.37	7228453.69	0.44
SUB11	22.23	7228453.69	0.44
SUB11	22.06	7228453.69	0.44
SUB11	21.89	7228453.69	0.43
SUB11	21.70	6640169.08	0.39
SUB11	21.50	7519.63	0.00
SUB11	23.41	332309.95	0.02
SUB11	23.24	4286598.64	0.27
SUB11	23.10	5500277.94	0.35
SUB11	22.98	5611932.47	0.35
SUB11	22.88	5956155.47	0.37
SUB11	22.78	7229296.99	0.45
SUB11	22.68	7229296.99	0.45
SUB11	22.58	7229296.99	0.45
SUB11	22.45	7229296.99	0.44
SUB11	22.31	7229296.99	0.44
SUB11	22.14	7229296.99	0.44
SUB11	21.96	7229296.99	0.43
SUB11	21.76	7229296.99	0.43
SUB11	21.55	3940382.44	0.23
SUB11	21.33	157606.58	0.01
SUB11	22.92	622747.18	0.04
SUB11	22.83	6849493.34	0.43
SUB11	22.74	7230140.44	0.45
SUB11	22.64	7230140.44	0.45
SUB11	22.52	7230140.44	0.45
SUB11	22.38	7230140.44	0.44
SUB11	22.22	7230140.44	0.44
SUB11	22.04	7230140.44	0.44
SUB11	21.83	7230140.44	0.43
SUB11	21.60	7230140.44	0.43
SUB11	21.35	6423050.07	0.38
SUB11	22.88	509656.39	0.03
SUB11	22.78	2188809.74	0.14
SUB11	22.69	2996243.08	0.19
SUB11	22.58	3123477.64	0.19
SUB11	22.45	3234485.42	0.20
SUB11	22.29	3100341.52	0.19
SUB11	22.10	3323241.97	0.20
SUB11	21.89	3308237.02	0.20
SUB11	21.64	3293436.91	0.20
SUB11	21.37	3220331.82	0.19
SUB11	21.09	886126.63	0.05

Major Basin	PRISM Part (in)	Area (sqft)	Area Average PRISM (in)
Total		273067713.03	23.67
USS1	22.31	882901.06	0.07
USS1	22.23	9189.11	0.00
USS1	22.61	1809827.89	0.15
USS1	22.50	6453644.92	0.53
USS1	22.39	848992.21	0.07
USS1	23.26	581608.09	0.05
USS1	23.18	3098371.78	0.26
USS1	23.11	3696096.66	0.31
USS1	23.02	2790831.83	0.24
USS1	23.09	2252795.79	0.19
USS1	22.84	6958255.62	0.58
USS1	22.69	7222554.87	0.60
USS1	22.56	2412485.32	0.20
USS1	25.68	67098.08	0.01
USS1	24.37	1587863.07	0.14
USS1	23.77	4193390.00	0.37
USS1	23.64	6407875.96	0.55
USS1	23.53	7223397.11	0.62
USS1	23.41	7223397.11	0.62
USS1	23.30	7223397.11	0.62
USS1	23.34	7223397.11	0.62
USS1	23.05	7223397.11	0.61
USS1	22.87	7053633.41	0.59
USS1	22.73	2287147.10	0.19
USS1	28.09	1686086.49	0.17
USS1	26.64	5610626.22	0.55
USS1	25.56	7140195.06	0.67
USS1	23.93	7185781.98	0.63
USS1	23.98	7224239.49	0.63
USS1	23.79	7224239.49	0.63
USS1	23.69	7224239.49	0.63
USS1	23.54	7224239.49	0.62
USS1	23.46	7224239.49	0.62
USS1	23.27	7224239.49	0.62
USS1	23.06	7224239.49	0.61
USS1	22.89	6385885.17	0.54
USS1	22.76	98057.57	0.01
USS1	29.98	595306.39	0.07
USS1	29.27	2697109.62	0.29
USS1	28.05	393211.14	0.04
USS1	26.33	354730.05	0.03
USS1	24.44	1615597.37	0.14
USS1	24.22	5848310.02	0.52
USS1	24.01	7225082.03	0.64
USS1	23.90	7225082.03	0.63
USS1	23.76	7225082.03	0.63
USS1	23.65	7225082.03	0.63
USS1	23.49	7225082.03	0.62
USS1	23.24	7225082.03	0.61
USS1	23.05	4898214.44	0.41
USS1	24.45	9065.43	0.00
USS1	24.14	2433341.99	0.22
USS1	24.09	5145956.86	0.45
USS1	23.93	6245218.05	0.55
USS1	23.80	4348549.03	0.38
USS1	23.69	4942158.15	0.43
USS1	23.40	7225924.72	0.62
USS1	23.20	5084069.52	0.43
USS1	23.83	2253.11	0.00
USS1	23.53	1739475.96	0.15
USS1	23.32	730871.75	0.06

Major Basin	PRISM Part (in)	Area (sqft)	Average PRISM (in)
Total		2904365.68	19.56
Proposed	19.59	1336640.99	9.02
Proposed	19.54	1567724.69	10.55

RICK ENGINEERING COMPANY

Proposed Site Lag Time Calculations

Job Name: Bretton Woods
Job Number: 18243
Date: 2/5/2020

Design Standards:
Yolo County City/County Drainage Manual (YCCCDM) (Rev Feb 2010
USDA NRCS TR-55 (June 1986)

Flow Type:
OF: Overland Flow (YCCCDM Tables 13 and 15)
GF: Gutter Flow; Sx=0.02ft/ft; S=0.005ft/ft; T=25ft; n=0.02 (YCCCDM Page 33)
PF: Pipe Flow; Pipe Flowing Full; R=D/4 ft; S=0.005ft/ft; n=0.015 (YCCCDM Page 33)

Basin	Flow Type	Length (ft)	Pipe Diameter (in)	Velocity (ft/s)	Lag (min)	Total Lag (min)	Total Lag (hr)	Basin Area (sqft)	Basin Area (sqmi)
A	OF	100			9	15.41	0.257	387355	0.01389
	GF	252		2.49	1.69				
	PF	486	18	3.64	2.22				
	PF	661	24	4.41	2.50				
B	OF	100			9	15.68	0.261	756515	0.02714
	GF	168		2.49	1.13				
	PF	302	15	3.22	1.56				
	PF	227	18	3.64	1.04				
	PF	910	30	5.13	2.96				
C	OF	100			9	15.53	0.259	282903	0.01015
	GF	196		2.49	1.31				
	PF	1140	18	3.64	5.22				
D	OF	100			9	16.92	0.282	698853	0.02507
	GF	342		2.49	2.29				
	PF	51	15	3.22	0.26				
	PF	482	18	3.64	2.21				
	PF	301	24	4.41	1.14				
	PF	621	30	5.13	2.02				
E	OF	100			9	16.63	0.277	375634	0.01347
	GF	356		2.49	2.38				
	PF	342	15	3.22	1.77				
	PF	269	18	3.64	1.23				
	PF	595	24	4.41	2.25				
F	OF	100			9	16.62	0.277	403083	0.01446
	GF	320		2.49	2.14				
	PF	549	15	3.22	2.84				
	PF	698	24	4.41	2.64				

RICK ENGINEERING COMPANY

Area Averaged Cv Calculator

Job Name: Bretton Woods
Job Number: 18463
Date: 5/12/2020

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		249652401.70	0.3722
CDW2	0.3728	156565734.11	0.2338
CDW2	0.3713	93086667.59	0.1384

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		431301601.77	0.3742
CHS2	0.3736	58216443.15	0.0504
CHS2	0.3721	146876041.93	0.1267
CHS2	0.3707	3961787.74	0.0034
CHS2	0.3771	37171360.05	0.0325
CHS2	0.3756	163468013.62	0.1424
CHS2	0.3742	21607955.29	0.0187

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		288406745.50	0.3736
DS3B	0.3742	172366838.00	0.2236
DS3B	0.3728	116039907.50	0.1500

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		294095125.68	0.3745
SUB10	0.3756	66684833.35	0.0852
SUB10	0.3742	227410292.34	0.2894

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		365037526.78	0.3737
SUB11	0.3707	20882526.17	0.0212
SUB11	0.3742	270524977.41	0.2773
SUB11	0.3728	73630023.20	0.0752

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		273067713.03	0.3721
USS1	0.3721	264328746.38	0.3602
USS1	0.3707	8738966.65	0.0119

Major Basin	Cv Part (in)	Area (sqft)	Area Average Cv (in)
Total		2904365.68	0.3713
Proposed	0.3713	2904365.68	0.3713

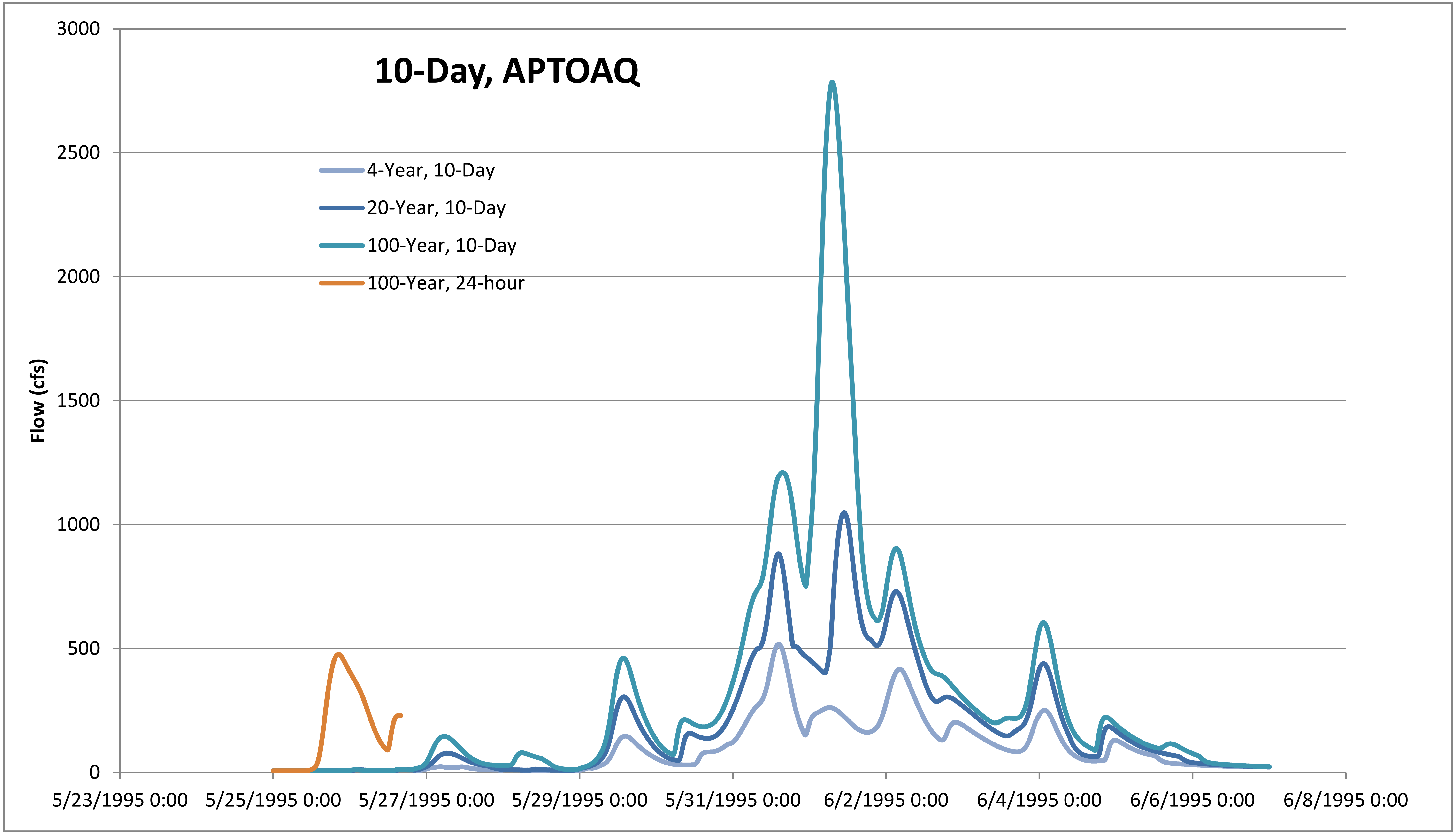
Appendix 2

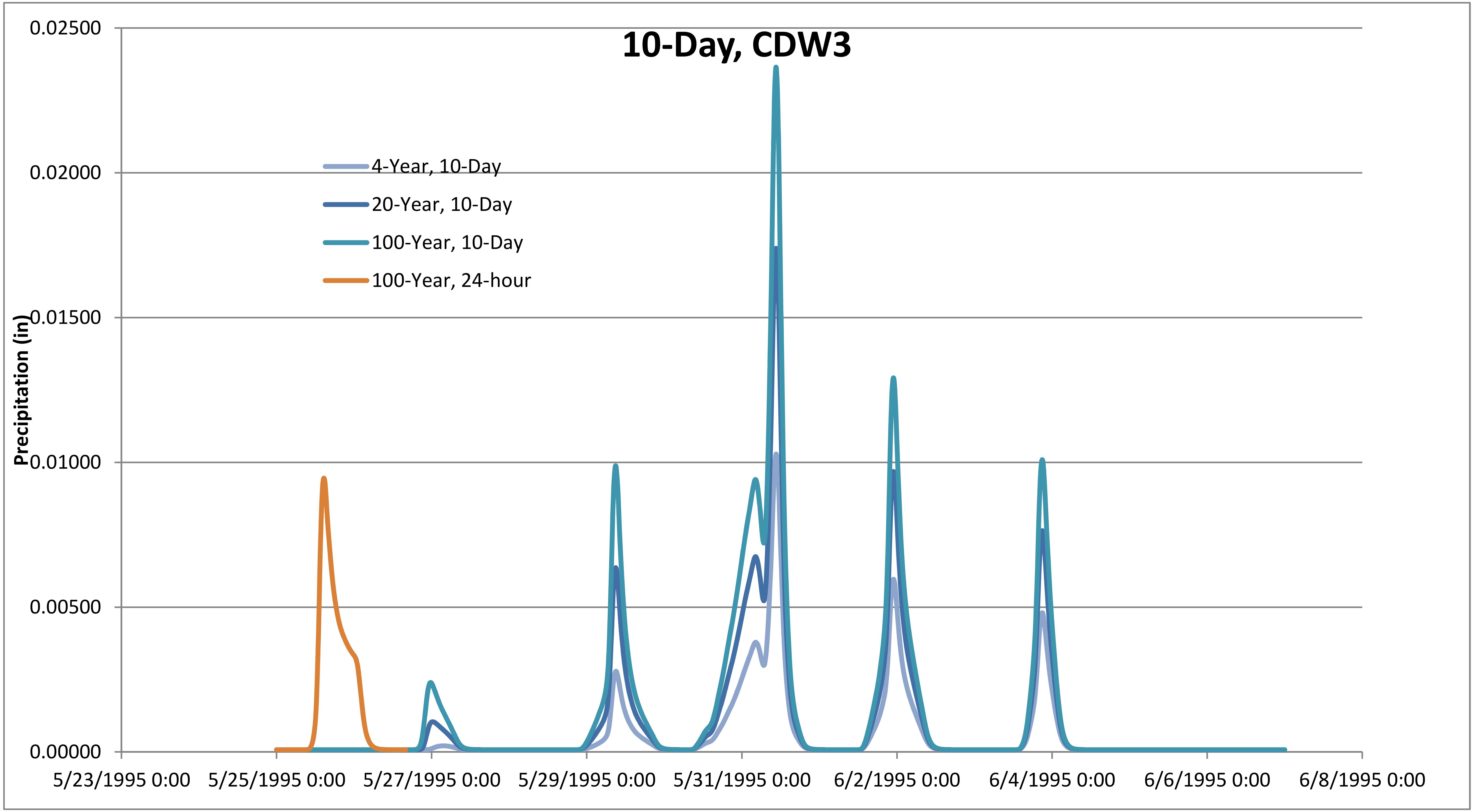
Hydrologic Results

2A: Existing Hydrographs
2B: Proposed Hydrographs

Appendix 2A

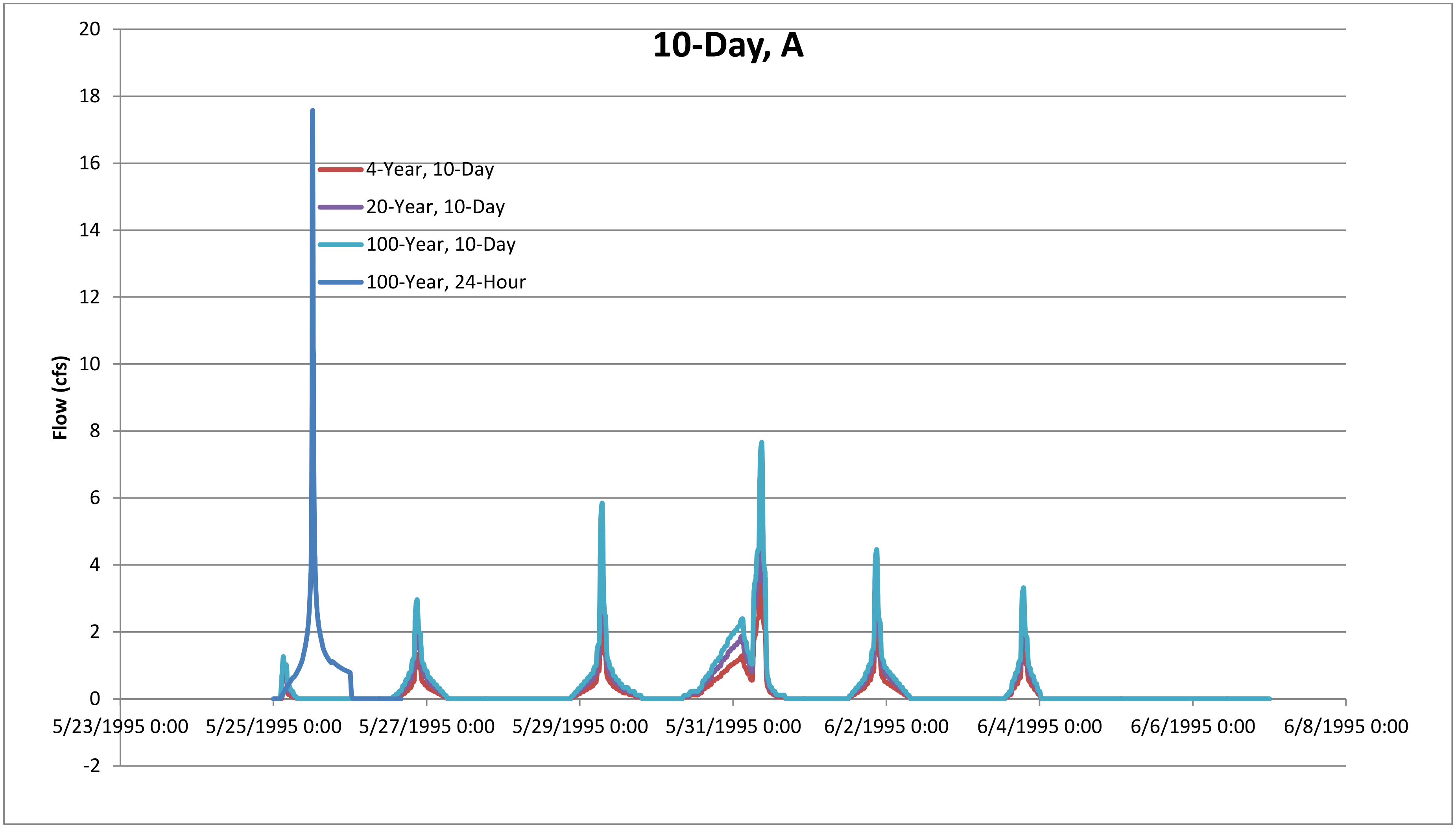
Existing Hydrographs

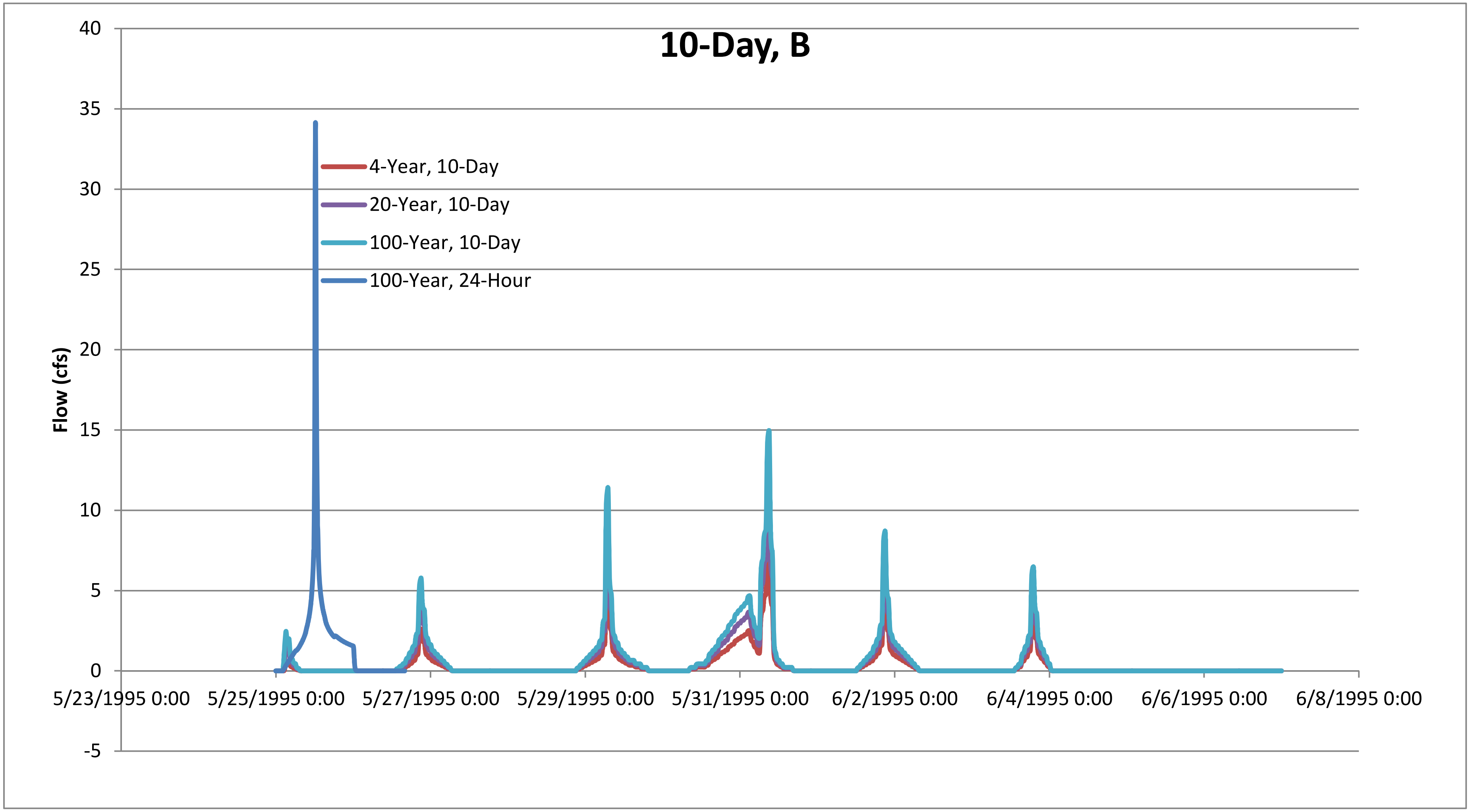

10-Day, APTOAQ
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-hour
Flow (cfs)
3000
2500
2000
1500
1000
500
0
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00


10-Day, CDW3
Precipitation (in)
0.02500
0.02000
0.01500
0.01000
0.00500
0.00000
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-hour
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00

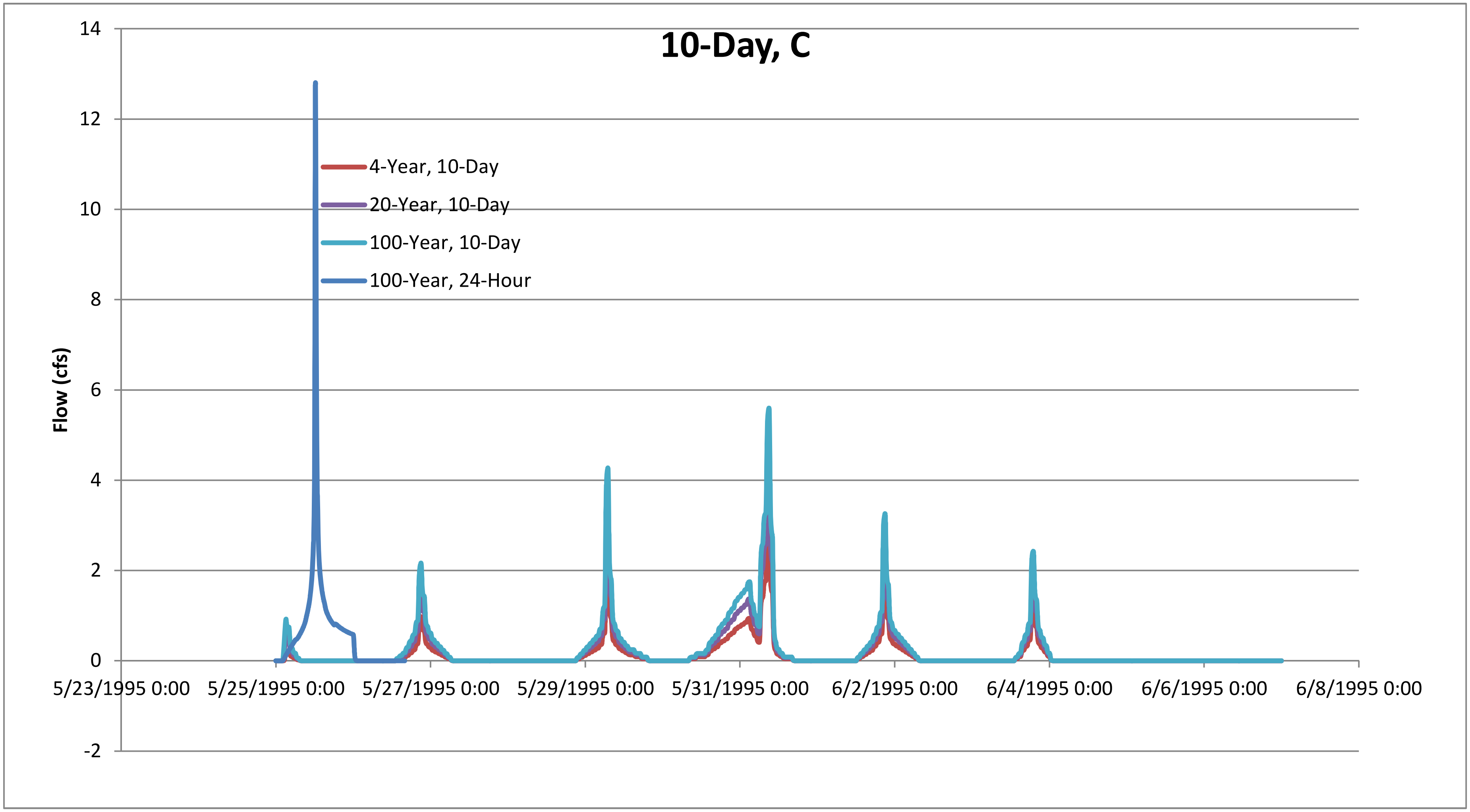
Appendix 2B

Proposed Hydrographs


10-Day, A
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour
Flow (cfs)
20
18
16
14
12
10
8
6
4
2
0
-2
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00



10-Day, B
Flow (cfs)
40
35
30
25
20
15
10
5
0
-5
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00



10-Day, C
Flow (cfs)
14
12
10
8
6
4
2
0
-2
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
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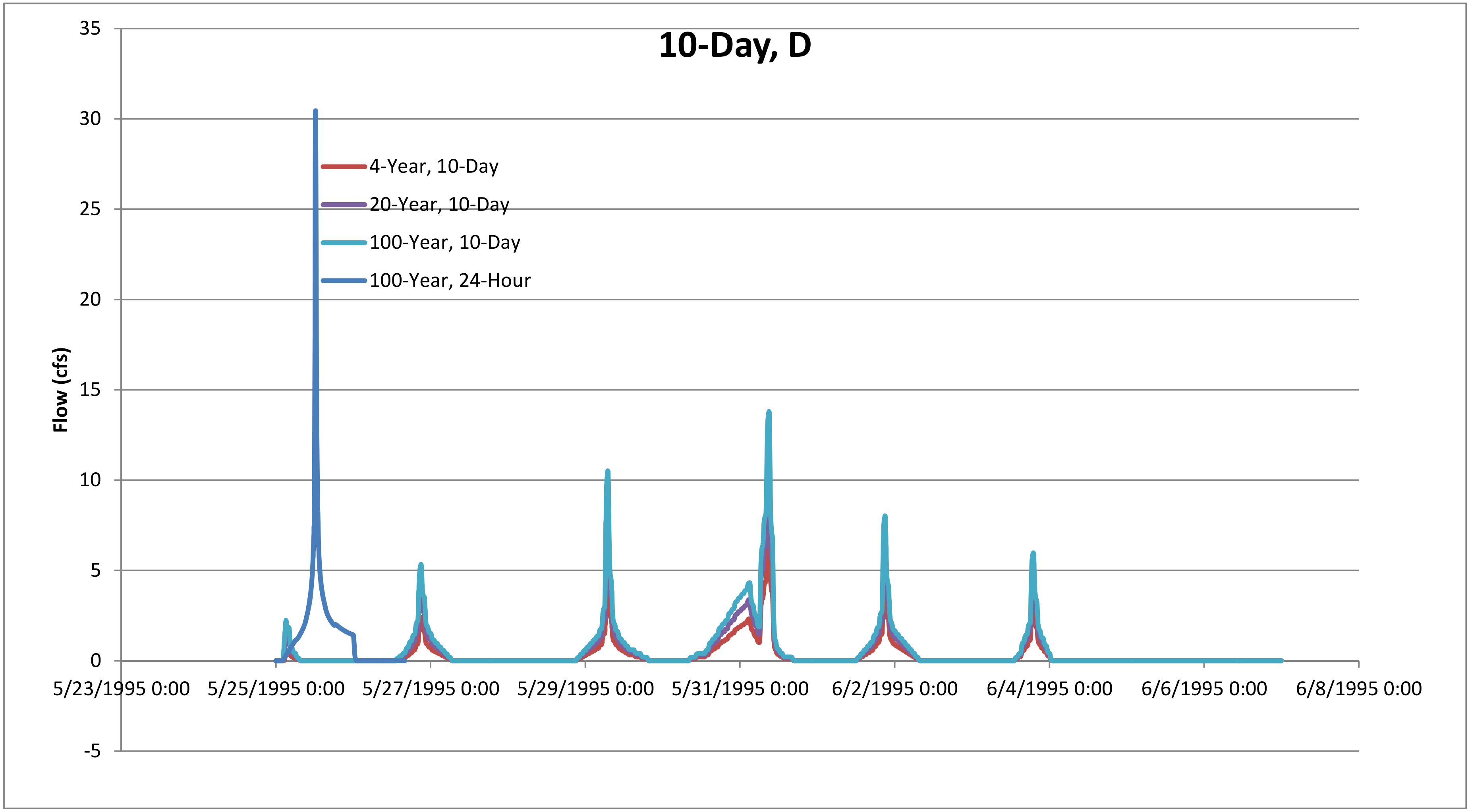
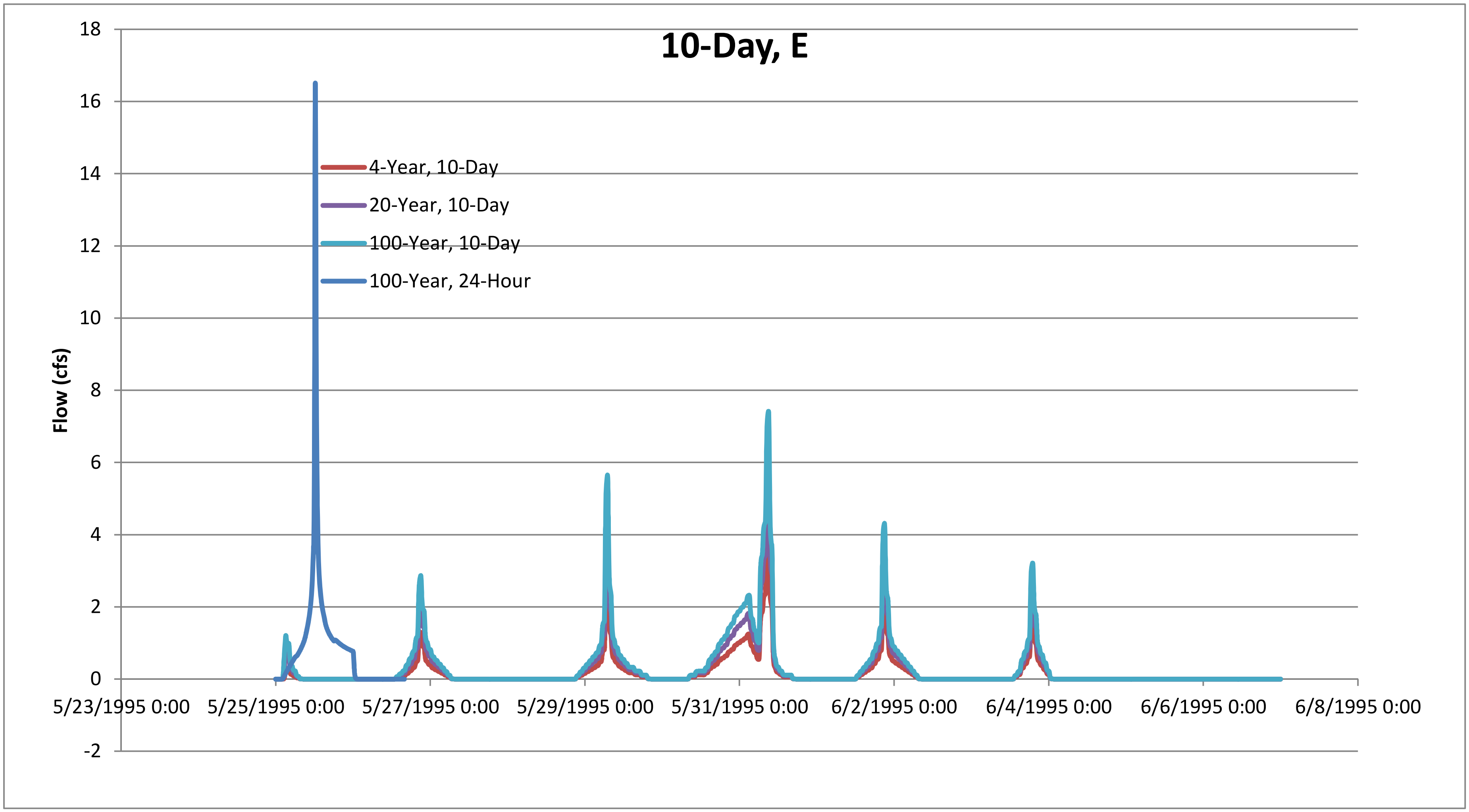
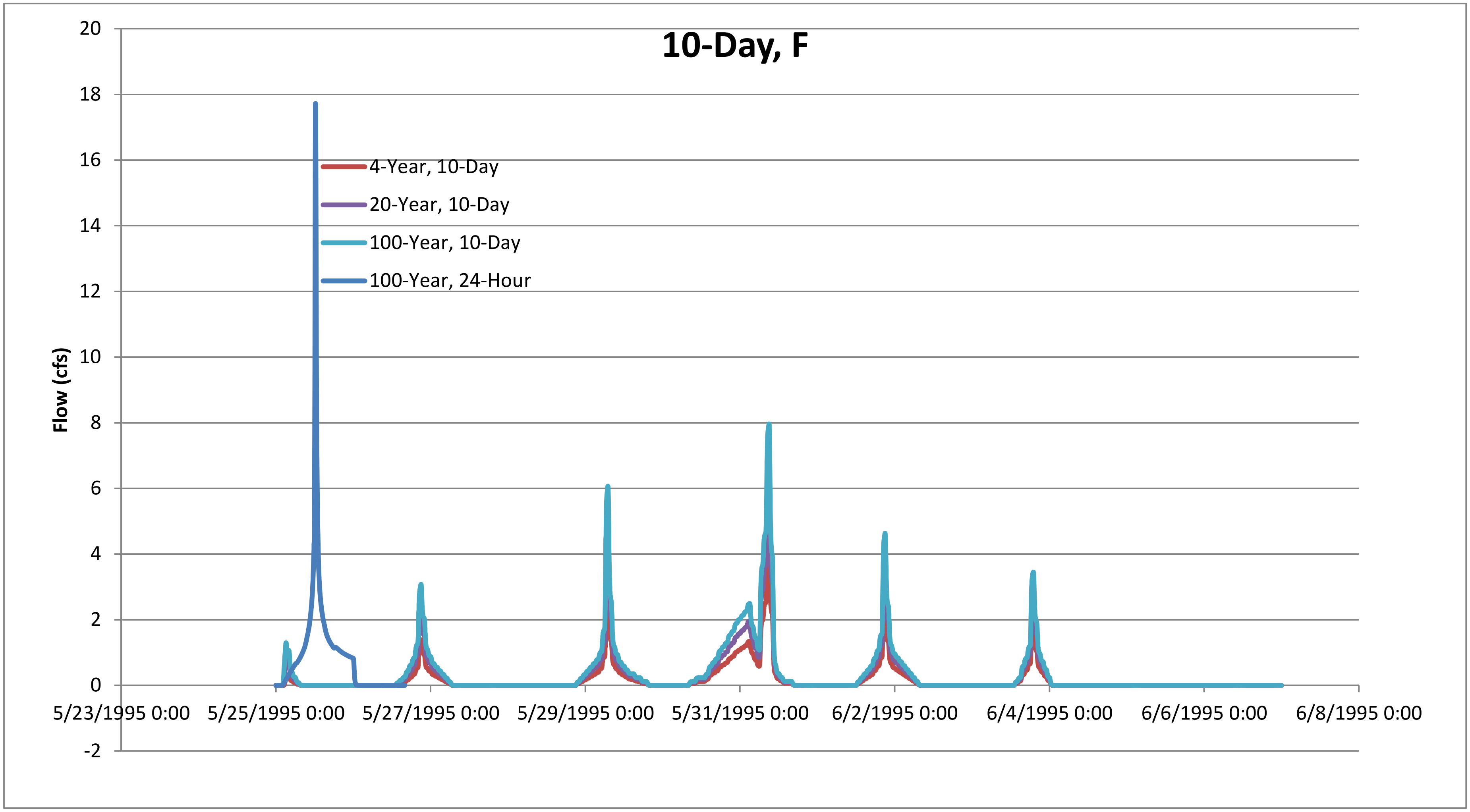
6/6/1995 0:00
6/8/1995 0:00



10-Day, D
Flow (cfs)
35
30
25
20
15
10
5
0
-5
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00



10-Day, E
Flow (cfs)
18
16
14
12
10
8
6
4
2
0
-2
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour


10-Day, F
Flow (cfs)
20
18
16
14
12
10
8
6
4
2
0
-2
4-Year, 10-Day
20-Year, 10-Day
100-Year, 10-Day
100-Year, 24-Hour
5/23/1995 0:00
5/25/1995 0:00
5/27/1995 0:00
5/29/1995 0:00
5/31/1995 0:00
6/2/1995 0:00
6/4/1995 0:00
6/6/1995 0:00
6/8/1995 0:00

Appendix 3

Hydraulics

3A: Existing Condition HEC-RAS Workmaps
3B: Proposed Condition HEC-RAS Workmaps
3C: HEC-RAS Model Backup

Appendix 3A

Existing Condition HEC-RAS Workmaps

LEGEND

- 2D FLOW AREA BOUNDARY
- PROJECT BOUNDARY
- STRUCTURES
- BOUNDARY CONDITIONS
- BREAKLINES

NOTES:

1. NAVD-88 ELEVATIONS ARE 2.55 FEET ABOVE NGVD-29 ELEVATIONS.
2. SITE TOPOGRAPHY: FROM H-113 TO EAST OF SITE TO ROAD 99 WEST OF SITE AND FROM COVELL BOULEVARD SOUTH OF SITE TO NORTH OF THE BINNING TRACT: PROVIDED BY CUNNINGHAM ENGINEERING,1FT CONTOURS ON THE NAVD-88 VERTICAL DATUM COLLECTED 2018.
3. SUPPLEMENTAL TOPOGRAPHY: OUTSIDE OF THE LIMITS OF THE SITE TOPOGRAPHY: LIDAR PROVIDED BY YOLO COUNTY, 1FT CONTOURS ON THE NAVD-88 VERTICAL DATUM.

200 100 0 200 400 600

GRAPHIC SCALE: 1" = 200'

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FOLSOM, CA 95630
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(FAX)916.934.5144
rickengineering.com
San Diego - Orange - Riverside - San Luis Obispo - Phoenix - Tucson - Denver - Las Vegas

EXISTING 2D HEC-RAS WORKMAP FOR BRETTON WOODS

SOUTH

SHEET 1 OF 2

J-18463
DATE: MARCH 30, 2020

200 100 0 200 400 600

GRAPHIC SCALE: 1" = 200'

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EXISTING 2D HEC-RAS WORKMAP FOR BRETTON WOODS

NORTH

SHEET 2 OF 2

J-18463
DATE: MARCH 30, 2020

Appendix 3B

Proposed Condition HEC-RAS Workmaps

LEGEND

- 2D/SA FLOW AREA BOUNDARY
- PROJECT BOUNDARY
- STRUCTURES
- BOUNDARY CONDITIONS
- BREAKLINES

NOTES:

1. NAVD-88 ELEVATIONS ARE 2.55 FEET ABOVE NGVD-29 ELEVATIONS.
2. SITE TOPOGRAPHY: FROM H-113 TO EAST OF SITE TO ROAD 99 WEST OF SITE AND FROM COVELL BOULEVARD SOUTH OF SITE TO NORTH OF THE BINNING TRACT: PROVIDED BY CUNNINGHAM ENGINEERING,1FT CONTOURS ON THE NAVD-88 VERTICAL DATUM COLLECTED 2018.
3. SUPPLEMENTAL TOPOGRAPHY: OUTSIDE OF THE LIMITS OF THE SITE TOPOGRAPHY: LIDAR PROVIDED BY YOLO COUNTY, 1FT CONTOURS ON THE NAVD-88 VERTICAL DATUM.

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PROPOSED 2D HEC-RAS WORKMAP FOR BRETTON WOODS

SOUTH

SHEET 1 OF 2

J-18463
DATE: MAY 20, 2020

PROPOSED 2D HEC-RAS WORKMAP FOR BRETTON WOODS

NORTH

SHEET 2 OF 2

J-18463
DATE: MAY 20, 2020

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Appendix 3C

HEC-RAS Model Backup

RICK ENGINEERING COMPANY

Exhibit Date: 02-24-2020
REC JN: 18463

N

800 400 0 800 1,600
Feet

Existing Aerial Image

RICK ENGINEERING COMPANY

Exhibit Date: 02-24-2020
REC JN: 18463

N

800 400 0 800 1,600 Feet

Existing Manning's n-Values

RICK ENGINEERING COMPANY

Exhibit Date: 02-24-2020
REC JN: 18463

Proposed Manning's n-Values

TABLE 5

YOLO COUNTY
CITY / COUNTY DRAINAGE MANUAL

MANNING'S "n" FOR CHANNEL FLOW

Land Use Description	Manning's "n"
Concrete Pipe	0.015
Corrugated Metal Pipe	0.024
Concrete-Lined Channels	0.015
Earth Channel – Straight/Smooth	0.022
Earth Channel – Dredged	0.028
Mowed Grass Lined Channel	0.035
Natural Channel – Clean/Some Pools	0.040
Natural Channel – Winding/Some Vegetation	0.048
Natural Channel – Winding/Stony/Partial Vegetation	0.060
Natural Channel – Debris/Pools/Rocks/Full Vegetation	0.070
Floodplain – Isolated Trees/Mowed Grass	0.040
Floodplain – Isolated Trees/High Grass	0.050
Floodplain – Few Trees/Shrubs/Weeds	0.080
Floodplain – Scattered Trees/Shrubs	0.120
Floodplain – Numerous Trees/Dense Vines	0.200

Source:
Sacramento City/County Drainage Manual, Volume 2, "Hydrology Standards," December 1996.

RICK ENGINEERING COMPANY

Pump Flow Rate Calculations

Job Name: Bretton Woods
Job Number: 18463
Date: 5/13/2020

Per Existing Pump Information		Proposed Pumps
2 Pumps at 1500gpm each		Per Coordination with Yolo County, pump flow at storm peak shall not exceed 15cfs. 15cfs flow rate for pumps was utilized in model
1500	gpm/pump	
3.34	cfs/pump	
6.7	cfs total	

Questions concerning the VERTCON process may be mailed to NGS

Latitude: 38.564049

Longitude: 121.768504

NGVD 29 height:

Datum shift(NAVD 88 minus NGVD 29): 0.777 meter x3.2808=2.55'

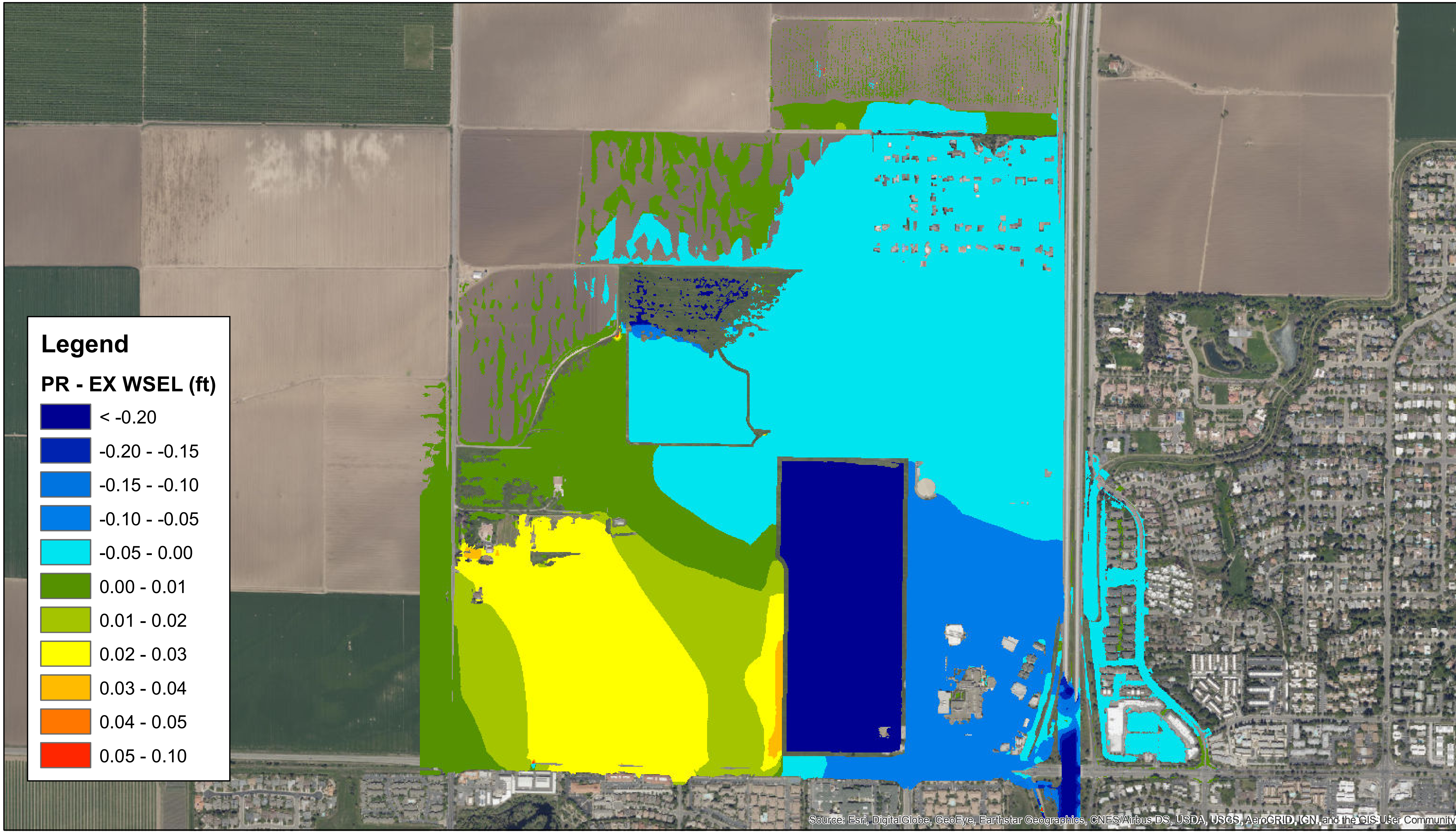
Appendix 4

Hydraulic Results

4A: Result Exhibits
4B: Covell Drain Peak Outflow Hydrographs

Appendix 4A

Result Exhibits

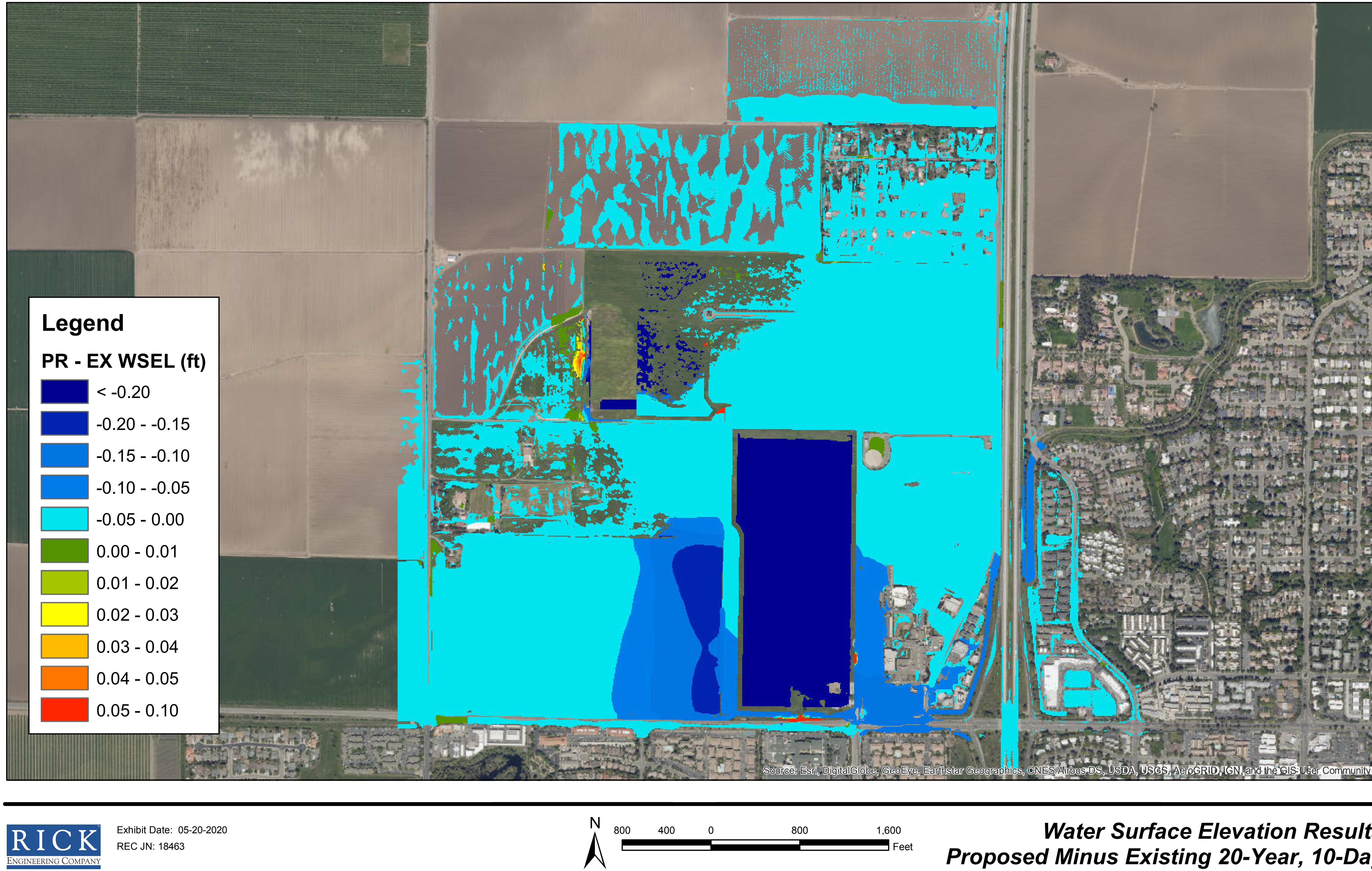


RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020
REC JN: 18463

N
800 400 0 800 1,600
Feet

Water Surface Elevation Results
Proposed Minus Existing 100-Year, 10-Day



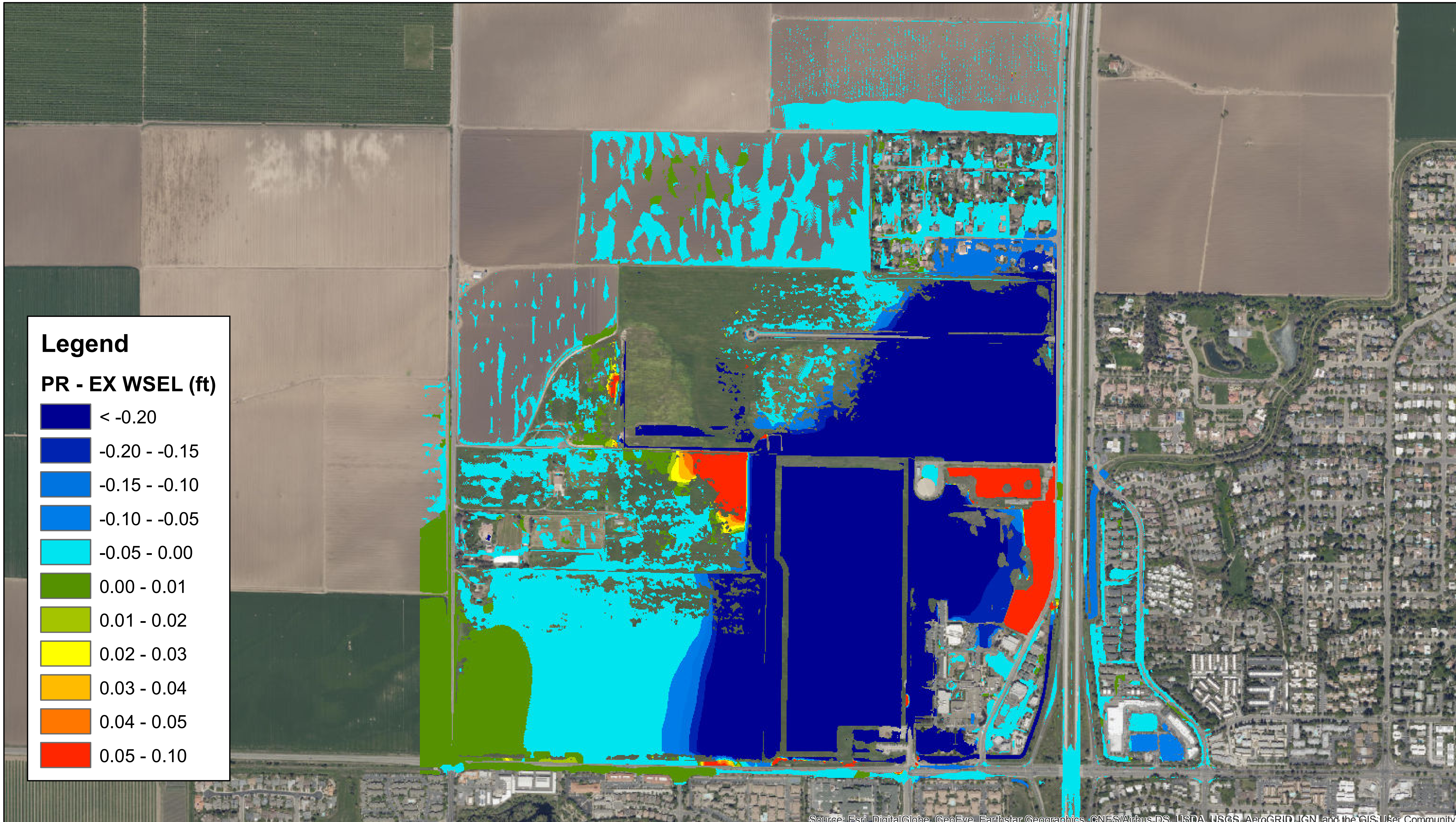
RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

REC JN: 18463

Water Surface Elevation Results

Proposed Minus Existing 20-Year, 10-Day

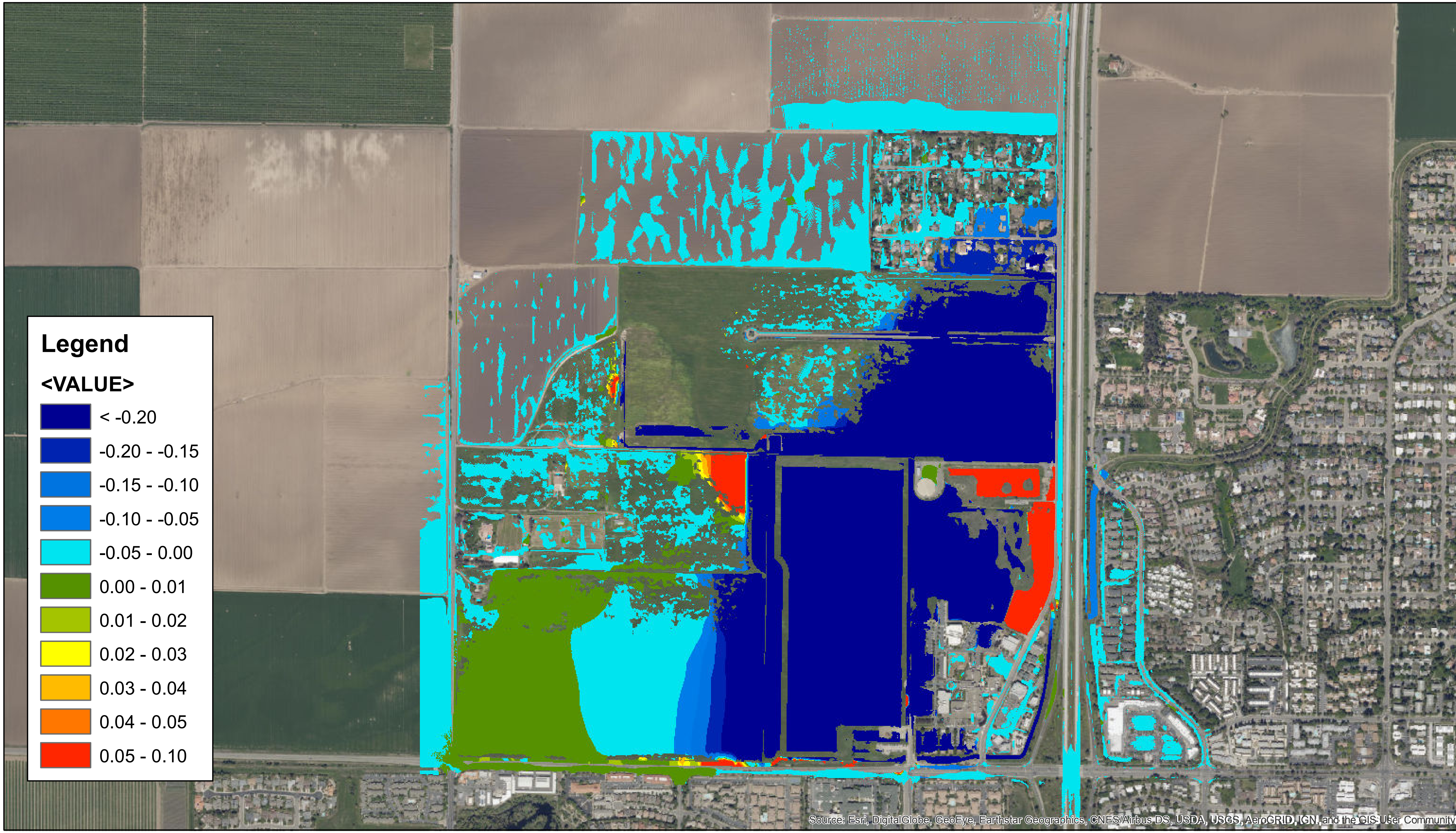


RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020
REC JN: 18463

N
800 400 0 800 1,600
Feet

Water Surface Elevation Results
Proposed Minus Existing 4-Year, 10-Day

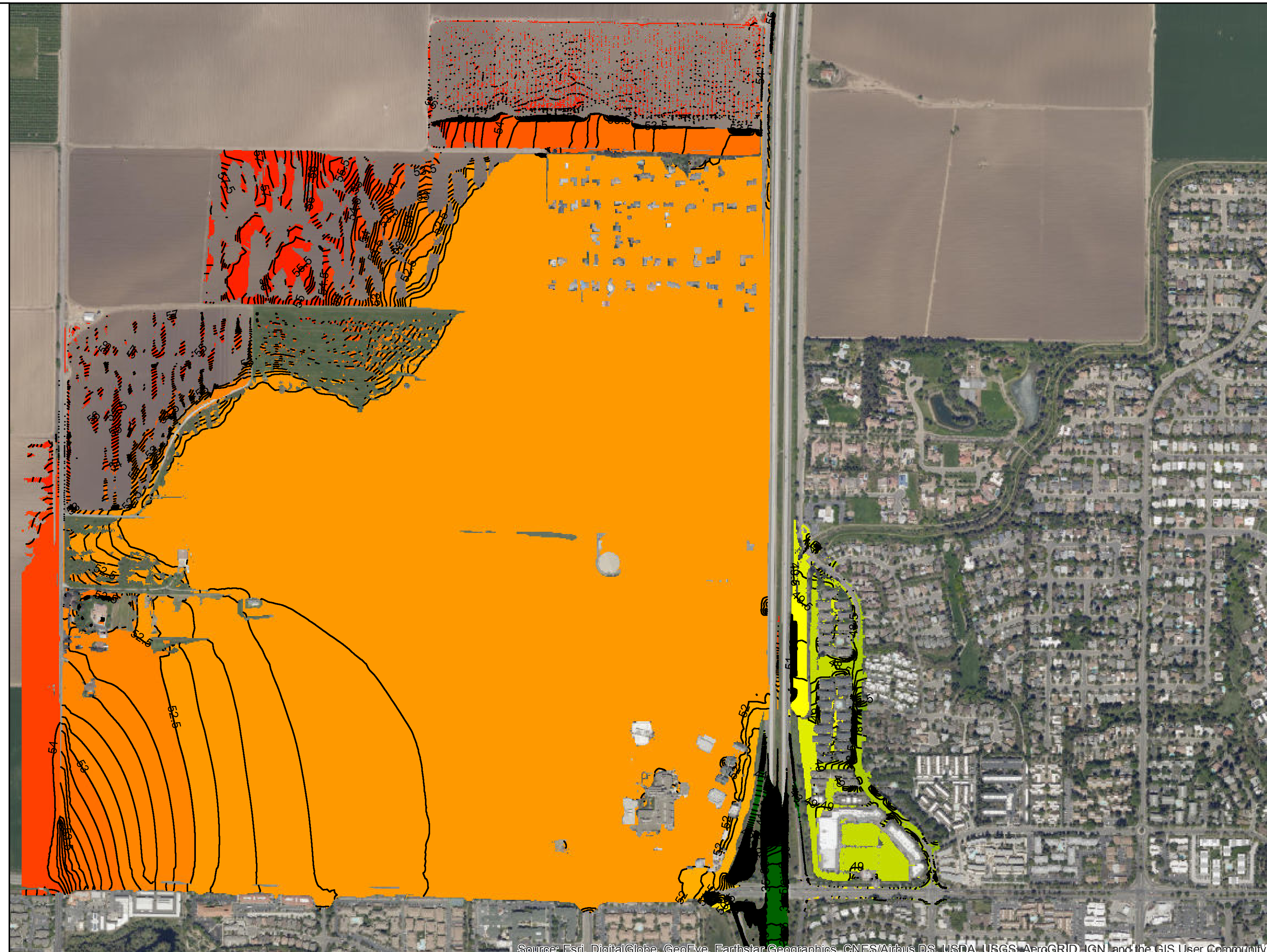


RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020
REC JN: 18463

N
800 400 0 800 1,600 Feet

Water Surface Elevation Results
Proposed Minus Existing 100-Year, 24-Hour



Legend

—— Contours of WSEL at 0.1' Intervals

WSEL (ft, NAVD-88)

- 0 - 45
- 45.00000001 - 45.5
- 45.50000001 - 46
- 46.00000001 - 46.5
- 46.50000001 - 47
- 47.00000001 - 47.5
- 47.50000001 - 48
- 48.00000001 - 48.5
- 48.50000001 - 49
- 49.00000001 - 49.5
- 49.50000001 - 50
- 50.00000001 - 50.5
- 50.50000001 - 51
- 51.00000001 - 51.5
- 51.50000001 - 52
- 52.00000001 - 52.5
- 52.50000001 - 53
- 53.00000001 - 53.5
- 53.50000001 - 54
- 54.00000001 - 54.5
- 54.50000001 - 55

RICK ENGINEERING COMPANY

Exhibit Date: 05-14-2020
REC JN: 18463

N
800 400 0 800 1,600 Feet

Water Surface Elevation Results
Existing Condition 100-Year, 10-Day

Legend

—— Contours of WSEL at 0.1' Intervals

WSEL (ft, NAVD-88)

- 0 - 45
- 45.00000001 - 45.5
- 45.50000001 - 46
- 46.00000001 - 46.5
- 46.50000001 - 47
- 47.00000001 - 47.5
- 47.50000001 - 48
- 48.00000001 - 48.5
- 48.50000001 - 49
- 49.00000001 - 49.5
- 49.50000001 - 50
- 50.00000001 - 50.5
- 50.50000001 - 51
- 51.00000001 - 51.5
- 51.50000001 - 52
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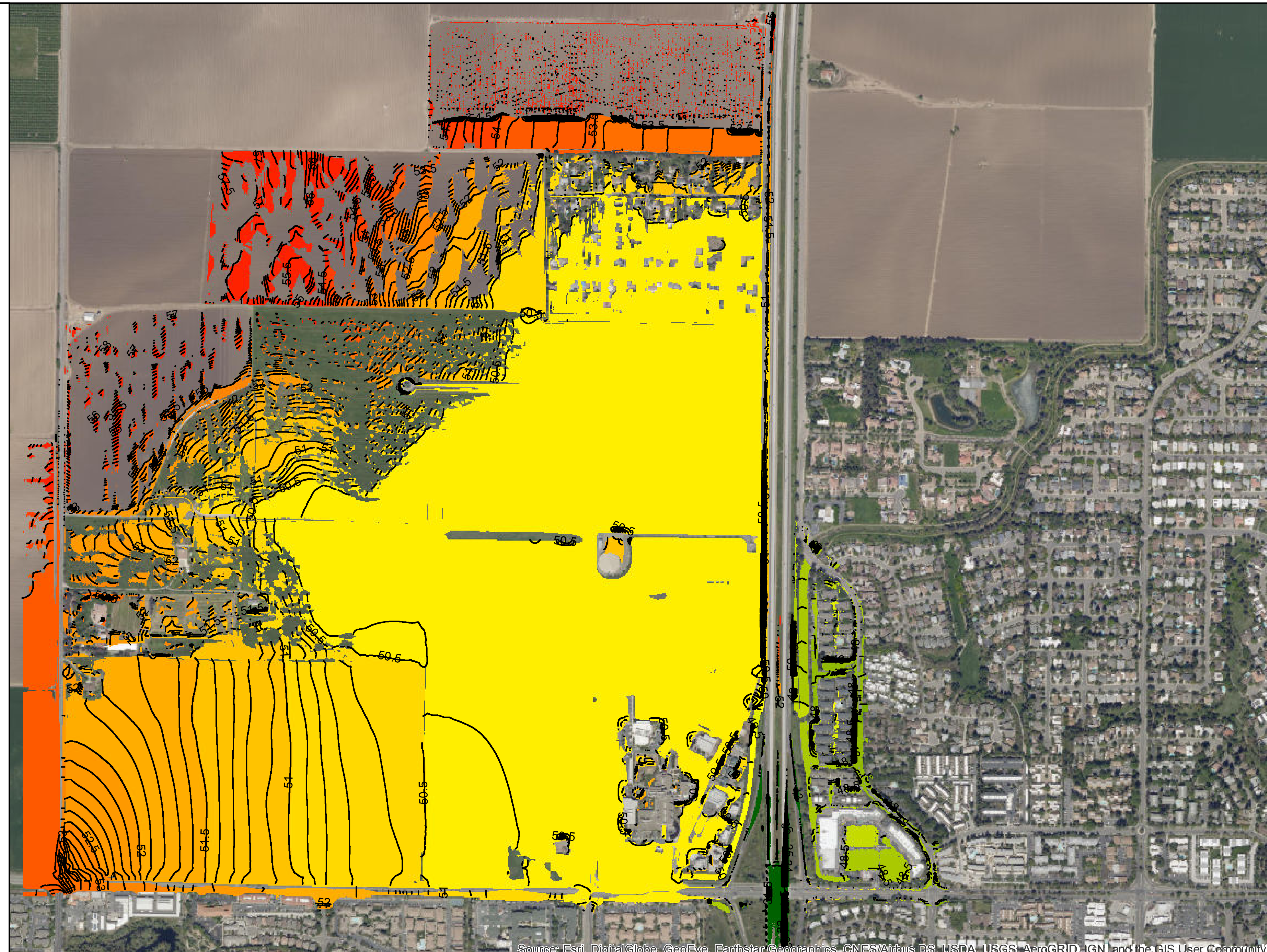
- 54.50000001 - 55



RICK ENGINEERING COMPANY

Exhibit Date: 05-14-2020

REC JN: 18463

N

800 400 0 800 1,600 Feet

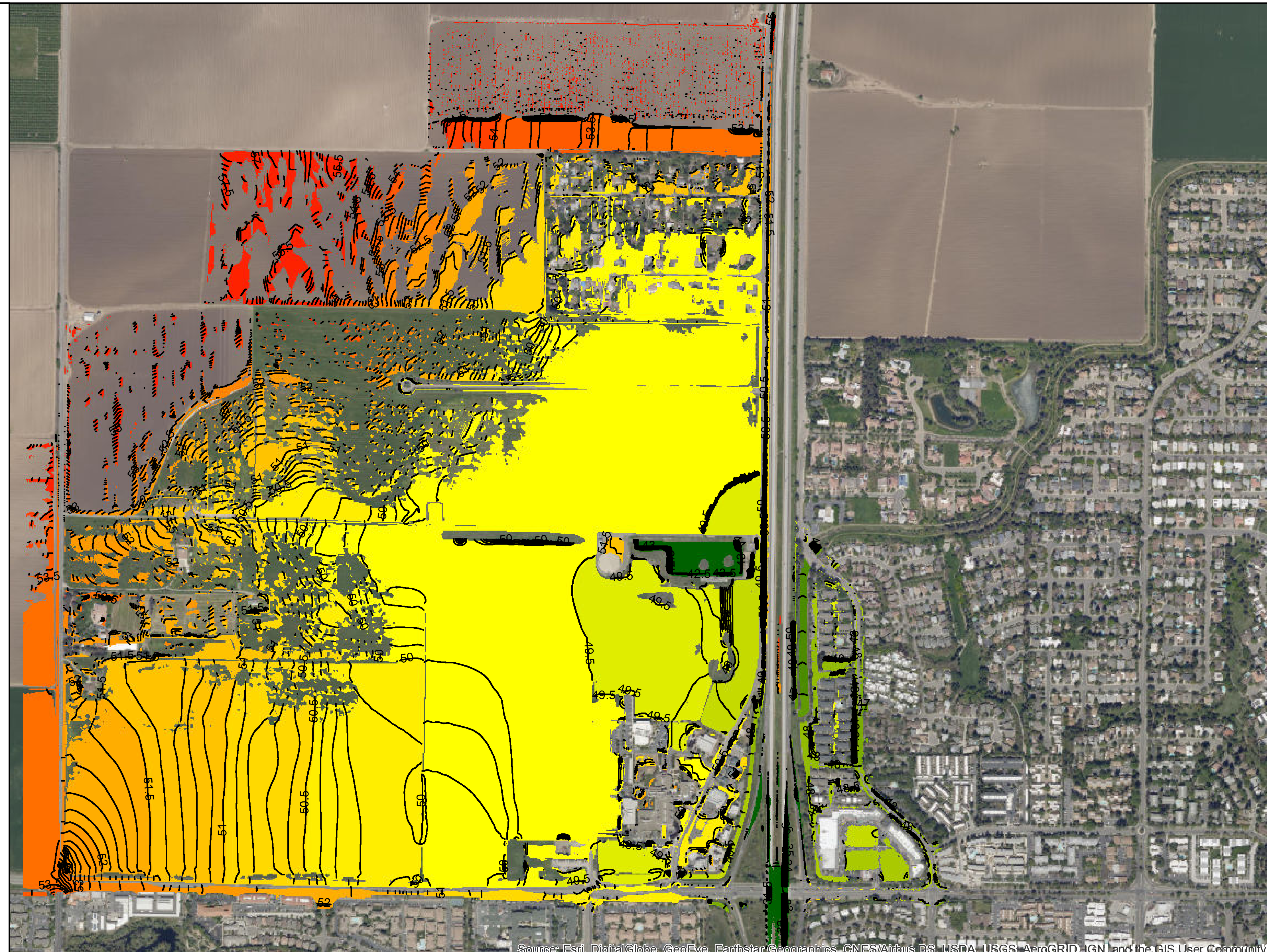
Water Surface Elevation Results
Existing Condition 20-Year, 10-Day

Legend

—— Contours of WSEL at 0.1' Intervals

WSEL (ft, NAVD-88)

- 0 - 45
- 45.00000001 - 45.5
- 45.50000001 - 46
- 46.00000001 - 46.5
- 46.50000001 - 47
- 47.00000001 - 47.5
- 47.50000001 - 48
- 48.00000001 - 48.5
- 48.50000001 - 49
- 49.00000001 - 49.5
- 49.50000001 - 50
- 50.00000001 - 50.5
- 50.50000001 - 51
- 51.00000001 - 51.5
- 51.50000001 - 52
- 52.00000001 - 52.5
- 52.50000001 - 53
- 53.00000001 - 53.5
- 53.50000001 - 54
- 54.00000001 - 54.5
- 54.50000001 - 55



RICK ENGINEERING COMPANY

Exhibit Date: 05-14-2020
REC JN: 18463

N
800 400 0 800 1,600 Feet

Water Surface Elevation Results
Existing Condition 4-Year, 10-Day

Legend

—— Contours of WSEL at 0.1' Intervals

WSEL (ft, NAVD-88)

- 0 - 45
- 45.00000001 - 45.5
- 45.50000001 - 46
- 46.00000001 - 46.5
- 46.50000001 - 47
- 47.00000001 - 47.5
- 47.50000001 - 48
- 48.00000001 - 48.5
- 48.50000001 - 49
- 49.00000001 - 49.5
- 49.50000001 - 50
- 50.00000001 - 50.5
- 50.50000001 - 51
- 51.00000001 - 51.5
- 51.50000001 - 52
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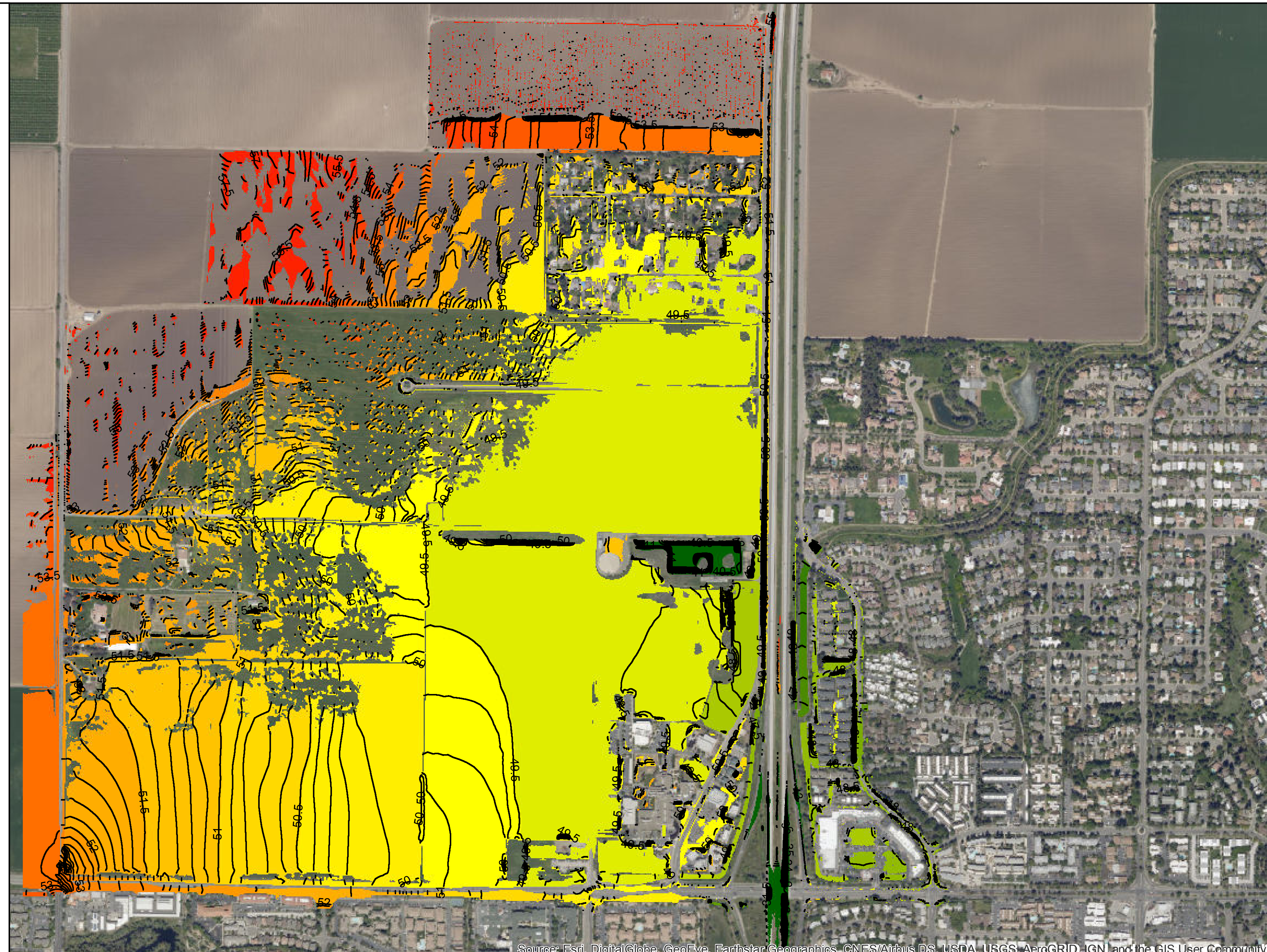
- 54.50000001 - 55



RICK ENGINEERING COMPANY

Exhibit Date: 05-14-2020

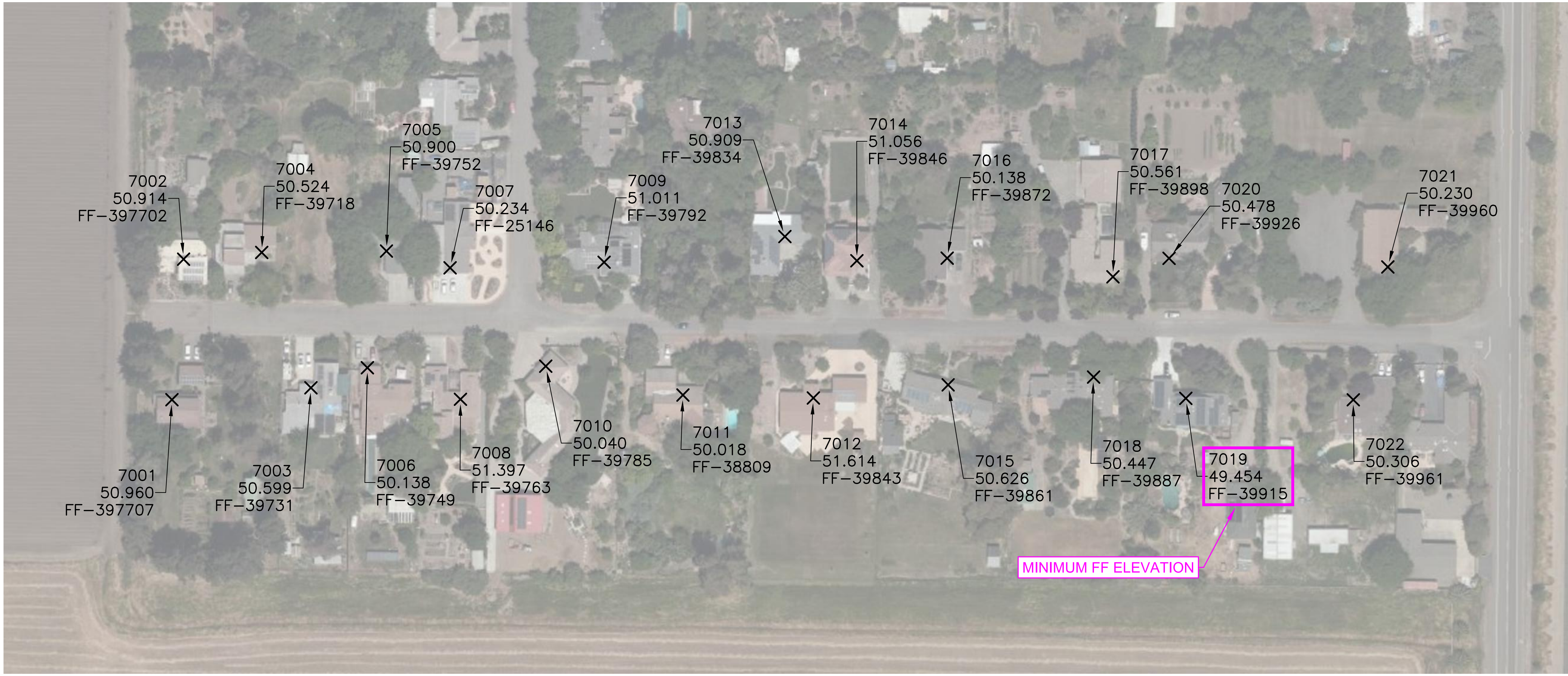
REC JN: 18463

N

800 400 0 800 1,600 Feet

Water Surface Elevation Results

Existing Condition 100-Year, 24-Hour



N

60 30 0 60 120 180

GRAPHIC SCALE: 1" = 120'

BINNING TRACT FINISHED FLOORS FOR BRETTON WOODS

SHEET 1 OF 1

J-18463
DATE: MAY 11, 2020

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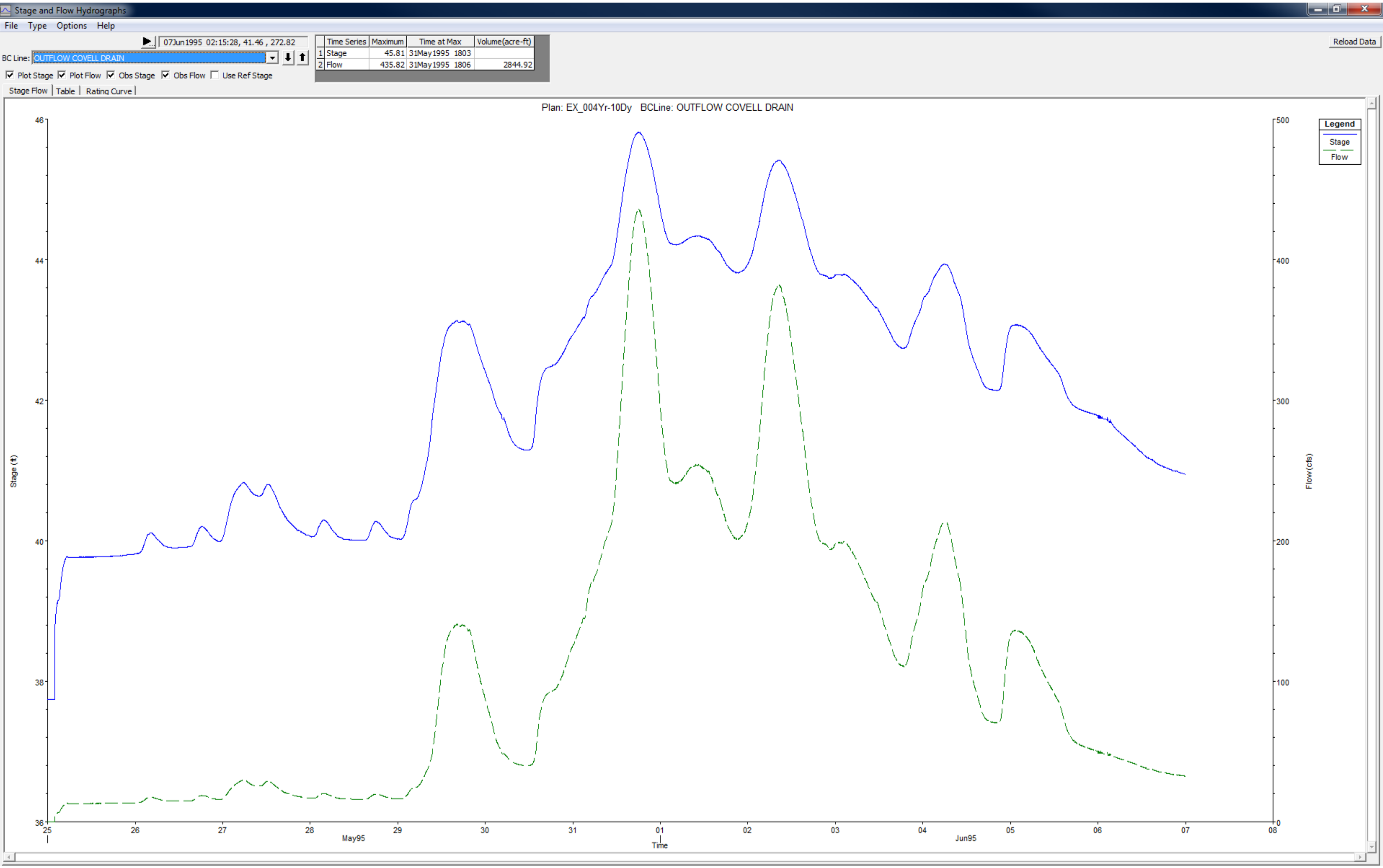
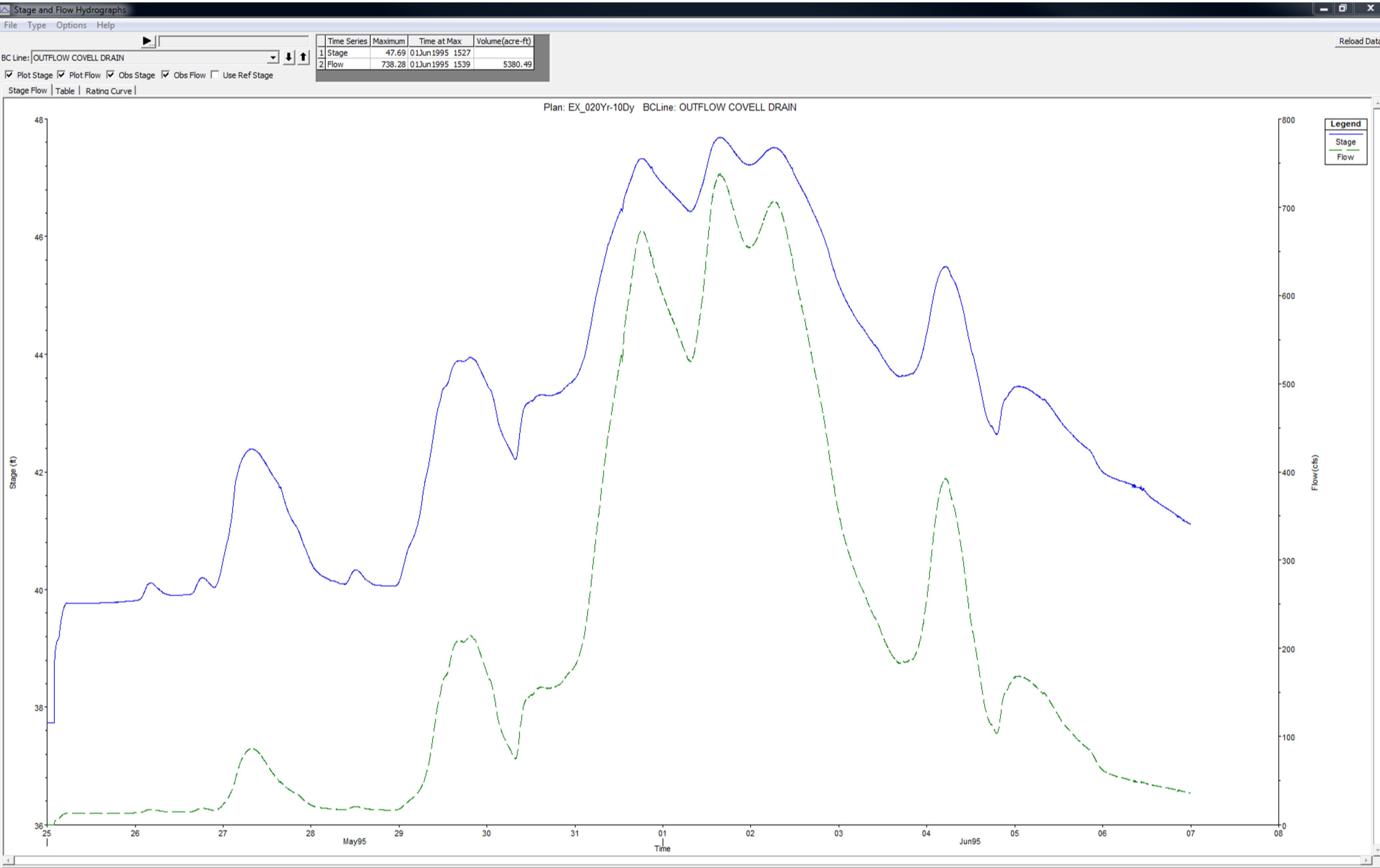
C:\RICK\Projects\C_SAC_S\18463_WDAAC\WaterResources\18463_Workmap_Binning_FF.dwg
REC_NCS-2.ctb

Appendix 4B

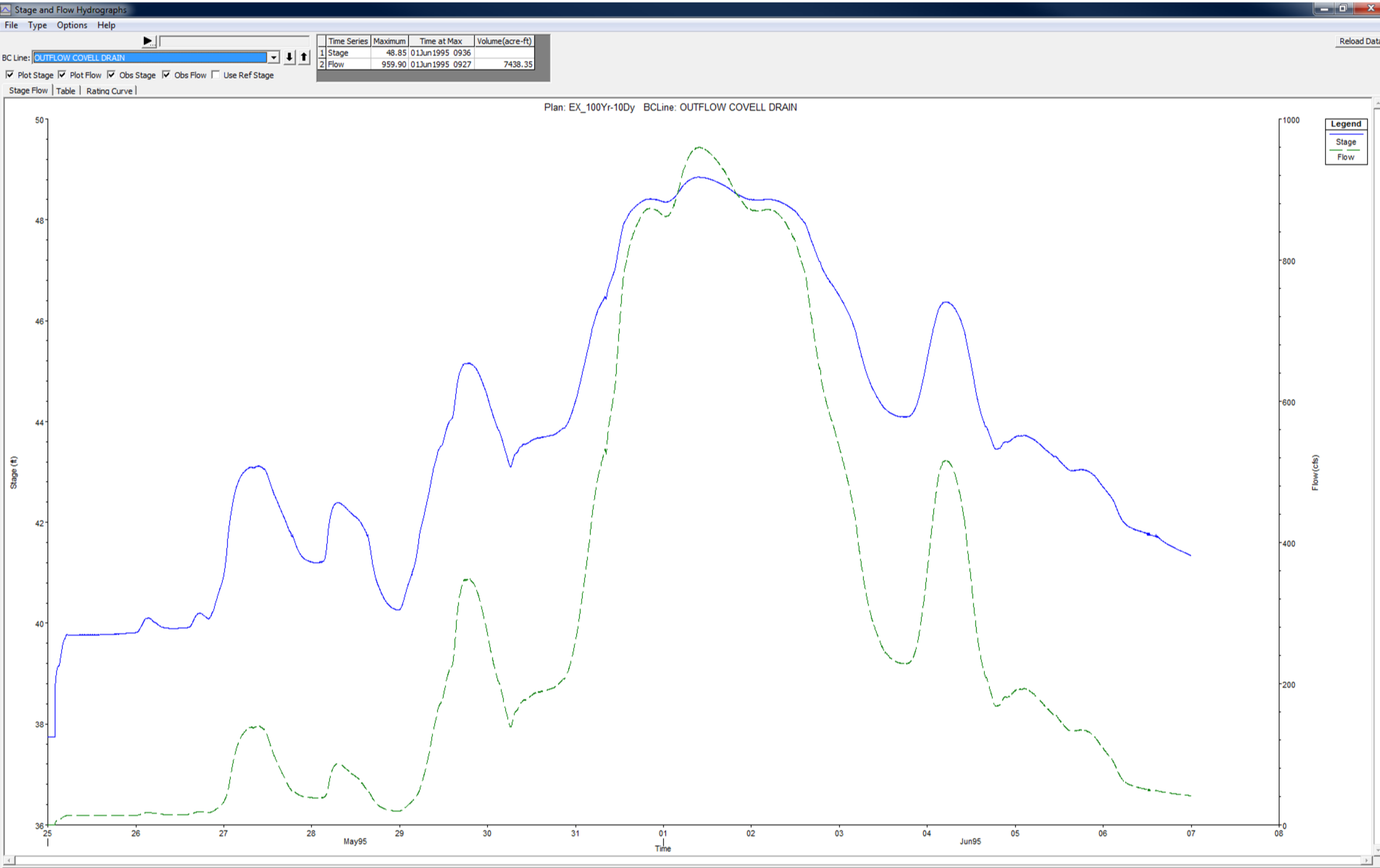
Covell Drain Peak Outflow Hydrographs



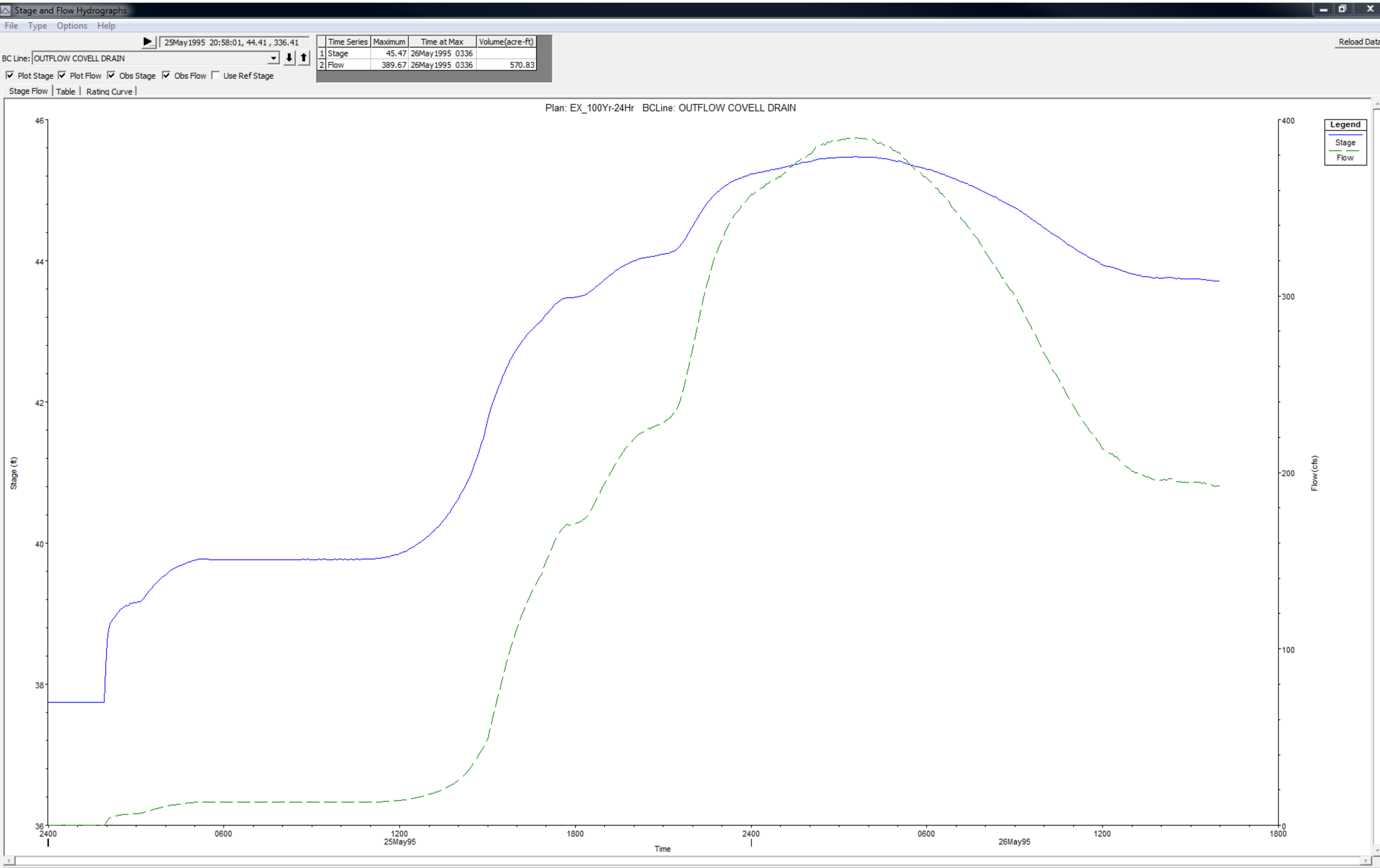
Stage and Flow Hydrographs
File Type Options Help
07Jun1995 02:15:28, 41.46 , 272.82
BC Line: OUTFLOW COVELL DRAIN
Plot Stage Plot Flow Obs Stage Obs Flow Use Ref Stage
Stage Flow | Table | Rating Curve
Time Series Maximum Time at Max Volume(acre-ft)
1 Stage 45.81 31May1995 1803
2 Flow 435.82 31May1995 1806 2844.92
Reload Data
Plan: EX_004Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
May95
Jun95

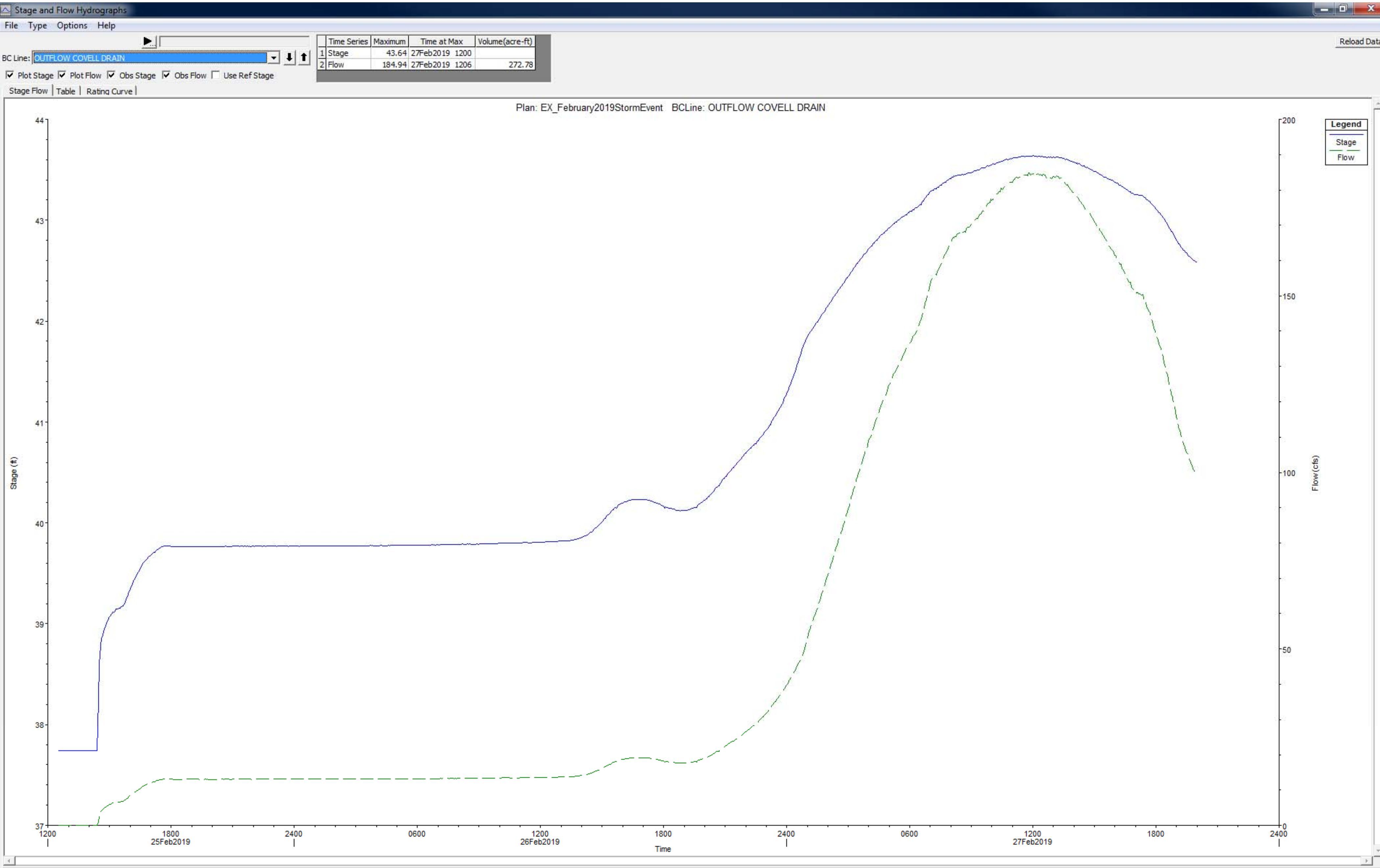


Stage and Flow Hydrographs
File Type Options Help
BC Line: OUTFLOW COVELL DRAIN
Plot Stage Plot Flow Obs Stage Obs Flow Use Ref Stage
Stage Flow | Table | Rating Curve
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage 47.69 01Jun1995 1527
2 Flow 738.28 01Jun1995 1539 5380.49
Reload Data
Plan: EX_020Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
May95
Jun95

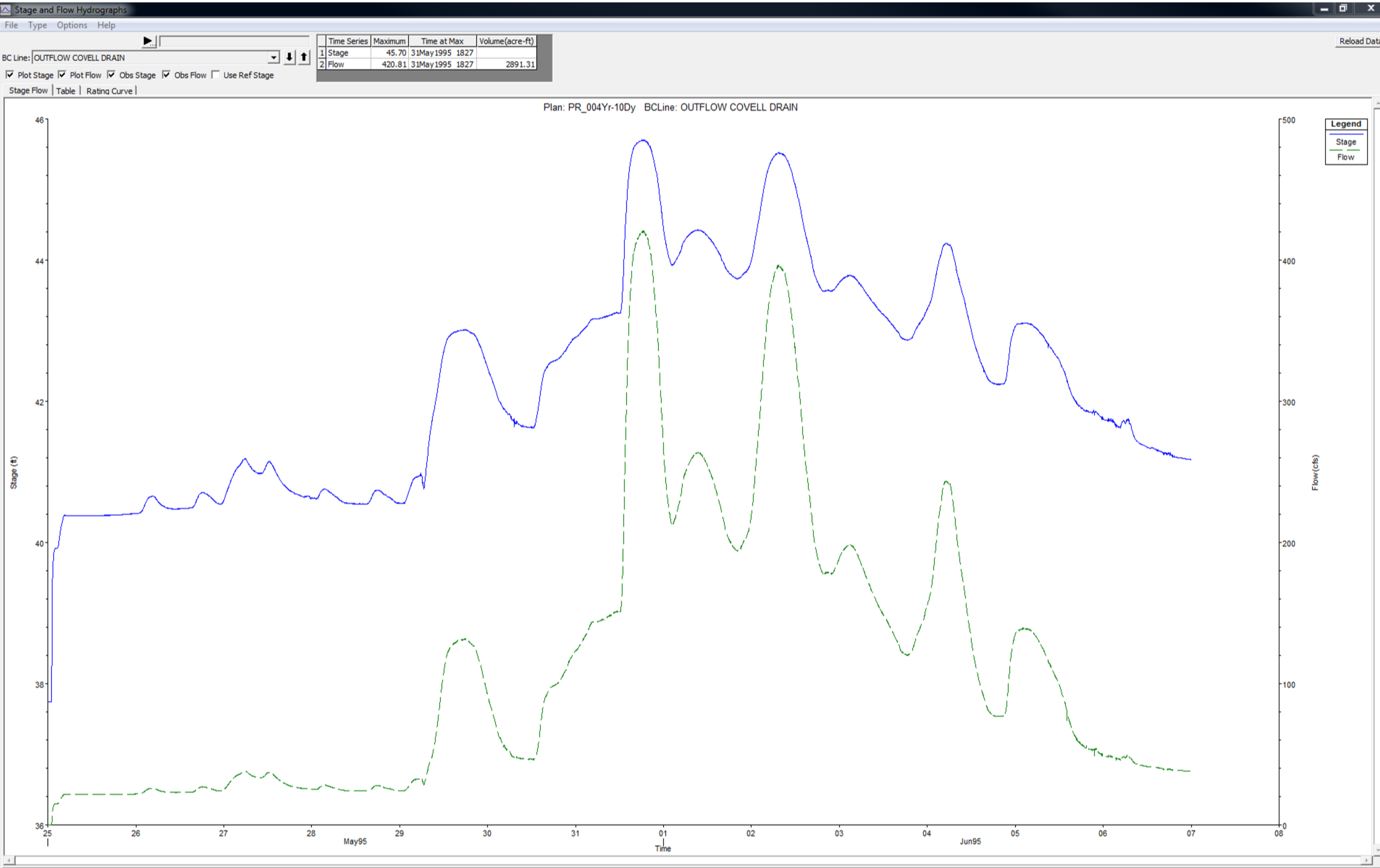


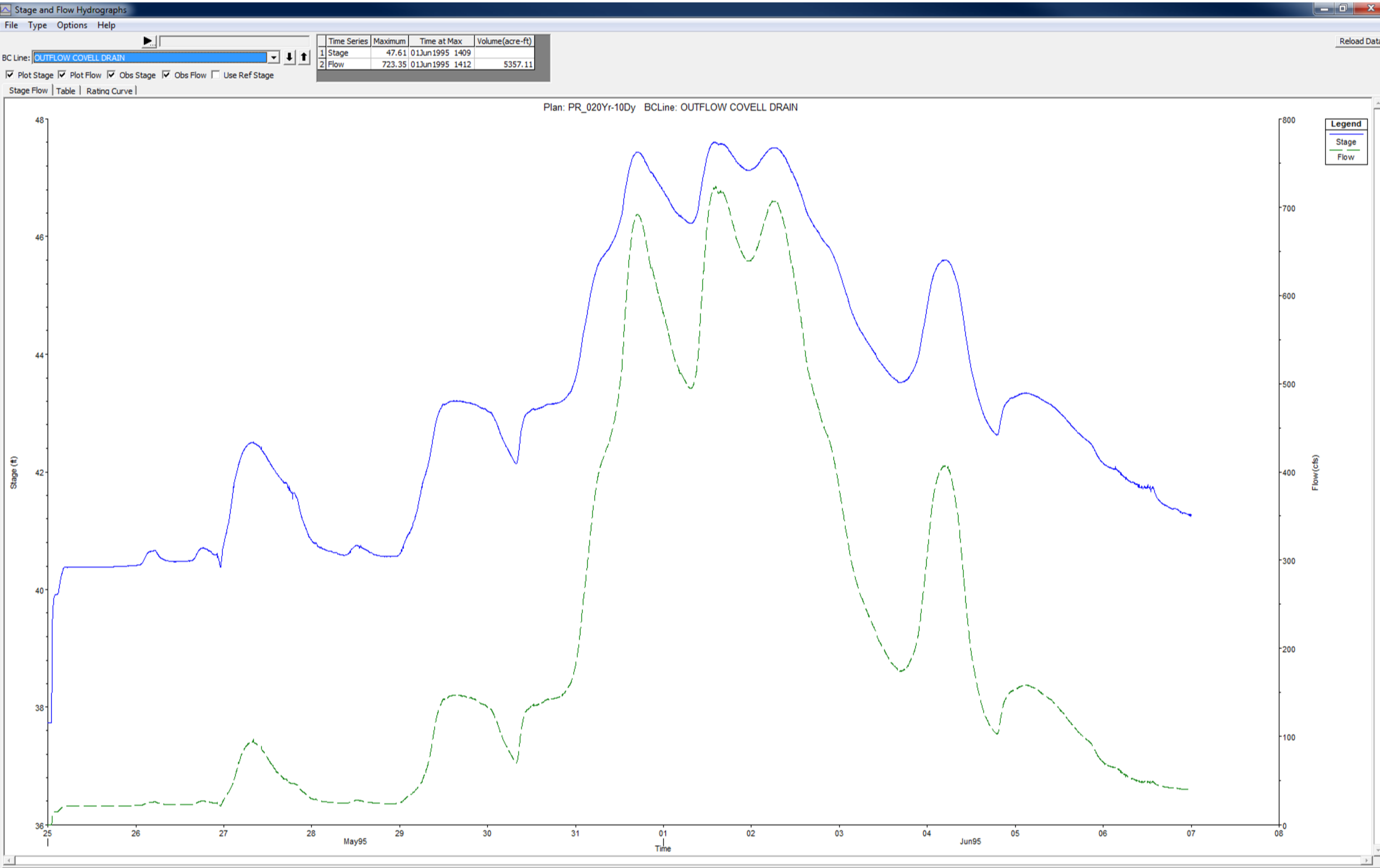
Stage and Flow Hydrographs
File
Type
Options
Help
BC Line:
OUTFLOW COVELL DRAIN
Plot Stage
Plot Flow
Obs Stage
Obs Flow
Use Ref Stage
Stage Flow
Table
Rating Curve
Time Series
Maximum
Time at Max
Volume(acre-ft)
1 Stage 48.85 01Jun1995 0936
2 Flow 959.90 01Jun1995 0927 7438.35
Reload Data
Plan: EX_100Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
May95
Jun95


Stage and Flow Hydrographs
File Type Options Help
25May1995 20:58:01, 44.41 , 336.41
BC Line: OUTFLOW COVELL DRAIN
Plot Stage
Plot Flow
Obs Stage
Obs Flow
Use Ref Stage
Stage Flow
Table
Rating Curve
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage | 45.47 | 26May1995 0336 |
2 Flow | 389.67 | 26May1995 0336 | 570.83
Reload Data
Plan: EX_100Yr-24Hr BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow(cfs)
Time
2400
0600
1200
25May95
1800
2400
0600
26May95
1200
1800
46
44
42
40
38
36
400
300
200
100
0

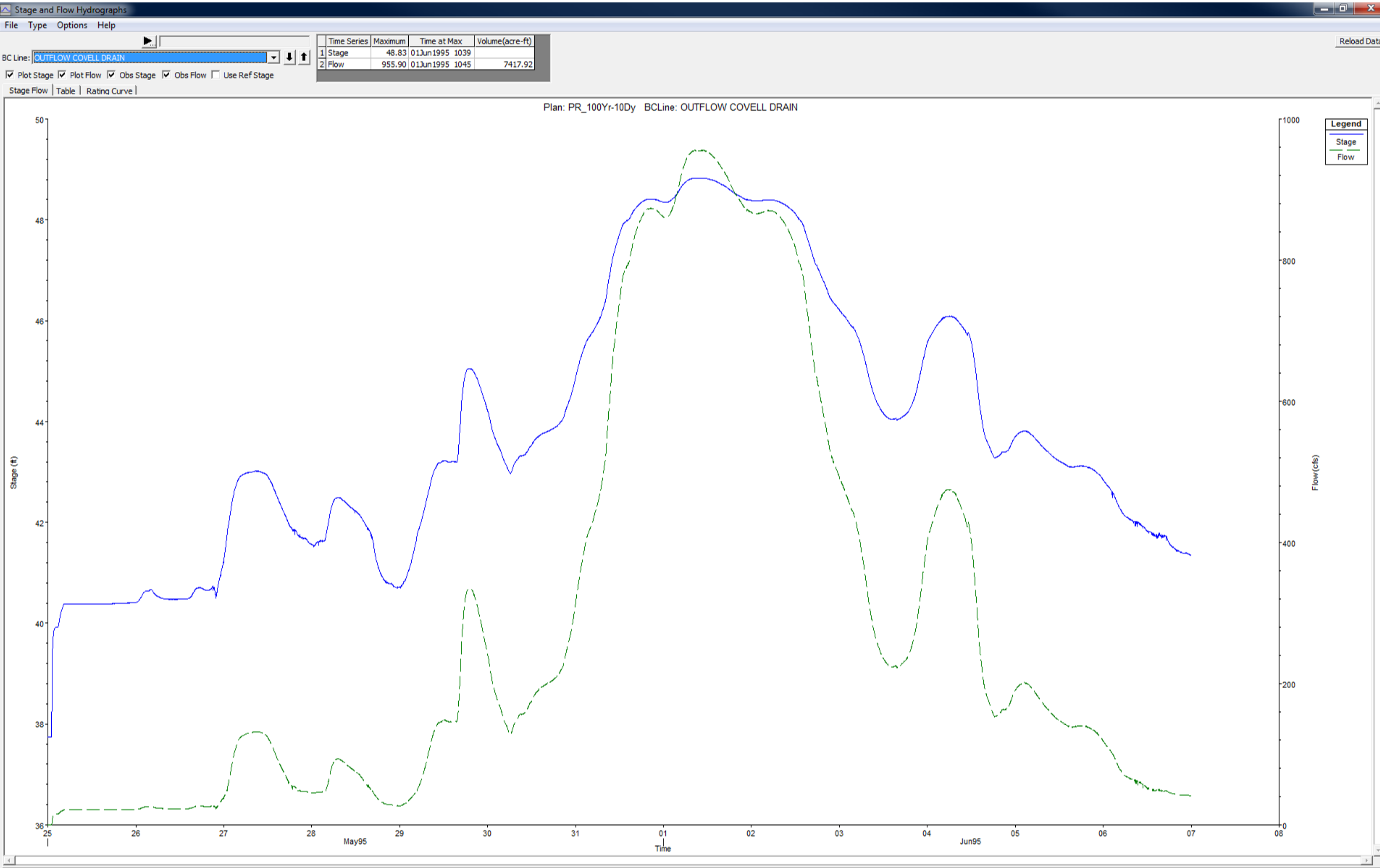


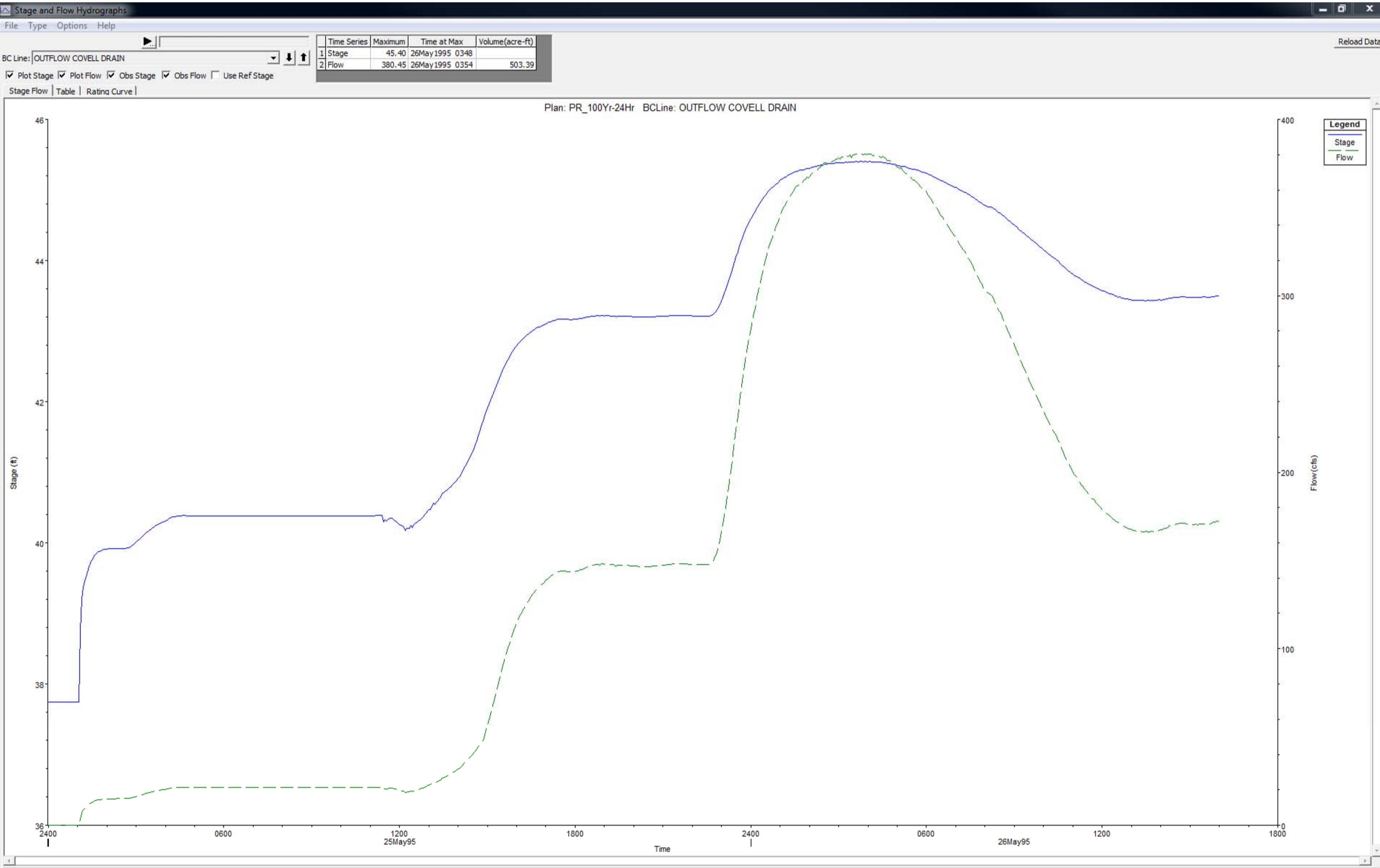
	Time Series	Maximum	Time at Max	Volume(acre-ft)
1	Stage	43.64	27Feb2019 1200	
2	Flow	184.94	27Feb2019 1206	272.78

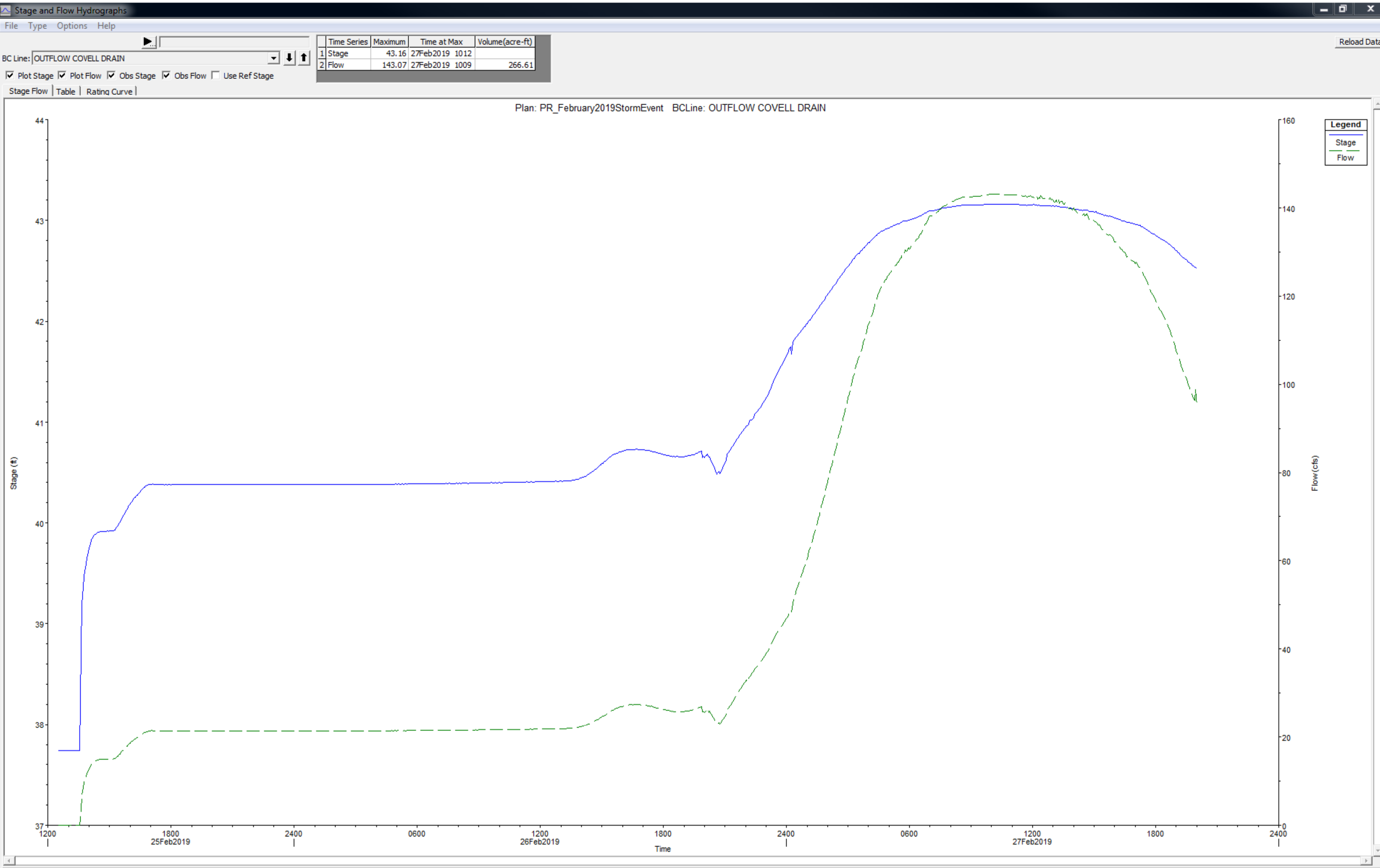

Stage and Flow Hydrographs
File Type Options Help
BC Line: OUTFLOW COVELL DRAIN
Plot Stage
Plot Flow
Obs Stage
Obs Flow
Use Ref Stage
Stage Flow
Table
Rating Curve
Reload Data
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage | 45.70 | 31May1995 1827 |
2 Flow | 420.81 | 31May1995 1827 | 2891.31
Plan: PR_004Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
May95
Jun95



Stage and Flow Hydrographs
File Type Options Help
Reload Data
BC Line: OUTFLOW COVELL DRAIN
Plot Stage Plot Flow Obs Stage Obs Flow Use Ref Stage
Stage Flow Table Rating Curve
Time Series Maximum Time at Max Volume(acre-ft)
1 Stage 47.61 01Jun1995 1409
2 Flow 723.35 01Jun1995 1412 5357.11
Plan: PR_020Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow(cfs)
48
46
44
42
40
38
36
800
700
600
500
400
300
200
100
0
25
26
27
28
29
30
31
01
02
03
04
05
06
07
08
May95
Jun95
Time


Stage and Flow Hydrographs
File Type Options Help
BC Line: OUTFLOW COVELL DRAIN
Plot Stage Plot Flow Obs Stage Obs Flow Use Ref Stage
Stage Flow | Table | Rating Curve
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage 48.83 01Jun1995 1039
2 Flow 955.90 01Jun1995 1045 7417.92
Reload Data
Plan: PR_100Yr-10Dy BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
50
48
46
44
42
40
38
36
1000
800
600
400
200
0
25 26 27 28 29 30 31 01 02 03 04 05 06 07 08
May95
Jun95
Time


Stage and Flow Hydrographs
File Type Options Help
BC Line: OUTFLOW COVELL DRAIN
Plot Stage
Plot Flow
Obs Stage
Obs Flow
Use Ref Stage
Stage Flow
Table
Rating Curve
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage 45.40 26May1995 0348
2 Flow 380.45 26May1995 0354 503.39
Reload Data
Plan: PR_100Yr-24Hr BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
25May95
26May95


Stage and Flow Hydrographs
File Type Options Help
BC Line: OUTFLOW COVELL DRAIN
Plot Stage Plot Flow Obs Stage Obs Flow Use Ref Stage
Stage Flow | Table | Rating Curve
Time Series | Maximum | Time at Max | Volume(acre-ft)
1 Stage 43.16 27Feb2019 1012
2 Flow 143.07 27Feb2019 1009 266.61
Reload Data
Plan: PR_February2019StormEvent BCLine: OUTFLOW COVELL DRAIN
Legend
Stage
Flow
Stage (ft)
Flow (cfs)
Time
1200
1800
25Feb2019
2400
0600
1200
26Feb2019
1800
2400
0600
1200
27Feb2019
1800
2400

Appendix 5

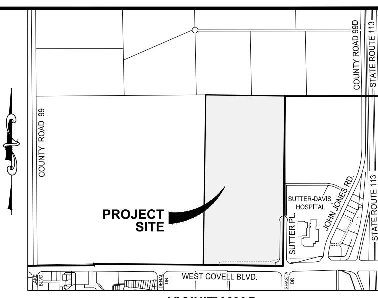
Reference Plans

5A: Tentative Map
5B: As-Built Plans

Appendix 5A

Tentative Map

BRETTON WOODS
PHASED TENTATIVE SUBDIVISION MAP NO. 5180
A SUBDIVISION OF LOTS 3 THROUGH 6 OF LARGE LOT SUBDIVISION NO. 5165
CITY OF DAVIS   COUNTY OF YOLO   CALIFORNIA
CUNNINGHAM ENGINEERING
JULY 2019



VICINITY MAP
NTS

OWNER:
BINNING RANCH HOLDING COMPANY, LLC
23 RUSSELL BLVD
DAVIS, CA 95616

DEVELOPER:
BRETTON WOODS, LLC
260 RUSSELL BOULEVARD
DAVIS, CALIFORNIA 95616
(530) 564-4444

CIVIL ENGINEER:
CUNNINGHAM ENGINEERING
2940 SPAFFORD STREET, SUITE 200
DAVIS, CALIFORNIA 95618
(530) 758-2026

GEOTECHNICAL ENGINEER:
GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742
(916) 852-9118

ASSESSORS PARCEL NUMBER:
036-060-004

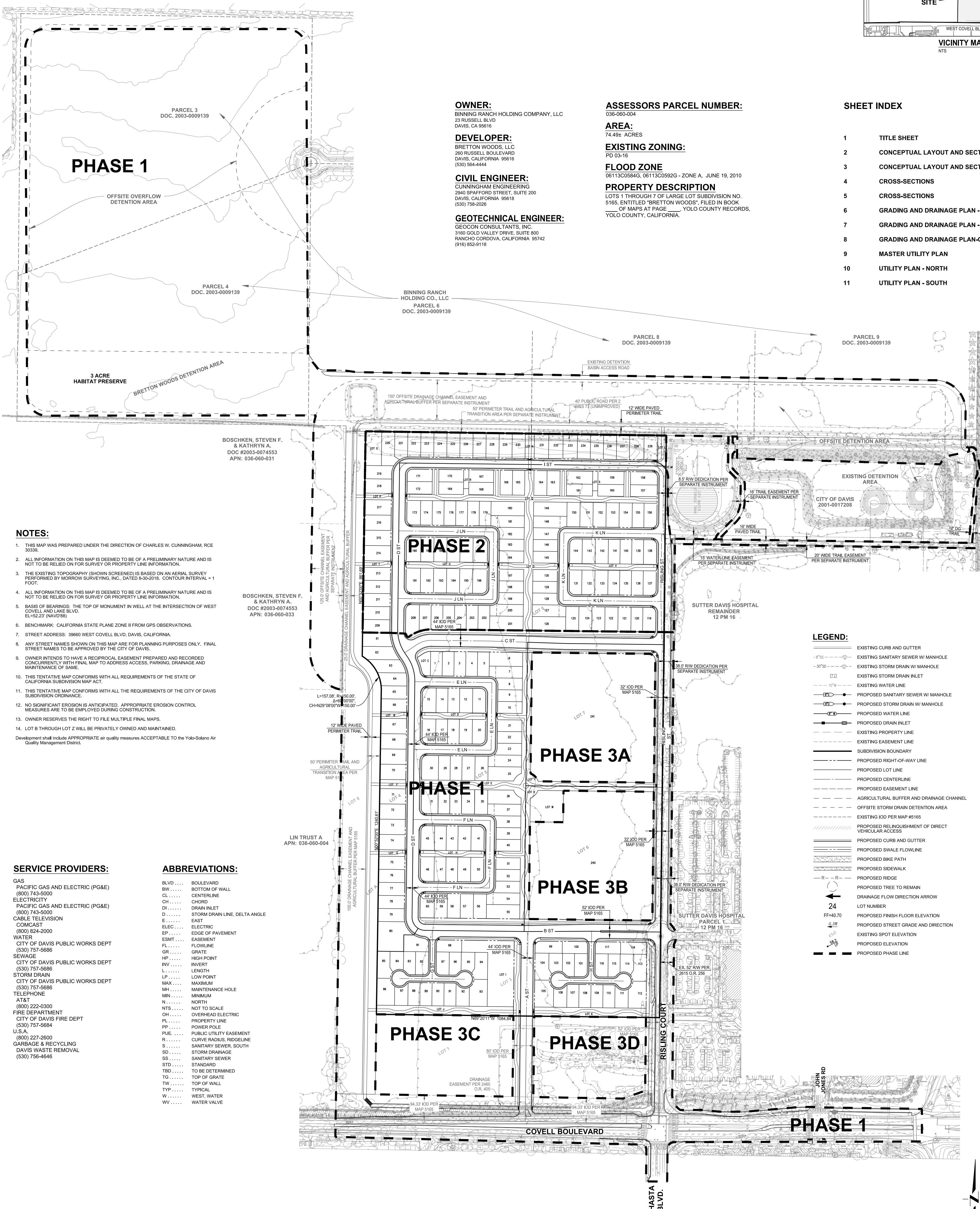
AREA:
74.49± ACRES

EXISTING ZONING:
PD 03-16

FLOOD ZONE
06113C0584G, 06113C0592G - ZONE A, JUNE 19, 2010

PROPERTY DESCRIPTION
LOTS 1 THROUGH 7 OF LARGE LOT SUBDIVISION NO. 5165, ENTITLED "BRETTON WOODS", FILED IN BOOK ____ OF MAPS AT PAGE ____, YOLO COUNTY RECORDS, YOLO COUNTY, CALIFORNIA.

SHEET INDEX



NOTES:

1. THIS MAP WAS PREPARED UNDER THE DIRECTION OF CHARLES W. CUNNINGHAM, RCE 30339.
2. ALL INFORMATION ON THIS MAP IS DEEMED TO BE OF A PRELIMINARY NATURE AND IS NOT TO BE RELIED ON FOR SURVEY OR PROPERTY LINE INFORMATION.
3. THE EXISTING TOPOGRAPHY (SHOWN SCREENED) IS BASED ON AN AERIAL SURVEY PERFORMED BY MORROW SURVEYING, INC., DATED 8-30-2018. CONTOUR INTERVAL = 1 FOOT.
4. ALL INFORMATION ON THIS MAP IS DEEMED TO BE OF A PRELIMINARY NATURE AND IS NOT TO BE RELIED ON FOR SURVEY OR PROPERTY LINE INFORMATION.
5. BASIS OF BEARINGS: THE TOP OF MONUMENT IN WELL AT THE INTERSECTION OF WEST COVELL AND LAKE BLVD.
   EL=52.23' (NAVD'88)
6. BENCHMARK: CALIFORNIA STATE PLANE ZONE II FROM GPS OBSERVATIONS.
7. STREET ADDRESS: 39660 WEST COVELL BLVD, DAVIS, CALIFORNIA.
8. ANY STREET NAMES SHOWN ON THIS MAP ARE FOR PLANNING PURPOSES ONLY. FINAL STREET NAMES TO BE APPROVED BY THE CITY OF DAVIS.
9. OWNER INTENDS TO HAVE A RECIPROCAL EASEMENT PREPARED AND RECORDED CONCURRENTLY WITH FINAL MAP TO ADDRESS ACCESS, PARKING, DRAINAGE AND MAINTENANCE OF SAME.
10. THIS TENTATIVE MAP CONFORMS WITH ALL REQUIREMENTS OF THE STATE OF CALIFORNIA SUBDIVISION MAP ACT.
11. THIS TENTATIVE MAP CONFORMS WITH ALL THE REQUIREMENTS OF THE CITY OF DAVIS SUBDIVISION ORDINANCE.
12. NO SIGNIFICANT EROSION IS ANTICIPATED. APPROPRIATE EROSION CONTROL MEASURES ARE TO BE EMPLOYED DURING CONSTRUCTION.
13. OWNER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS.
14. LOT B THROUGH LOT Z WILL BE PRIVATELY OWNED AND MAINTAINED.

Development shall include APPROPRIATE air quality measures ACCEPTABLE TO the Yolo-Solano Air Quality Management District.

LEGEND:

EXISTING CURB AND GUTTER
EXISTING SANITARY SEWER W/ MANHOLE
EXISTING STORM DRAIN W/ MANHOLE
EXISTING STORM DRAIN INLET
EXISTING WATER LINE
PROPOSED SANITARY SEWER W/ MANHOLE
PROPOSED STORM DRAIN W/ MANHOLE
PROPOSED WATER LINE
PROPOSED DRAIN INLET
EXISTING PROPERTY LINE
EXISTING EASEMENT LINE
SUBDIVISION BOUNDARY
PROPOSED RIGHT-OF-WAY LINE
PROPOSED LOT LINE
PROPOSED CENTERLINE
PROPOSED EASEMENT LINE
AGRICULTURAL BUFFER AND DRAINAGE CHANNEL
OFFSITE STORM DRAIN DETENTION AREA
EXISTING IOD PER MAP #5165
PROPOSED RELINQUISHMENT OF DIRECT VEHICULAR ACCESS
PROPOSED CURB AND GUTTER
PROPOSED SWALE FLOWLINE
PROPOSED BIKE PATH
PROPOSED SIDEWALK
PROPOSED RIDGE
PROPOSED TREE TO REMAIN
DRAINAGE FLOW DIRECTION ARROW
24 LOT NUMBER
FF=40.70 PROPOSED FINISH FLOOR ELEVATION
0.3% PROPOSED STREET GRADE AND DIRECTION
43x0 EXISTING SPOT ELEVATION
58.2 LP PROPOSED ELEVATION
PROPOSED PHASE LINE

SERVICE PROVIDERS:

GAS
  PACIFIC GAS AND ELECTRIC (PG&E)
  (800) 743-5000
ELECTRICITY
  PACIFIC GAS AND ELECTRIC (PG&E)
  (800) 743-5000
CABLE TELEVISION
  COMCAST
  (800) 824-2000
WATER
  CITY OF DAVIS PUBLIC WORKS DEPT
  (530) 757-5686
SEWAGE
  CITY OF DAVIS PUBLIC WORKS DEPT
  (530) 757-5686
STORM DRAIN
  CITY OF DAVIS PUBLIC WORKS DEPT
  (530) 757-5686
TELEPHONE
  AT&T
  (800) 222-0300
FIRE DEPARTMENT
  CITY OF DAVIS FIRE DEPT
  (530) 757-5684
U.S.A.
  (800) 227-2600
GARBAGE & RECYCLING
  DAVIS WASTE REMOVAL
  (530) 756-4646

ABBREVIATIONS:

BLVD	BOULEVARD
BW	BOTTOM OF WALL
CL	CENTERLINE
CH	CHORD
DI	DRAIN INLET
D	STORM DRAIN LINE, DELTA ANGLE
E	EAST
ELEC	ELECTRIC
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
FL	FLOWLINE
GR	GRATE
HP	HIGH POINT
INV	INVERT
L	LENGTH
LP	LOW POINT
MAX	MAXIMUM
MH	MAINTENANCE HOLE
MIN	MINIMUM
N	NORTH
NTS	NOT TO SCALE
OH	OVERHEAD ELECTRIC
PL	PROPERTY LINE
PP	POWER POLE
PUE.	PUBLIC UTILITY EASEMENT
R	CURVE RADIUS, RIDGELINE
S	SANITARY SEWER, SOUTH
SD	STORM DRAINAGE
SS	SANITARY SEWER
STD	STANDARD
TBD	TO BE DETERMINED
TG	TOP OF GRATE
TW	TOP OF WALL
TYP	TYPICAL
W	WEST, WATER
WV	WATER VALVE

SCALE: 1" = 120'

APPROVED BY:

CITY OF DAVIS COMMUNITY DEVELOPMENT DEPARTMENT   DATE

DESIGNED BY BF
DRAWN BY LE
CHECKED BY SG
SCALE
AS SHOWN

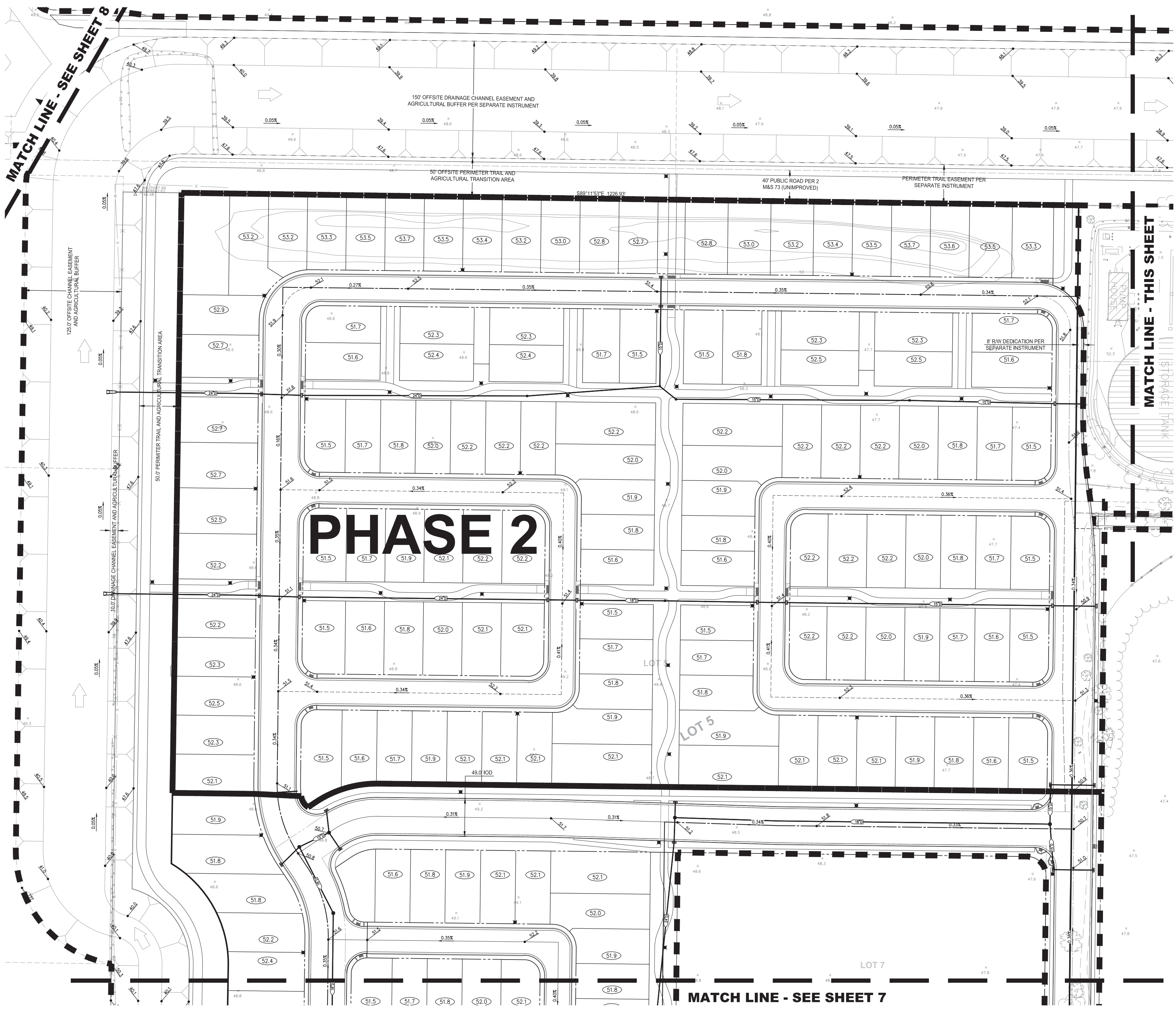
TENTATIVE SUBDIVISION MAP NO. 5180
BRETTON WOODS
TITLE SHEET
DAVIS   CALIFORNIA

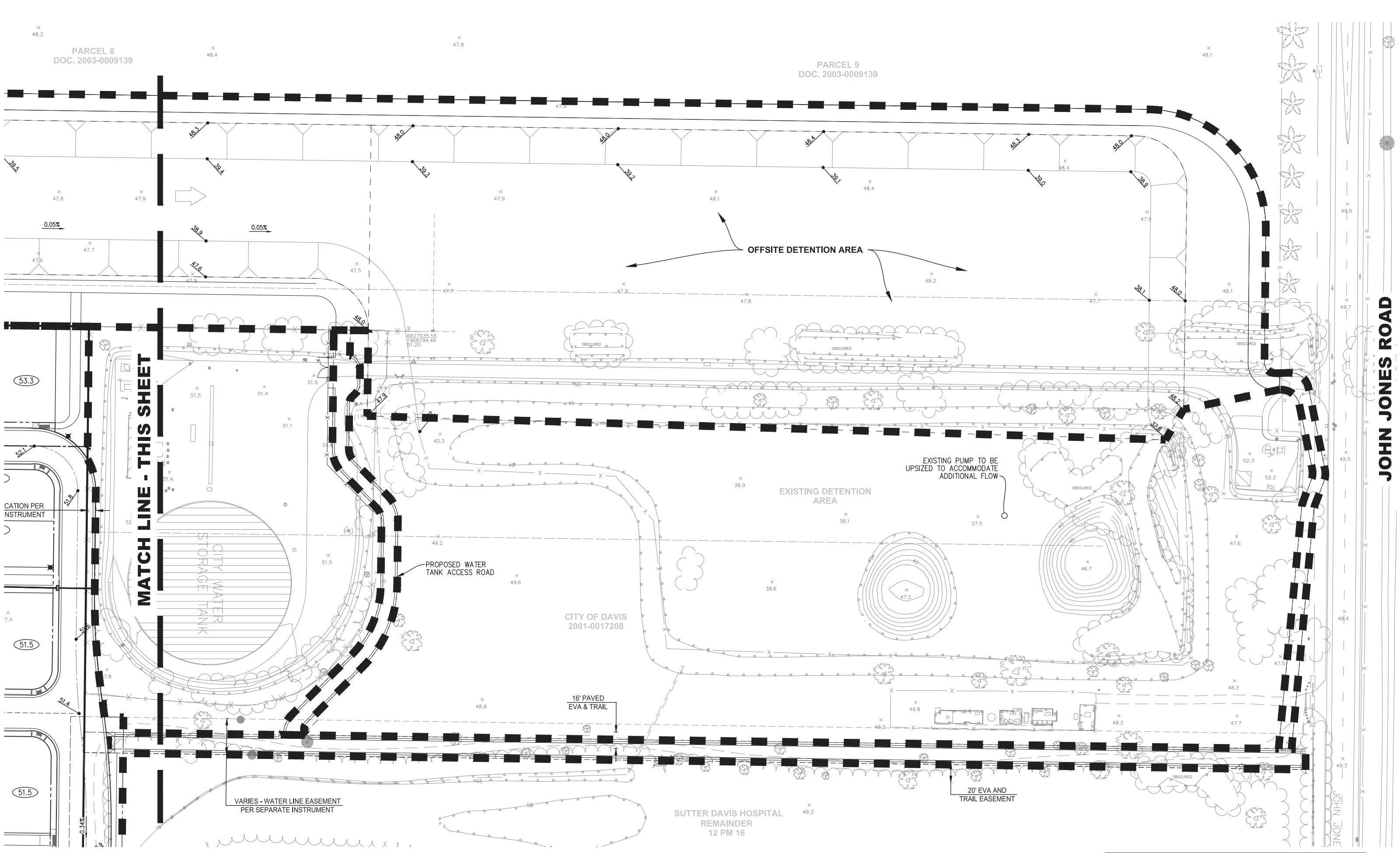
CUNNINGHAM ENGINEERING
CECWEST.COM
Project Planning ■ Civil Engineering ■ Landscape Architecture
■ Sacramento Office
2120 20th Street, Suite Three
Sacramento, CA 95818
(916) 455-2026
■ Davis Office
2940 Spafford Street, Suite 200
Davis, CA 95618
(530) 758-2026

NO.	DATE	REVISIONS	BY	APPD.

SHEET 1 OF 11
DATE: 07/29/2019
JOB NO: 1594.01.10

S:\Projects\1500\1594 West Davis Active Adult Community\AutoCAD\1594-01-10 SMALL LOT TM\SHEETS\1-1594-01-10 TM-TITL.dwg - TITL 7/29/2019 - 5:05PM Plotted by: anelle





LEGEND

- 52.0 — PAD GRADE
- 45.7 — FINISH GRADE ELEVATION
- 0.35% — CENTERLINE SLOPE
- 27.5x — EXISTING GRADE
- FUTURE LOT LINE
- PROPOSED CHANNELIZED FLOW
- 8"D — PROPOSED STORM DRAIN W/ MANHOLE
- PROPOSED DRAIN INLET

50 25 0 50 100
SCALE: 1" = 50'

APPROVED BY:

CITY OF DAVIS COMMUNITY DEVELOPMENT DEPARTMENT DATE

DESIGNED BY BF
DRAWN BY LE
CHECKED BY SG
SCALE
AS SHOWN

TENTATIVE SUBDIVISION MAP NO. 5180
BRETTON WOODS
GRADING AND DRAINAGE PLAN - NORTH

DAVIS CALIFORNIA

CUNNINGHAM ENGINEERING
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Sacramento, CA 95818
(916) 455-2026

■ Davis Office
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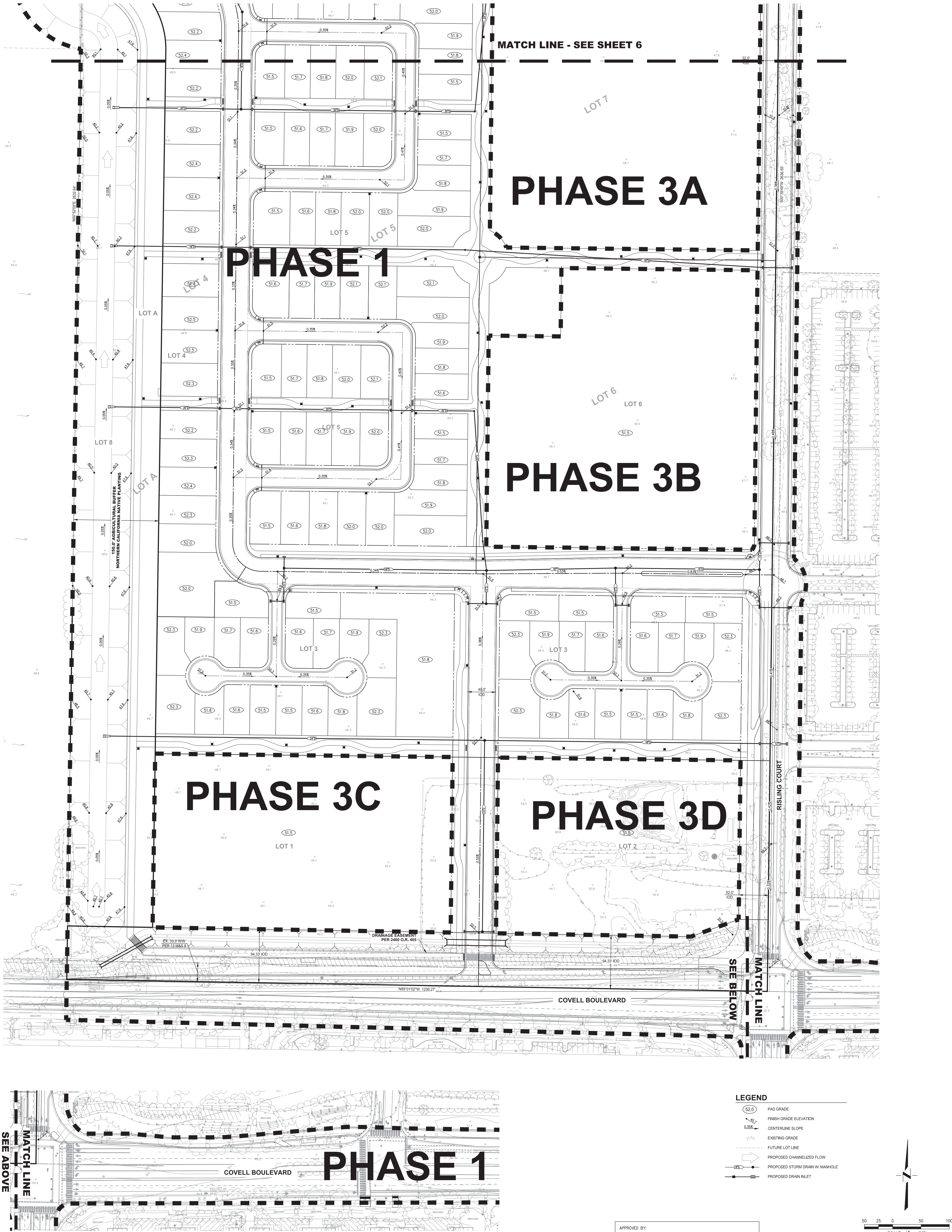
Davis, CA 95618
(530) 758-2026

NO.	DATE	REVISIONS	BY	APPD.

SHEET 6 OF 11
DATE: 07/29/2019
JOB NO: 1594.01.10

S:\Projects\1500\1594 West Davis Active Adult Community\AutoCAD\1594-01-10 SMALL LOT TM\SHEETS\6-1594-01-10 TM-GRAD-N.dwg - GRAD-N 7/29/2019 - 5:07PM Plotted by: anelle



APPROVED BY:

CITY OF DAVIS COMMUNITY DEVELOPMENT DEPARTMENT DATE

DESIGNED BY	BF
DRAWN BY	LE
CHECKED BY	SG
SCALE	AS SHOWN

TENTATIVE SUBDIVISION MAP NO. 5180
BRETTON WOODS
GRADING AND DRAINAGE PLAN - SOUTH

DAVIS CALIFORNIA

CUNNINGHAM ENGINEERING

CECWEST.COM

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■ Sacramento Office
2120 20th Street, Suite Three
Sacramento, CA 95818
(916) 455-2026

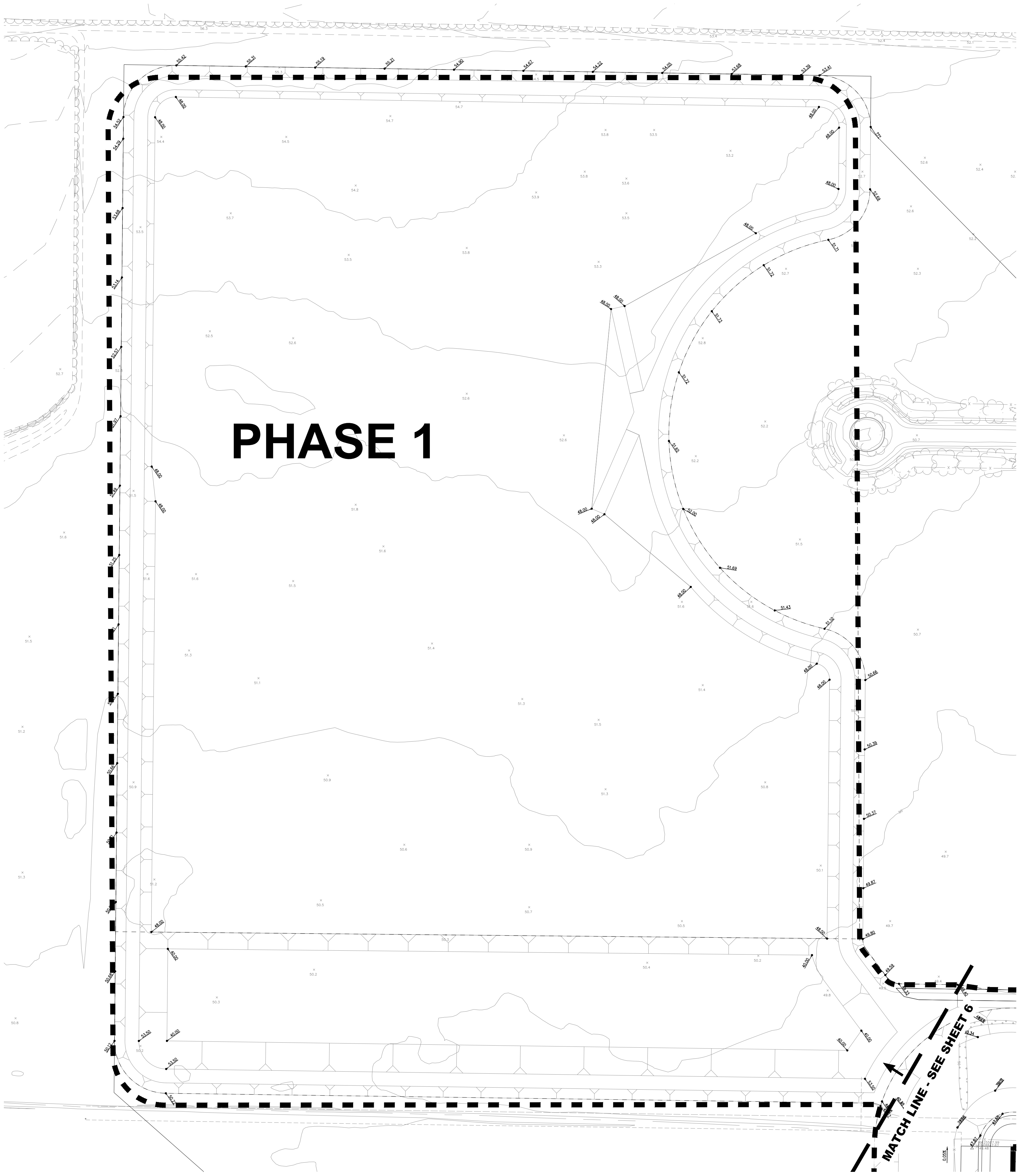
■ Davis Office
2940 Spafford Street, Suite 200
Davis, CA 95618
(530) 758-2026

NO.	DATE	REVISIONS	BY	APP'D.

SHEET 7 OF 11

DATE: 07/29/2019

JOB NO: 1594.01.10



LEGEND

52.0	PAD GRADE
45.7	FINISH GRADE ELEVATION
0.35%	CENTERLINE SLOPE
27.5	EXISTING GRADE
	FUTURE LOT LINE
	EXISTING CHANNELIZED FLOW
	EXISTING SHALLOW OVERLAND FLOW
	PROPOSED CHANNELIZED FLOW
	100-YEAR CHANNELIZED OVERFLOW
	PROPOSED SHALLOW OVERLAND FLOW

50 25 0 50 100
SCALE: 1" = 50'

APPROVED BY:

CITY OF DAVIS COMMUNITY DEVELOPMENT DEPARTMENT DATE

DESIGNED BY BF
DRAWN BY LE
CHECKED BY SG
SCALE
AS SHOWN

TENTATIVE SUBDIVISION MAP NO. 5180
BRETTON WOODS
GRADING AND DRAINAGE PLAN-OFFSITE NORTHWEST

DAVIS CALIFORNIA

CUNNINGHAM ENGINEERING
CECWEST.COM
Project Planning ■ Civil Engineering ■ Landscape Architecture
■ Sacramento Office: 2120 20th Street, Suite Three, Sacramento, CA 95818, (916) 455-2026
■ Davis Office: 2940 Spafford Street, Suite 200, Davis, CA 95618, (530) 758-2026

NO.	DATE	REVISIONS	BY	APPD.

SHEET 8 OF 11
DATE: 07/29/2019
JOB NO: 1594.01.10

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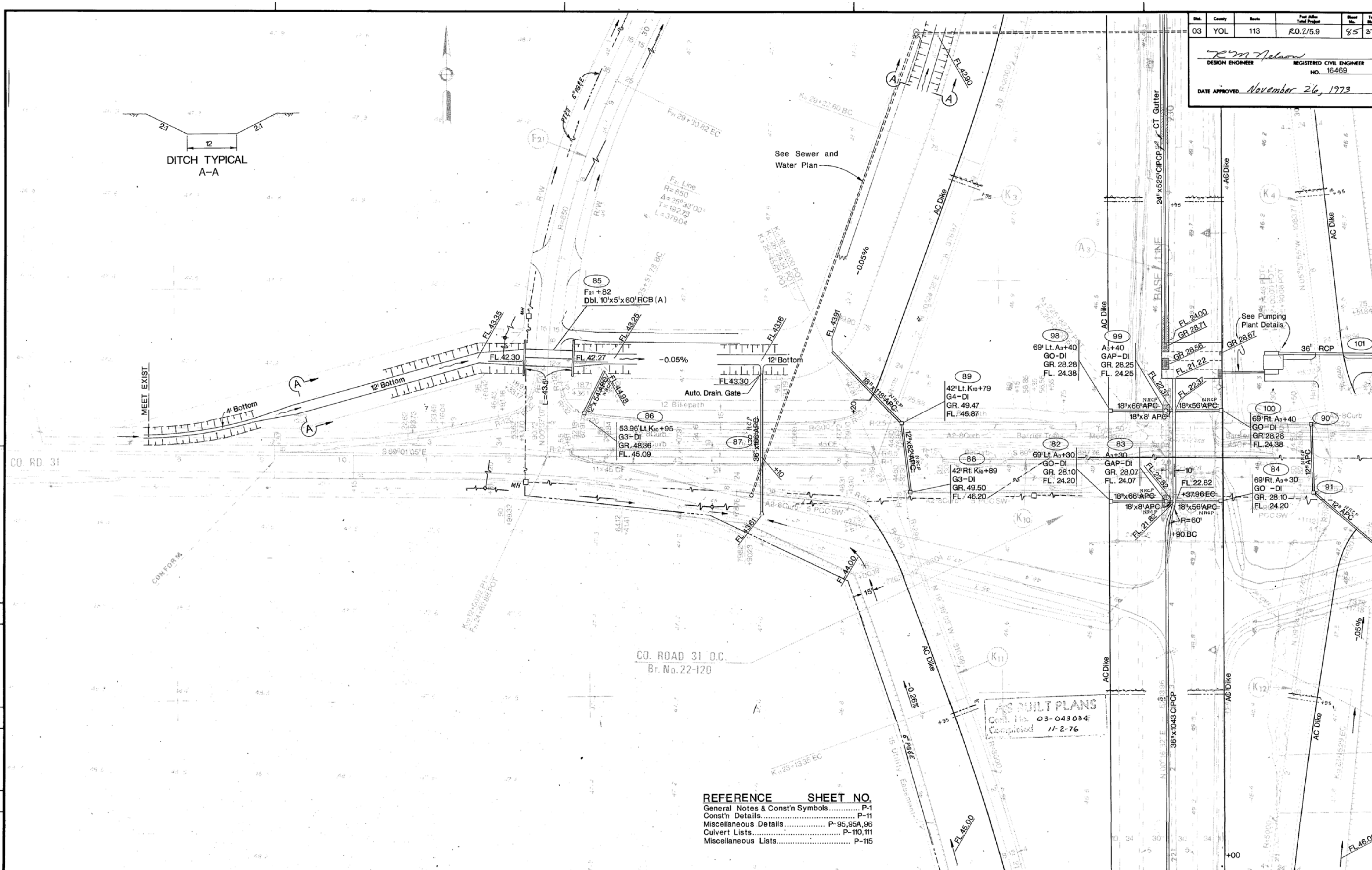
Appendix 5B

As-Built Plans

Dist.	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
03	YOL	113	R0.2/5.9	85	377

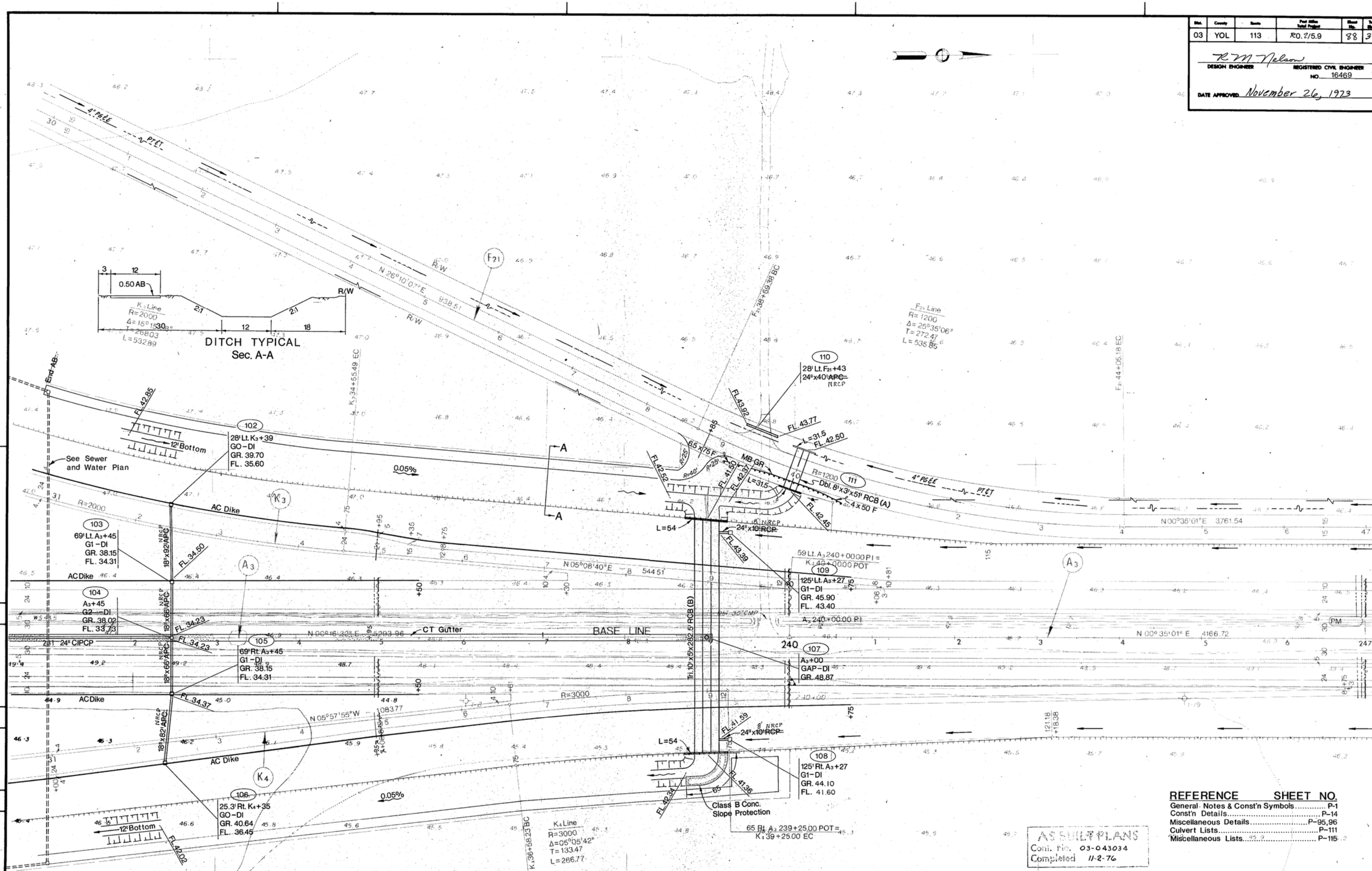
R. M. Nelson
DESIGN ENGINEER
REGISTERED CIVIL ENGINEER NO. 16469

DATE APPROVED November 26, 1973



REFERENCE SHEET NO.

REV. 4-6-73



Dist. County Route Post Miles Total Project Sheet No. Total Sheets
03 YOL 113 R0.7/5.9 88 377
R M Nelson
DESIGN ENGINEER
REGISTERED CIVIL ENGINEER NO. 16469
DATE APPROVED November 26, 1973
DITCH TYPICAL
Sec. A-A
0.50 AB
R/W
K3 Line R=2000 Δ=15°15'30" T=268.03 L=532.89
F21 Line R=1200 Δ=25°35'06" T=272.47 L=535.85
K4 Line R=3000 Δ=05°05'42" T=133.47 L=266.77
N 26°10'07"E 838.51
N 05°08'40"E 544.51
N 00°35'01"E 3761.54
N 00°35'01"E 4166.72
N 05°57'55"W 1083.77
BASE LINE
CT Gutter
AC Dike
See Sewer and Water Plan
End AB
12' Bottom
0.05%
4" PS&E
PT ET
102 28' Lt. K3+39 GO-DI GR. 39.70 FL. 35.60
103 69' Lt. A3+45 G1-DI GR. 38.15 FL. 34.31
104 A3+45 G2-DI GR. 38.02 FL. 33.73
105 69' Rt. A3+45 G1-DI GR. 38.15 FL. 34.31
106 25.3' Rt. K4+35 GO-DI GR. 40.64 FL. 36.45
107 A3+00 GAP-DI GR. 48.87
108 125' Rt. A3+27 G1-DI GR. 44.10 FL. 41.60
109 125' Lt. A3+27 G1-DI GR. 45.90 FL. 43.40
110 28' Lt. F21+43 24"x40' NRCP
111 Dbl. 8'x3'x51' RCB (A)
Tri. 10'x5'x282.5' RCB (B)
24" CIPCP
18"x92' APC
18"x66' APC
18"x82' APC
24"x10' RCP
MB-GR
Class B Conc. Slope Protection
59 Lt. A3 240+00.00 PI = K3 40+00.00 POT
65 Rt. A3 239+25.00 POT = K4 39+25.00 EC
A3 240+00.00 PI
K3 34+55.49 EC
K4 36+58.23 BC
F21 38+69.38 BC
F21 44+05.18 EC
REFERENCE SHEET NO.
General Notes & Const'n Symbols P-1
Const'n Details P-14
Miscellaneous Details P-95,96
Culvert Lists P-111
Miscellaneous Lists P-115
AS BUILT PLANS
Cont. No. 03-043034
Completed 11-2-76
FORM HD 82 PF

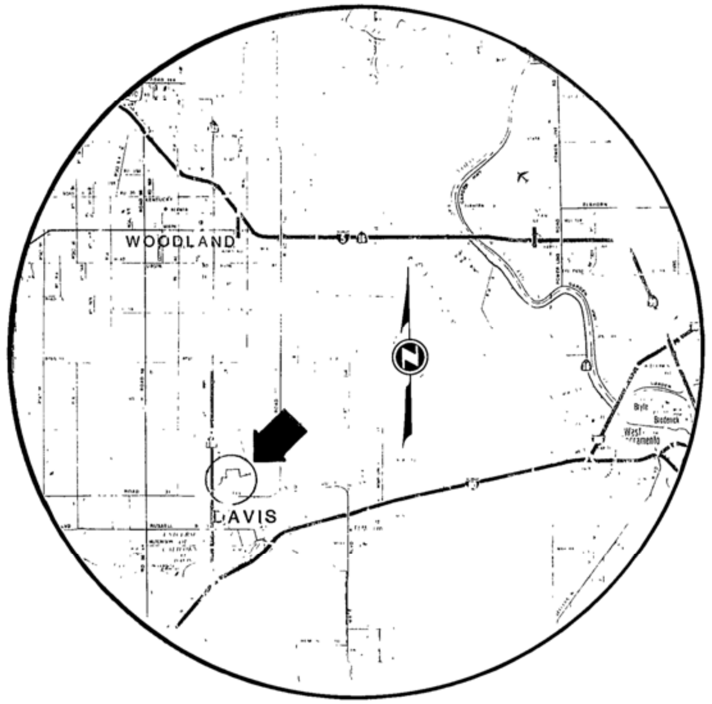
COVELL FLOOD CHANNEL RELOCATION

in the

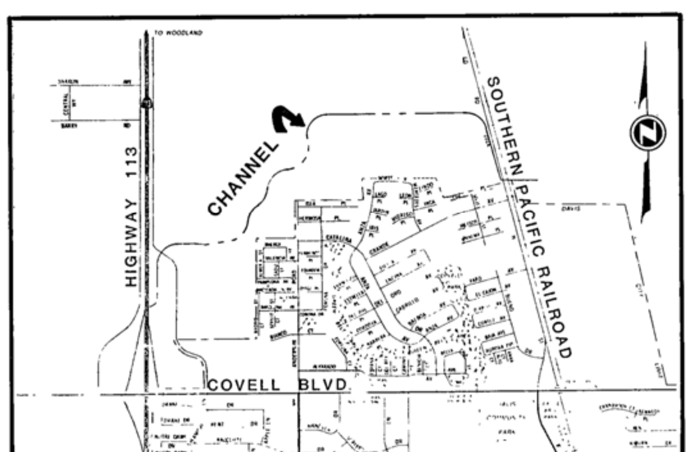
CITY OF DAVIS
COUNTY OF YOLO, CALIFORNIA

from

STATE HWY. 113 to SOUTHERN PACIFIC RAILROAD CROSSING



LOCATION MAP



AREA MAP

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CURRENT IMPROVEMENT STANDARDS & SPECIFICATIONS OF YOLO COUNTY AND TO THESE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTIL... COMPANIES AS TO THE LOCATION OF ALL UNDERGROUND FACILITIES A... OBTAINING NECESSARY PERMITS PRIOR TO CONSTRUCTION.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHA... CALL UNDERGROUND SERVICE ALERT (800-642-2444).
4. THE CONTRACTOR SHALL VERIFY ALL EXISTING ELEVATIO... PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPO...IBILITY ... NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN ... PROPOS... GRADES AND/OR LOCATIONS AND THE EXISTING IMPROV...TS.
5. THE CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE CITY OF DAVIS FOR WORK WITHIN THE R/W OF SYCAMORE LANE; COUNTY OF YOLO FOR "F" ST.; & FROM CALTRANS FOR STATE ROUTE 113. △1
6. ALL A.C. PAVING SHALL BE TYPE "B" 3/4" MAX., 5.8 ASPHALT BI...ER, A.R.-4,000 PAVING ASPHALT WITH A FOG SEAL.
7. ALL A.B. SHALL BE 1-1/2" CLASS II, OMIT PENETRAT...N TREATMENT.
8. ALL PAVEMENT SECTION SUBGRADE PREPARATION SHALL INCLUDE REL... IVE COMPACTION IN THE TOP 6 INCHES OF AT LEAST 90% (C...M. 216) AT △1 OR ABOVE OPTIMUM MOISTURE, AND 90% UNDER CURB, GU...ER AND SI... WALK.
9. ALL CONSTRUCTION SURVEYING AND STAKING SHALL BE FURNISHED BY THE OWNER.

SHEET INDEX

1	STA. 0+00 to STA. 11+00
2	STA. 11+00 to STA. 22+53 (LIGGETT)
3	STA. 22+53 to STA. 34+50 (SENDA NUEVA)
4	STA. 34+50 to STA. 47+00 (WHITCOMBE)
5	STA. 47+00 to STA. 59+00 (WHITCOMBE)
6	STA. 59+00 to STA. 68+00 (LIGGETT N.S.)
7	STA. 68+00 to STA. 79+00 (LIGGETT E.W.)
8	STA. 79+00 to STA. 90+00 (LIGGETT E.W.)
9	STA. 90+00 to STA. 96+00 (LIGGETT E.W.)
10	STA. 96+00 to STA. 105+00 (LIGGETT "F" ST.)
11	STA. 105+00 to STA. 108+00 (LIGGETT "F" ST.)
12	STA. 108+63.64 to END (CHANNEL A)
13	SYCAMORE LANE CULVERT CROSSING
14	SYCAMORE LANE CULVERT CROSSING DETAILS
15	"F" STREET (C.R. 101-A) CULVERT CROSSING
16	"F" STREET (C.R. 101-A) CULVERT CROSSING DETAILS

BENCH MARK: ELEVATION ______ DATUM ______
DESCRIPTION:

LAUGENOUR AND MEIKLE
R.C.E.

APPROVED:
Y.C.F.C. & W.C. DISTRICT
DATE: 5/23/83

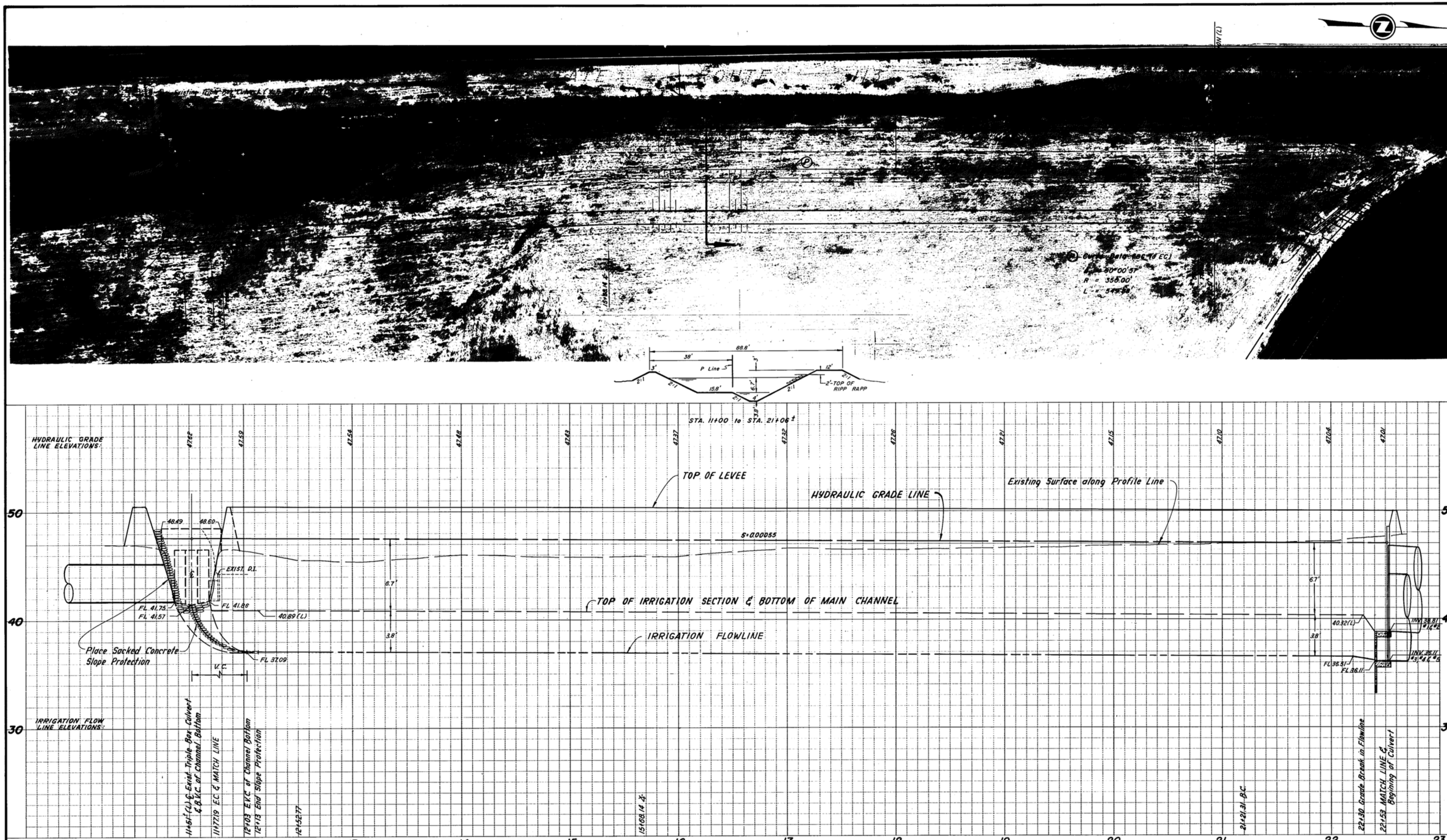
LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
P.O. BOX 828
WOODLAND, CALIFORNIA 95695
PHONE (916) 662-1755

TITLE SHEET

SCALE
DATE: 12-16-82
JOB NO. 717-28
SHEET ___ OF ___ △1

404-216

N12397



DESIGNED BY W.L.M.					
DRAWN BY D.R.K.					
CHECKED BY J.A.K.	REV.	DATE	DESCRIPTION	BY	APP'D.

BENCH MARK: ELEVATION 45.70 DATUM City

DESCRIPTION: State Highway Horizontal Control Monument (Bronze Disc) 22-219, Located @ 20±' West - ℄ of Sycamore Lane & @ 1780±' North of Covell Blvd.

LAUGENOUR AND MEIKLE

R.C.E. 8,468

APPROVED:

Y.C.F.C. & W.C. DISTRICT

DATE: 5/23/83

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
P.O. BOX 828
WOODLAND, CALIFORNIA 95695
PHONE (916) 662-1755

COVELL FLOOD CHANNEL RELOCATION
FROM STATE HWY. 113 TO THE SOUTHERN PACIFIC RAILROAD

STA. 11+00 to STA. 22+53

(LIGGETT)

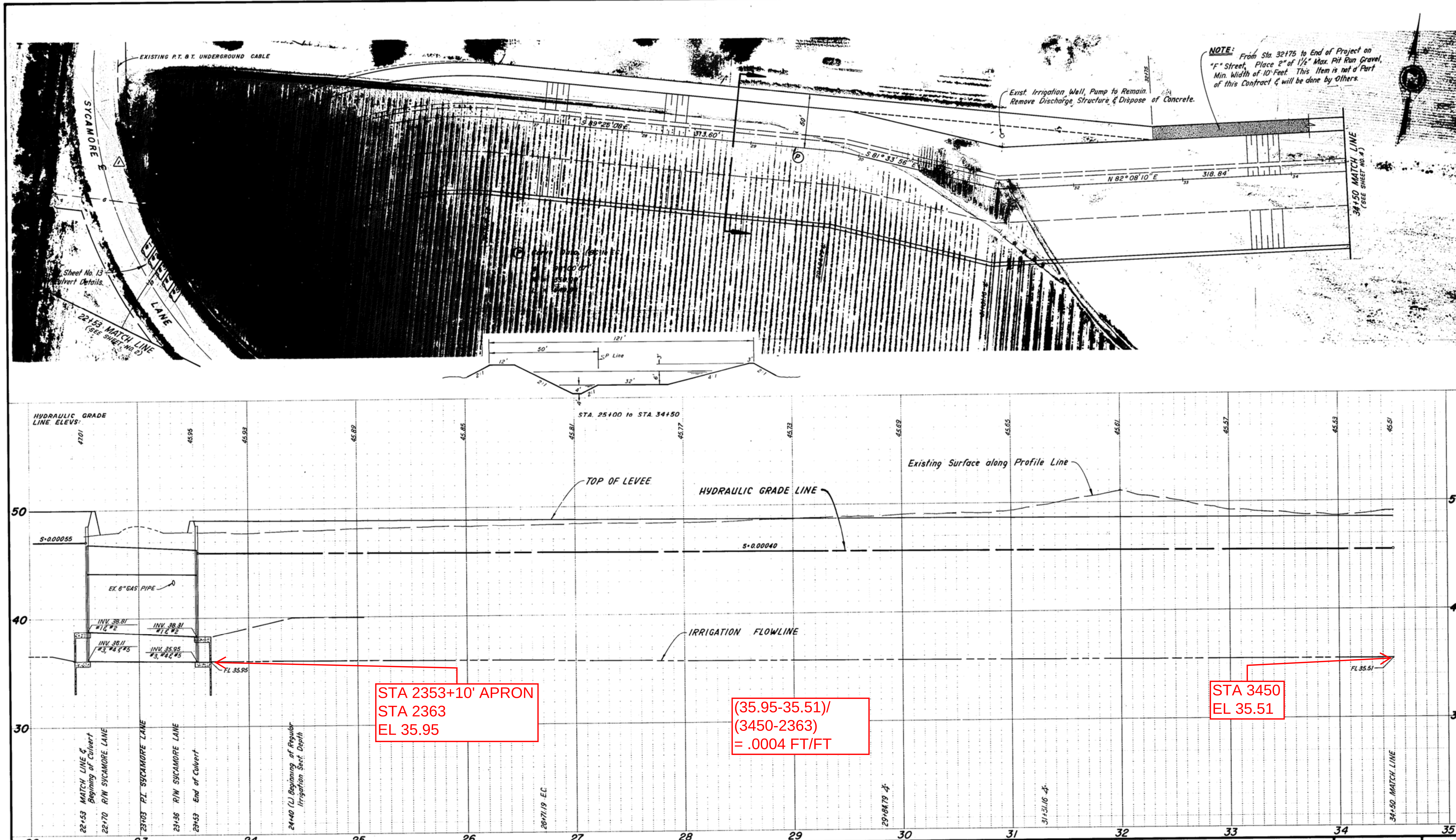
SCALE
VERT.: 1" = 4'
HORIZ.: 1" = 40'

DATE: 12-16-82

JOB NO. 717-28

SHEET 2 OF 16

404-26



1	7-15-83	ADD DROP INLET & 15" CSP	DRK	
REV.	DATE	DESCRIPTION	BY	APP'D.

DESIGNED BY W.L.M.
DRAWN BY D.R.K.
CHECKED BY J.A.K.

BENCH MARK: ELEVATION 49.02 DATUM City
DESCRIPTION: 1" Steel Pin with Drivinghead Located Along the East Side of Sycamore Lane at the Southwest Corner of the Davis Christian Assembly Property.

LAUGENOUR AND MEIKLE
R.C.E. 8,468

APPROVED:
Y.C.F.C. & W.C. DISTRICT
DATE: 5/23/83

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
P.O. BOX 828
WOODLAND, CALIFORNIA 95695
PHONE (916) 662-1755

COVELL FLOOD CHANNEL RELOCATION
FROM STATE HWY. 113 TO THE SOUTHERN PACIFIC RAILROAD

STA. 22+53 to STA. 34+50
(SENDA NUEVA)

SCALE
VERT.: 1" = 4'
HORIZ.: 1" = 40'
DATE: 12-16-82
JOB NO. 717-28

SHEET 3 OF 16

404-26

CULVERT CROSSING - STRUCTURAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION, DATED JANUARY 1981, UNLESS SPECIFIED OTHERWISE.

2. CONCRETE SHALL BE CLASS "A" IN COMPLIANCE WITH STATE STANDARD SPECIFICATIONS SECTION 90, "PORTLAND CEMENT CONCRETE". THE COMBINED AGGREGATE GRADING SHALL BE THE 1" MAXIMUM GRADE. MAXIMUM SLUMP, AS DETERMINED IN ACCORDANCE WITH ASTM C 143, SHALL NOT EXCEED 4 INCHES.

3. REINFORCING BARS SHALL CONFORM TO THE SPECIFICATIONS OF ASTM DESIGNATION: A615, GRADE 60. PLACEMENT OF REINFORCEMENT SHALL COMPLY WITH STATE STANDARD SPECIFICATIONS SECTION 52, "REINFORCEMENT".

4. COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS UNLESS INDICATED OTHERWISE:
   3" FOR CONCRETE CAST AGAINST EARTH
   2" FOR OTHER SURFACES

5. REBAR LAP SPLICE LENGTHS:
   #4 - 20"
   #5 - 25"
   #6 - 26"

6. DOWELS SHALL BE WIRED OR OTHERWISE HELD IN POSITION, THEY SHALL NOT BE SHOVED INTO FRESHLY PLACED CONCRETE.

7. REINFORCEMENT BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY PIPE, PIPE FLANGE OR METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM OF 2 INCHES CLEARANCE SHALL BE PROVIDED AT ALL TIMES.

8. METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR THE SUBGRADE. CONCRETE BLOCKS SUPPORTING BARS ON SUBGRADE SHALL BE IN SUFFICIENT NUMBERS TO SUPPORT THE BARS WITHOUT SETTLEMENT, BUT IN NO CASE SHALL SUCH SUPPORT BE CONTINUOUS.

9. ALL KEYWAYS AND CONSTRUCTION JOINTS IN CONCRETE SHALL BE CLEANED FOR BOND. CONSTRUCTION JOINTS BETWEEN FOOTINGS AND WALLS SHALL BE COVERED WITH BURLAP MATS, WHICH SHALL BE KEPT WET WITH WATER UNTIL THE CONCRETE IN THE WALLS IS TO BE PLACED. NO CURING COMPOUND SHALL BE APPLIED IN THE CONSTRUCTION JOINTS BETWEEN FOOTINGS AND WALLS.

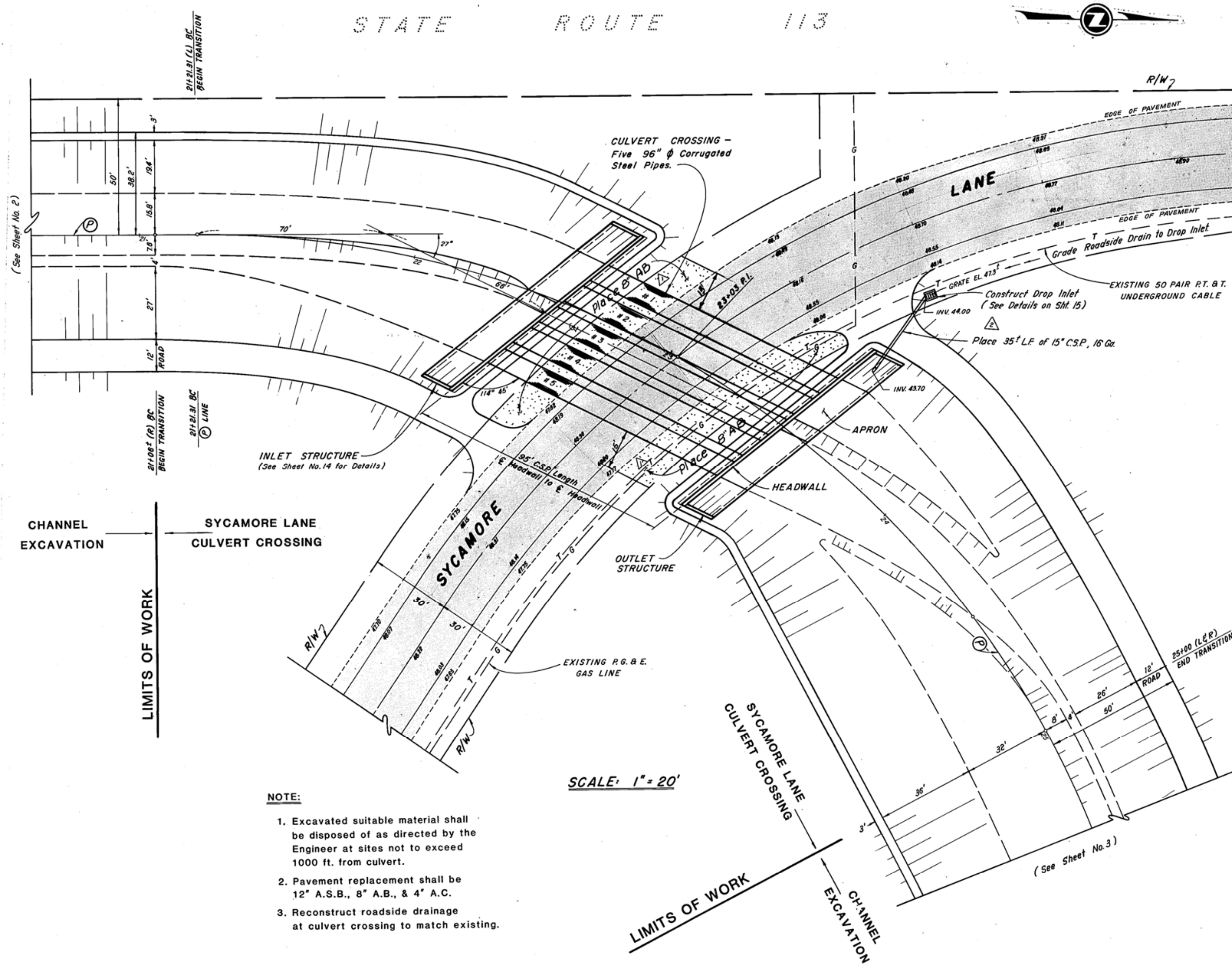
10. EARTHWORK, INCLUDING STRUCTURE EXCAVATION, SUBGRADE PREPARATION AND STRUCTURE BACKFILL, SHALL CONFORM WITH STATE STANDARD SPECIFICATIONS SECTION 19, "EARTHWORK", EXCEPT AS MAY BE MODIFIED HEREIN. CULVERT BEDDINGS SHALL CONSIST OF EITHER SHAPED BEDDING OR SAND BEDDING.

   BACKFILL MATERIAL SHALL BE PLACED IN HORIZONTAL, UNIFORM LAYERS NOT EXCEEDING 8 INCHES IN THICKNESS BEFORE COMPACTION, AND SHALL BE BROUGHT UP UNIFORMLY ON ALL SIDES OF THE STRUCTURE OR FACILITY. EACH LAYER OF BACKFILL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF NOT LESS THAN 90 PERCENT.

   CONSOLIDATION OF STRUCTURE BACKFILL BY PONDING AND JETTING WILL BE PERMITTED ONLY WHEN, AS DETERMINED BY THE ENGINEER, THE BACKFILL MATERIAL IS OF SUCH CHARACTER THAT IT WILL BE SELF-DRAINING AND THAT FOUNDATION MATERIALS WILL NOT SOFTEN OR BE OTHERWISE DAMAGED BY THE APPLIED WATER, AND NO DAMAGE TO THE STRUCTURE FROM HYDROSTATIC PRESSURE WILL RESULT. PONDING AND JETTING OF THE UPPER 2 FEET BELOW FINISHED SUBGRADE WILL NOT BE PERMITTED IN ROADWAY AREAS. WHEN PONDING AND JETTING IS PERMITTED, MATERIAL FOR USE AS STRUCTURE BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 4 FEET IN THICKNESS. THE WORK SHALL BE PERFORMED WITHOUT DAMAGE TO THE STRUCTURE OR SOFTENING OF THE EMBANKMENT, AND IN SUCH A MANNER THAT EXCESS WATER WILL NOT BE IMPOUNDED. PONDING AND JETTING METHODS SHALL BE SUPPLEMENTED BY THE USE OF VIBRATORY OR OTHER CONSOLIDATION EQUIPMENT WHEN NECESSARY TO OBTAIN THE REQUIRED CONSOLIDATION.

   STRUCTURE BACKFILL SHALL NOT BE PLACED UNTIL WALLS HAVE ATTAINED SPECIFIED STRENGTH. WHEN ORIGINAL MATERIAL AT THE PLANNED GRADE OF THE EXCAVATION IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE MATERIAL, THE ENGINEER WILL DIRECT CORRECTIVE WORK.
   THE MATERIAL FOR BACKFILL MAY BE OBTAINED FROM THE EXCAVATION, AND SHALL BE FREE FROM STONES, LUMPS, BROKEN CONCRETE, OR BITUMINOUS SURFACING EXCEEDING 3 INCHES IN GREATEST DIMENSION, VEGETABLE MATTER, OR OTHER UNSATISFACTORY MATERIAL.

11. CORRUGATED STEEL PIPE SHALL CONFORM WITH STATE STANDARD SPECIFICATIONS SECTION 66, "CORRUGATED METAL PIPE". PIPE SHALL BE 96 INCHES NOMINAL INSIDE DIAMETER, 0.079-INCH MINIMUM NOMINAL WALL THICKNESS, GALVANIZED AND WITH BITUMINOUS COATING INSIDE AND OUTSIDE. AN ASPHALT MASTIC COATING, APPLIED INSIDE AND OUTSIDE, MAY BE SUBSTITUTED FOR THE BITUMINOUS COATING. PIPE END FINISH SHALL BE AS SHOWN ON THESE PLANS.



NOTE:

1. Excavated suitable material shall be disposed of as directed by the Engineer at sites not to exceed 1000 ft. from culvert.
2. Pavement replacement shall be 12" A.S.B., 8" A.B., & 4" A.C.
3. Reconstruct roadside drainage at culvert crossing to match existing.

DESIGNED BY J.A.K.					
DRAWN BY D.R.K.	2	7-15-83	ADDED DROP INLET & 15" C.S.P.	DRK	
CHECKED BY J.A.K.	△	6-21-83	Added 8" AB & Pavement Sect.	J.K.	
	REV.	DATE	DESCRIPTION	BY	APP'D.

BENCH MARK: ELEVATION 49.02 DATUM City
DESCRIPTION: (See Sheet No. 3)

LAUGENOUR AND MEIKLE
R.C.E. 8,468

APPROVED:
Y.C.F.C. & W.C. DISTRICT
DATE: 5/23/83

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
P.O. BOX 828
WOODLAND, CALIFORNIA 95695
PHONE (916) 662-1755

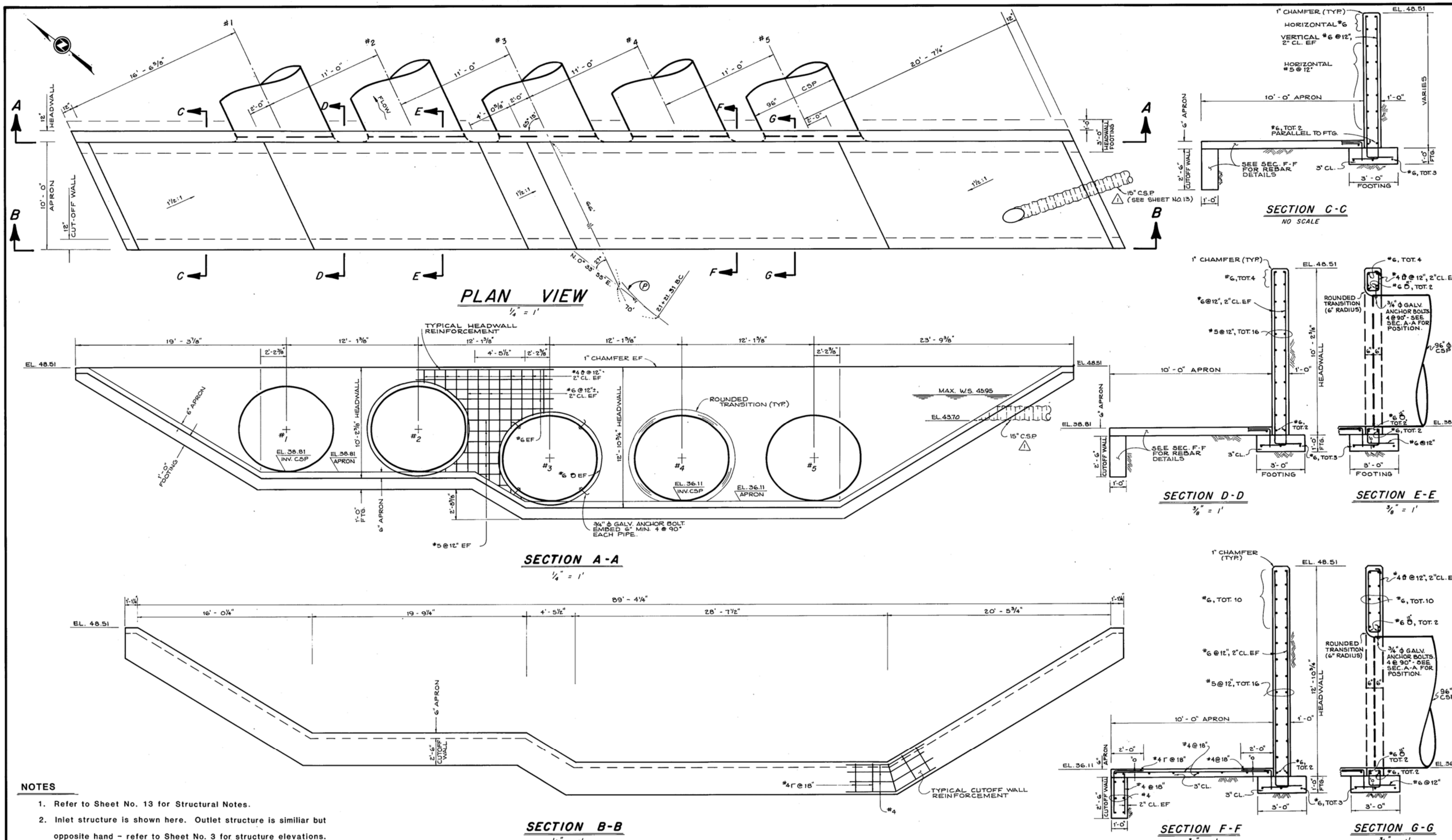
COVELL FLOOD CHANNEL RELOCATION
FROM STATE HWY. 113 TO THE SOUTHERN PACIFIC RAILROAD

SYCAMORE LANE
CULVERT CROSSING

SCALE: AS SHOWN
DATE: 12-16-82
JOB NO. 717-28

SHEET 13 OF 16 △

404-26



NOTES

1. Refer to Sheet No. 13 for Structural Notes.
2. Inlet structure is shown here. Outlet structure is similiar but opposite hand – refer to Sheet No. 3 for structure elevations.

DESIGNED BY TGH					
DRAWN BY DBD					
CHECKED BY TGH	1	7-15-83	ADDED 15" C.S.P.	DRK	
	REV.	DATE	DESCRIPTION	BY	APP'D.

BENCH MARK: ELEVATION ______ DATUM ______
DESCRIPTION:

LAUGENOUR AND MEIKLE
R.C.E. 8468

APPROVED:
Y. C.F.C. & W. C. DISTRICT
DATE: 5/23/83

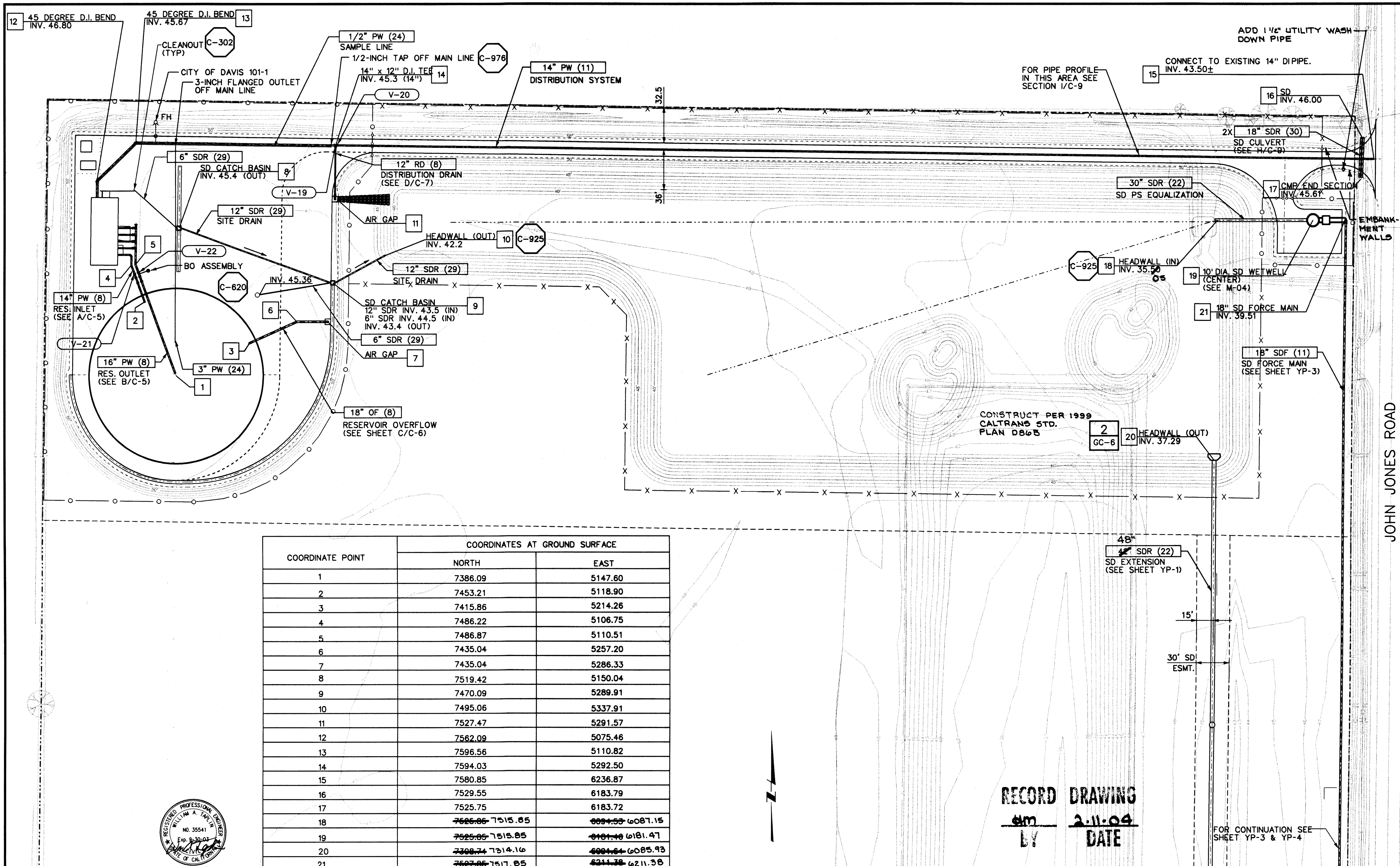
LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
P.O. BOX 828
WOODLAND, CALIFORNIA 95695
PHONE (916) 662-1755

COVELL FLOOD CHANNEL RELOCATION
FROM STATE HWY. 113 TO THE SOUTHERN PACIFIC RAILROAD

SYCAMORE LANE CULVERT CROSSING DETAILS

SCALE: AS SHOWN
DATE: 12-6-82
JOB NO. 717-28
SHEET 14 OF 16

404-26



COORDINATE POINT	COORDINATES AT GROUND SURFACE	
	NORTH	EAST
1	7386.09	5147.60
2	7453.21	5118.90
3	7415.86	5214.26
4	7486.22	5106.75
5	7486.87	5110.51
6	7435.04	5257.20
7	7435.04	5286.33
8	7519.42	5150.04
9	7470.09	5289.91
10	7495.06	5337.91
11	7527.47	5291.57
12	7562.09	5075.46
13	7596.56	5110.82
14	7594.03	5292.50
15	7580.85	6236.87
16	7529.55	6183.79
17	7525.75	6183.72
18	~~7525.85~~ 7515.85	~~6094.53~~ 6087.15
19	~~7525.85~~ 7515.85	~~6181.48~~ 6181.47
20	~~7308.74~~ 7314.16	~~6091.64~~ 6085.93
21	~~7527.85~~ 7517.85	~~6211.38~~ 6211.38

RECORD DRAWING
~~SM~~ BY 2.11.04 DATE

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. TAPLIN NO. 35541 Exp. 9-30-03 STATE OF CALIFORNIA

REV	DATE	BY	DESCRIPTION

SCALE 1" = 40'

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED J. GUTIERREZ
DRAWN J. GUTIERREZ
CHECKED B. TAPLIN

SUBMITTED BY
William A. Taplin — WILLIAM A. TAPLIN — NO. 35541 LICENSE NO. — 03/15/01 DATE
Christine Lindow — CHRISTINE LINDOW — NO. E14298 LICENSE NO. — 02/15/01 DATE

MONTGOMERY WATSON
Walnut Creek, California

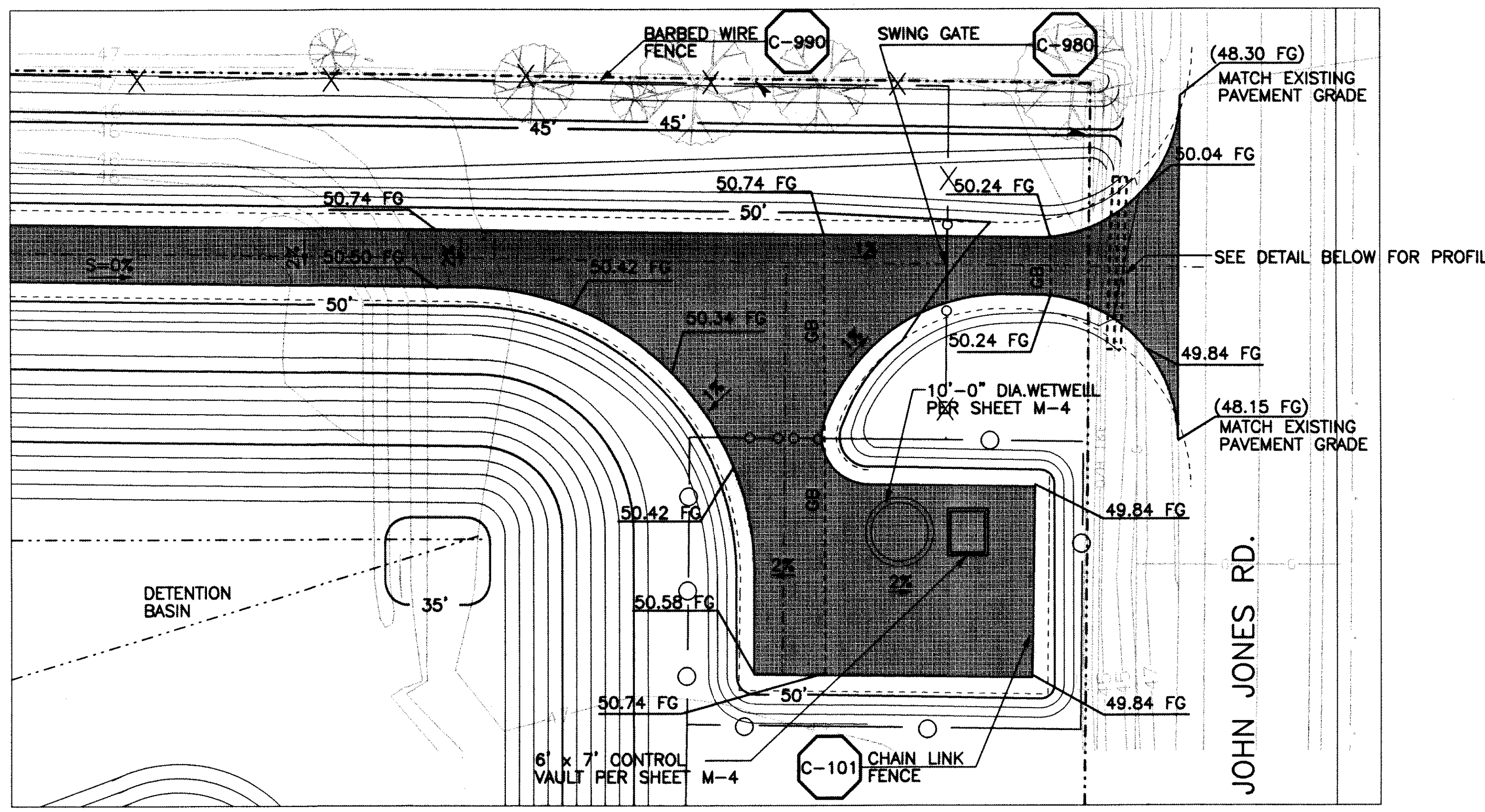
Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
YARD PIPING PLAN

SHEET C-4
15 . 75

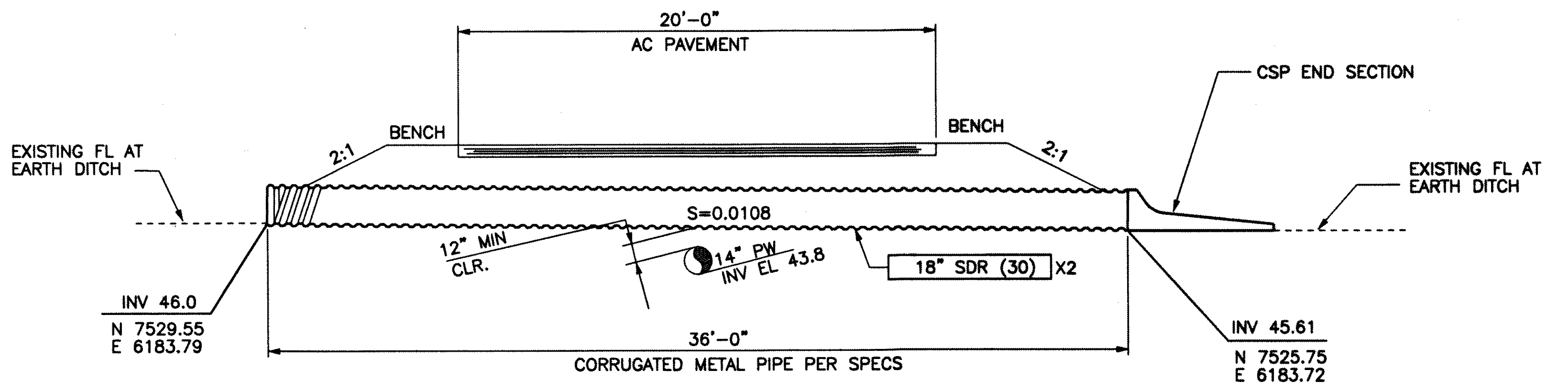
105-03-01

Job No: 1076081 File: n:\Projects\davis\cp8544\civ\dav_c04.dgn Plot Date: 16-MAR-2001 16:24



SITE ENTRANCE DETAILED GRADING

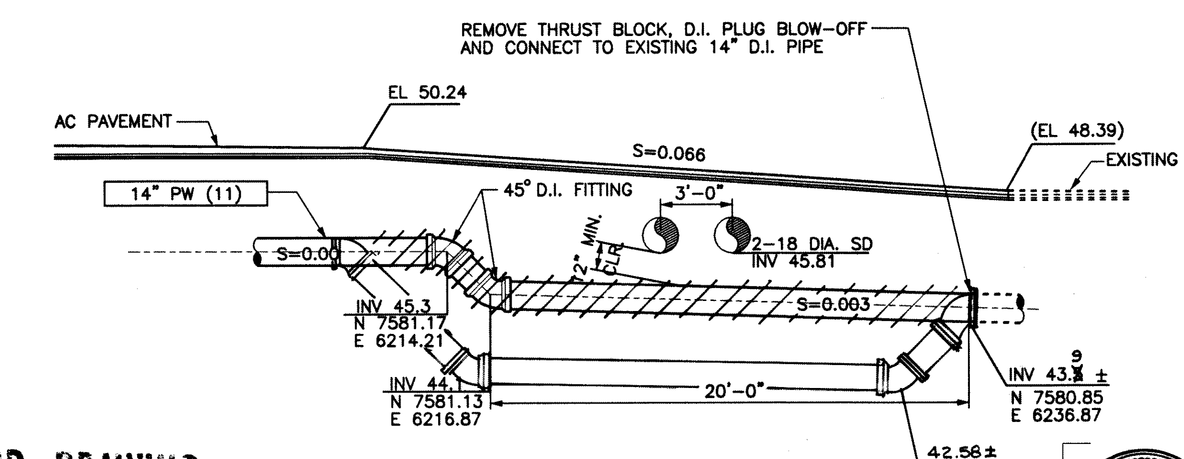
SCALE: 1" =20'



SD PIPE CULVERT PROFILE

H / –

1/4" =1'-0"



RECORD DRAWING
HM BY 2-17-04 DATE

14" DIA. PW PIPE UNDERCROSSING

I / C-4

1/4" =1'-0"

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. TAPLIN No. 35541 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA

REV	DATE	BY	DESCRIPTION
	2-17-04	HM	AS-BUILT

SCALE: AS SHOWN

WARNING: 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED ____ DRAWN ____ CHECKED ____

SUBMITTED BY: WILLIAM A. TAPLIN, LICENSE NO. 35541, DATE 3/16/01; CHRISTINE LINDOW, LICENSE NO. 38780, DATE 3.16.01

MONTGOMERY WATSON
Walnut Creek, California

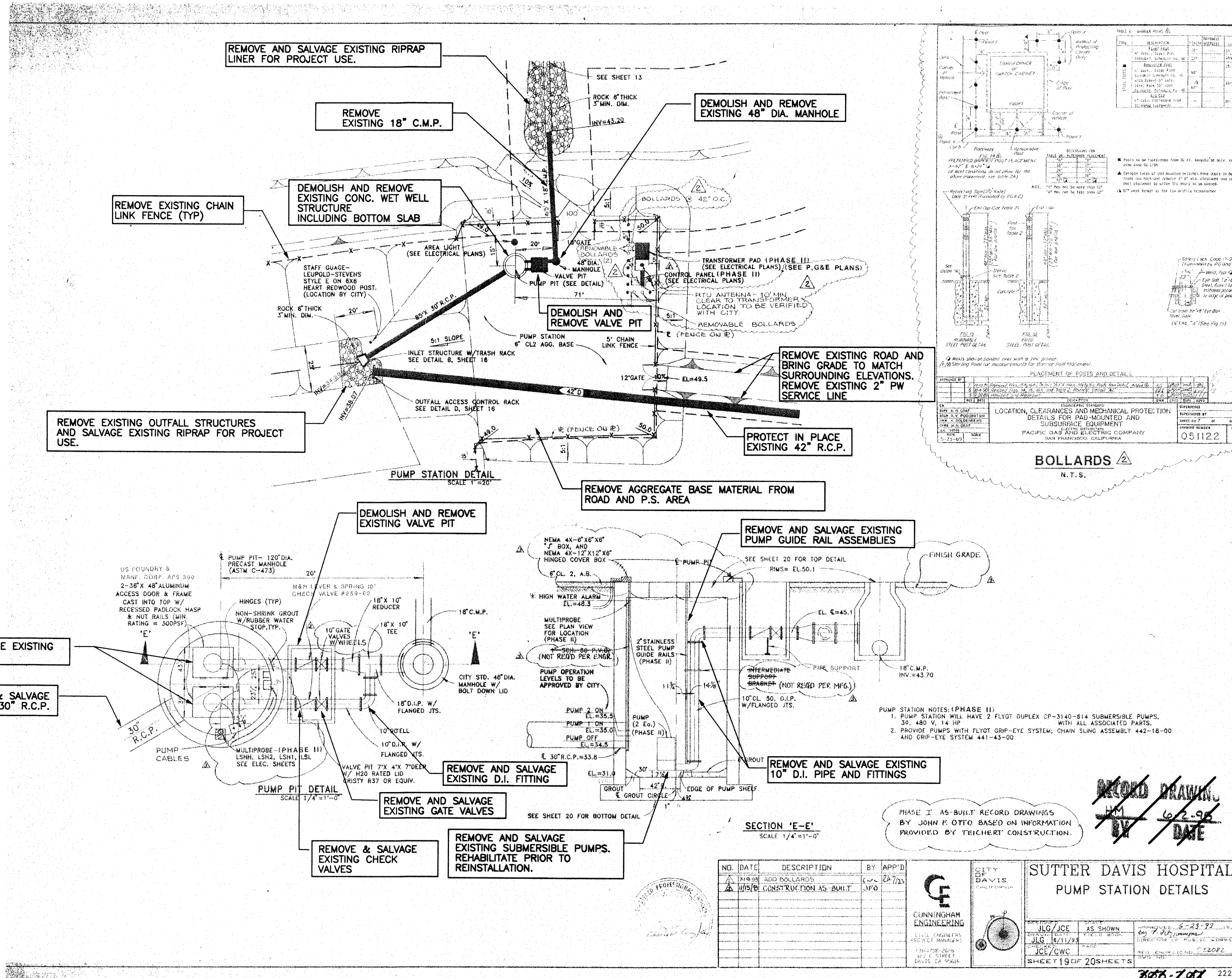
Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
SITE ENTRANCE DETAILED GRADING AND PIPING PROFILE

SHEET C-9
20 . 75

105-03-01

Job No: 1076081 File: n:\Projects\davis\cip8544\civ\dav_c09.dgn Plot Date: 15-MAR-2001 14:51



NOTES:

1. DEMOLITION AND SALVAGING NOTES ARE SHOWN WITH BOXES.
2. REMOVAL OF ALL ELECTRICAL EQUIPMENT SHALL BE PER SHEET E-8.
3. BACKGROUND INFORMATION WAS TAKEN FROM CITY AS-BUILT PLANS FOR EXISTING STORM WATER PUMP STATION AT DETENTION BASIN NEAR SUTTER DAVIS HOSPITAL.

RECORD DRAWING
HM — 2.17.04
BY — DATE

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED J. GUTIERREZ
DRAWN J. GUTIERREZ
CHECKED B. TAPLIN

SUBMITTED BY
WILLIAM A. TAPLIN — 35541 LICENSE NO. — 3/16/01 DATE
CHRISTINE LINDOW — 39780 LICENSE NO. — 3.16.01 DATE

MONTGOMERY WATSON
Walnut Creek, California

Davis California

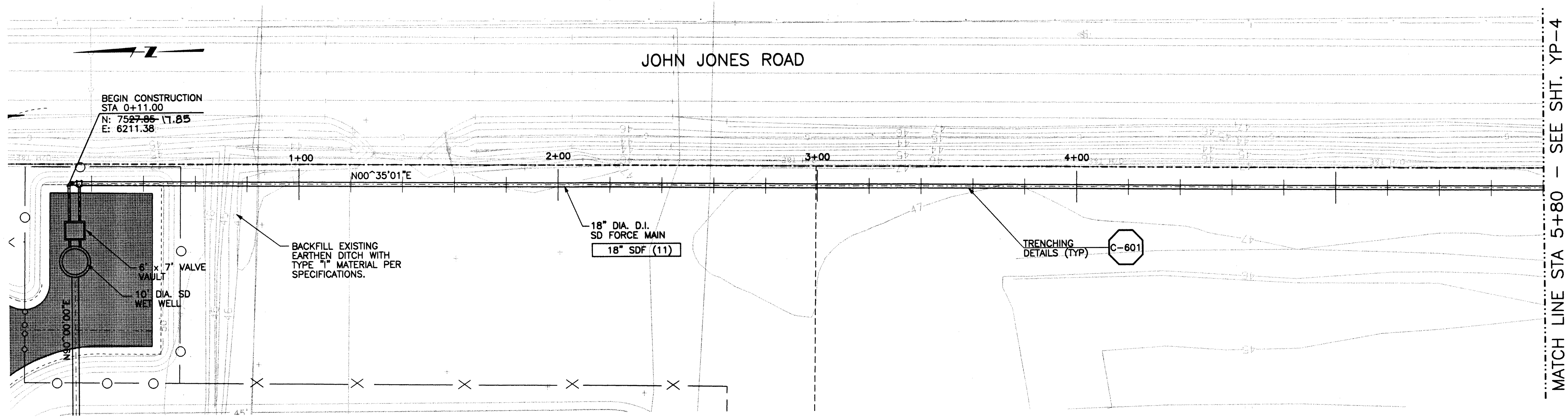
CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544

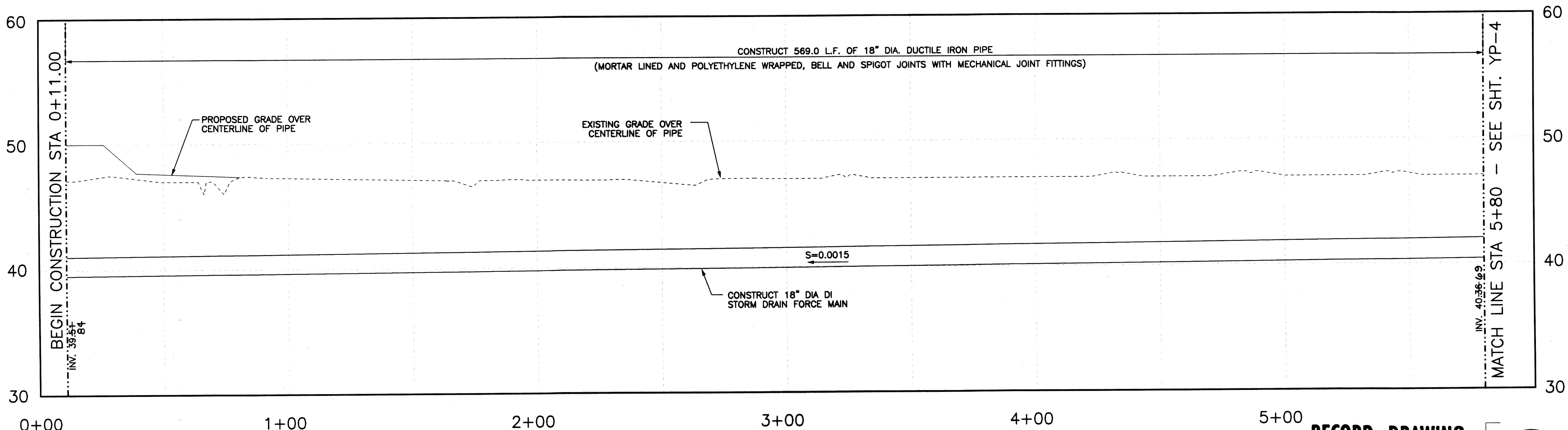
STORM DRAIN PUMP STATION
DEMOLITION PLAN

SHEET C-10
21 . 75

105-03-01

Job No: 1076081 File: n:\Projects\davis\cip8544\civ\dov_c10.dgn Plot Date: 15-MAR-2001 14:51





18" DIA. STORM DRAIN FORCE MAIN PROFILE

RECORD DRAWING
~~gm~~ BY
2-18-04 DATE

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. TAPLIN NO. 35541 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA

REV	DATE	BY	DESCRIPTION
	2-18-04	gm	AS-BUILT

SCALE: 1"=20' HORIZ, 1"=4" VERT

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED J. GUTIERREZ
DRAWN J. GUTIERREZ
CHECKED B. TAPLIN

SUBMITTED BY
WILLIAM A. TAPLIN — NO. 35541 LICENSE NO. — 03/15/01 DATE
CHRISTINE LINDOW — NO. E14298 LICENSE NO. — 02/15/01 DATE

MONTGOMERY WATSON
Walnut Creek, California

Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
18" DIA. SD FORCE MAIN
PLAN AND PROFILE
STA 0+11 TO STA 5+80

SHEET YP-3
24 / 75

105-03-01

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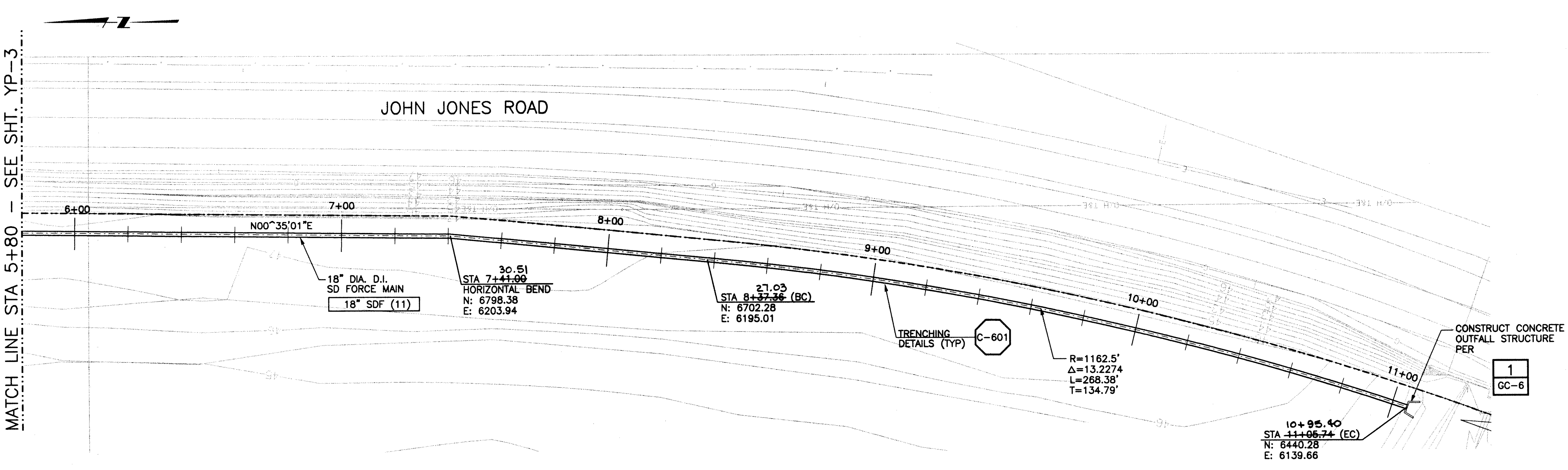
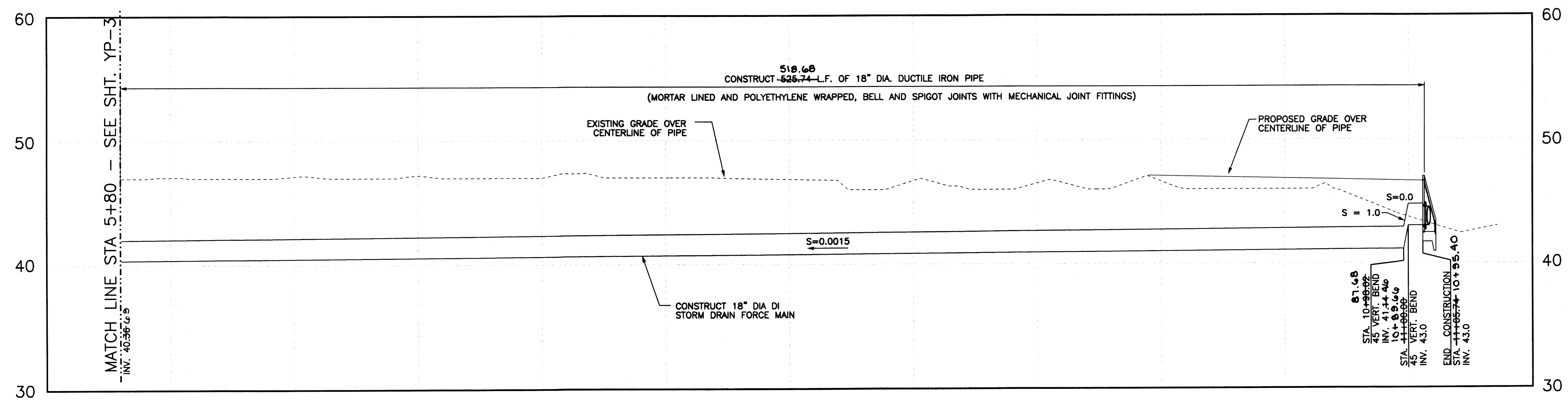




18" DIA. STORM DRAIN FORCE MAIN PROFILE

RECORD DRAWING
BY: WM DATE: 2-18-04

REGISTERED PROFESSIONAL ENGINEER — WILLIAM A. TAPLIN — No. 35541 — Exp. 4-30-03 — CIVIL — STATE OF CALIFORNIA

REV	DATE	BY	DESCRIPTION
	2-18-04	WM	AS-BUILT

SCALE: 1"=20' HORIZ, 1"=4" VERT

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED J. GUTIERREZ
DRAWN J. GUTIERREZ
CHECKED B. TAPLIN

SUBMITTED BY
WILLIAM A. TAPLIN — 35541 LICENSE NO. — 3/16/01 DATE
CHRISTINE LINDOW — 38780 LICENSE NO. — 3-16-01 DATE

MONTGOMERY WATSON
Walnut Creek, California

Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
18" DIA. SD FORCE MAIN
PLAN AND PROFILE
STA 5+80 TO STA 11+05.74

SHEET YP-4
25 .75

105-03-01

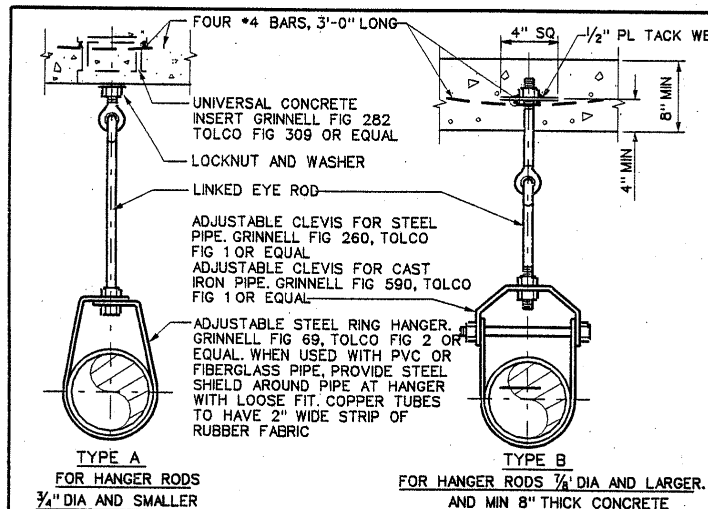
Job No: 1076081 File: n:\Projects\davis\cip8544\civ\dav_yp4.dgn Plot Date: 15-MAR-2001 14:51

VALVE SCHEDULE (6 INCH AND LARGER)

VALVE NO.	LOCATION	SERVICE	TYPE	SIZE IN.	OPERATOR	REMARKS
V-01	PUMP STATION	POTABLE WATER	BUTTERFLY	10	HANDWHEEL	N/C
V-02	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-03	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-04	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-05	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-06	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-07	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-08	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	--
V-09	PUMP STATION	POTABLE WATER	GATE	10	HANDWHEEL	PER C 640
V-10	PUMP STATION	POTABLE WATER	GATE	12	BURIED W/ VALVE EXT.	PER C 640
V-11	PUMP STATION	POTABLE WATER	GATE	12	BURIED W/ VALVE EXT.	PER C 640
V-12	PUMP STATION	POTABLE WATER	GATE	12	BURIED W/ VALVE EXT.	PER C 640
V-13	PUMP STATION	POTABLE WATER	GATE	10	BURIED W/ VALVE EXT.	PER C 640
V-14	PUMP STATION	POTABLE WATER	GLOBE	10	HYDRAULIC	--
V-15	PUMP STATION	POTABLE WATER	SWING CHECK	10	N/A	SPRING & WEIGHT
V-16	PUMP STATION	POTABLE WATER	SWING CHECK	10	N/A	SPRING & WEIGHT
V-17	PUMP STATION	POTABLE WATER	SWING CHECK	10	N/A	SPRING & WEIGHT
V-18	PUMP STATION	POTABLE WATER	S. D. CHECK	10	N/A	SURGE CONTROL
V-19	RESERVOIR DRAIN	POTABLE WATER	GATE	12	BURIED W/ VALVE EXT.	NORMALLY CLOSED PER C 640
V-20	DISTRIBUTION	POTABLE WATER	BUTTERFLY	14	BURIED W/ VALVE EXT.	PER C 640
V-21	RESERVOIR INLET	POTABLE WATER	BUTTERFLY	14	BURIED W/ VALVE EXT.	PER C 640
V-22	RESERVOIR OUTLET	POTABLE WATER	BUTTERFLY	16	BURIED W/ VALVE EXT.	PER C 640

PUMP SCHEDULE

PUMP NO.	LOCATION	SERVICE	TYPE	GPM	TDH FT.	HP (MIN.)	REMARKS
P-1	PUMP STATION	POTABLE WATER	VERTICAL TURBINE	1250	115	75	LEAD
P-2	PUMP STATION	POTABLE WATER	VERTICAL TURBINE	1250	115	75	LAG
P-3	PUMP STATION	POTABLE WATER	VERTICAL TURBINE	1250	115	75	BACKUP

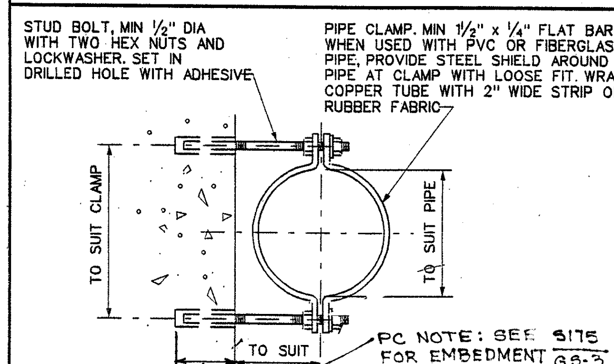


PIPE HANGER RODS AND SUPPORT SPACING					
PIPE DIA (INCHES)	ROD DIA (INCHES)	MAX SUPPORT SPACING (FEET)		WEIGHT LIMIT (LBS)	
		STEEL PIPE	CI PIPE	TYPE A	TYPE B
1 & SMALLER	3/8	6	5	610	1700
1 1/4 TO 2	3/8	9	5	610	1700
2 1/2 TO 3 1/2	1/2	12	5	1130	3200
4 TO 5	5/8	14	5	1430	3800
6, 8	3/4	16	5	1430	3800
10, 12	7/8	18	—	1430	3800
14, 16	1	20	—	1430	3800

NOTES:

1. ALL PARTS SHALL BE TYPE 304 STAINLESS STEEL
2. FOR PIPES 3" DIA AND SMALLER, EYE BOLTS IN ADHESIVE FILLED HOLES MAY BE USED.
3. TYPE A - FOR CONCRETE INSERT, ALLOW 1430 LB LOAD MAX. TYPE B - FOR 4" SQ BEARING PLATE, ALLOW 3800 LB LOAD MAX.
4. CONCRETE STRENGTH TO BE 3000 PSI MINIMUM.
5. DESIGN IS FOR STATIC LOAD ONLY.
6. FOR ADDITIONAL REQUIREMENTS SEE SPECIFICATION SECTION 'PIPE SUPPORTS'.

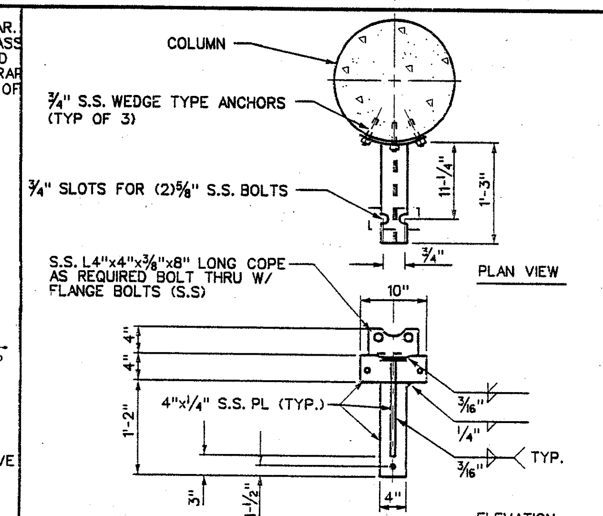
PIPE HANGER 2 / GM-2



NOTES :

1. ALL PARTS TO BE TYPE 304 STAINLESS STEEL. WHERE SUBMERGED, PIPE CLAMP, NUTS, LOCKWASHERS, ANCHORS AND SHIELDS TO BE TYPE 316 STAINLESS STEEL
2. THIS PIPE CLAMP IS LIMITED TO PIPES UP TO 6"DIAMETER INCLUSIVE
3. FOR ADDITIONAL REQUIREMENTS SEE SPECIFICATIONS SECTION 'PIPE SUPPORTS'

PIPE CLAMP 1 / GM-2



SUPPORT DETAIL 3 / GM-2

NOT TO SCALE 051401

RECORD DRAWING
HM 2-20-04
BY DATE

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. TAPLIN NO. 35541 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA

REV	DATE	BY	DESCRIPTION
	2-20-04	HM	AS-BUILT

SCALE: NONE

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED L. WONG
DRAWN L. WONG
CHECKED B. TAPLIN

SUBMITTED BY
WILLIAM A. TAPLIN — NO. 35541 LICENSE NO. — 03/15/01 DATE
CHRISTINE LINDOW — NO. E14298 LICENSE NO. — 02/15/01 DATE

MONTGOMERY WATSON
Walnut Creek, California

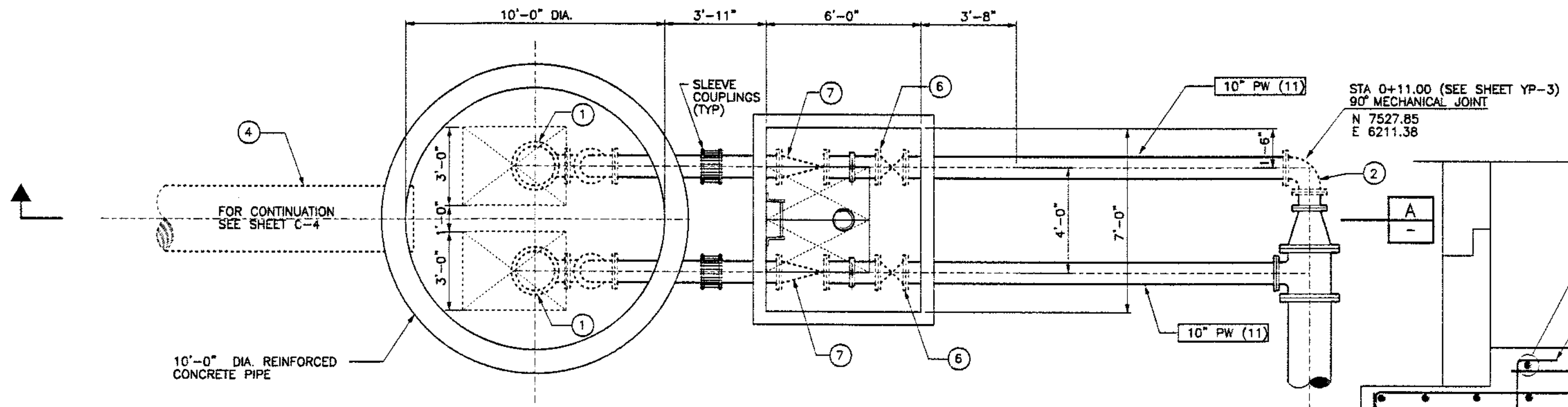
Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
VALVES AND EQUIPMENT SCHEDULES

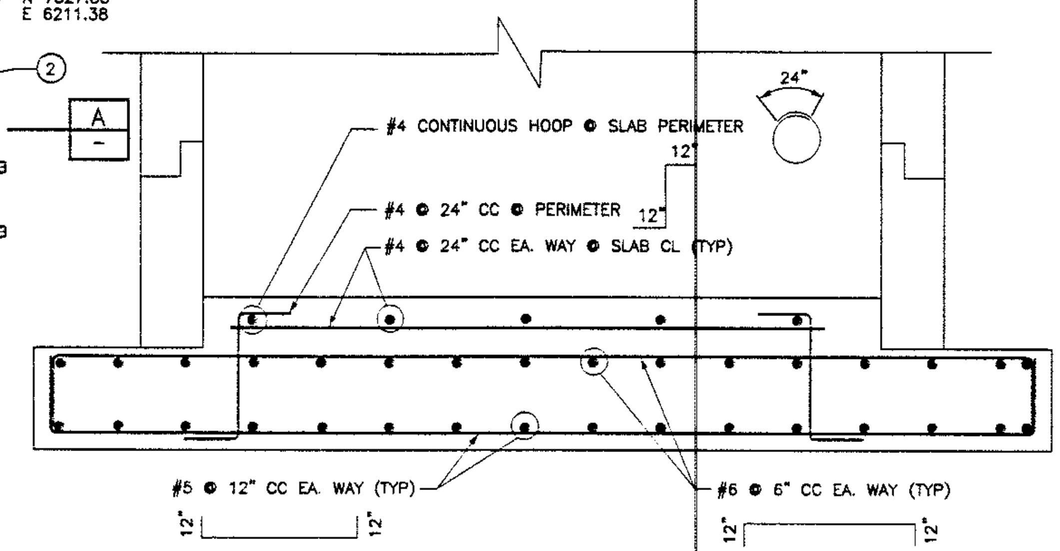
SHEET GM-1
89/75

105-03-01

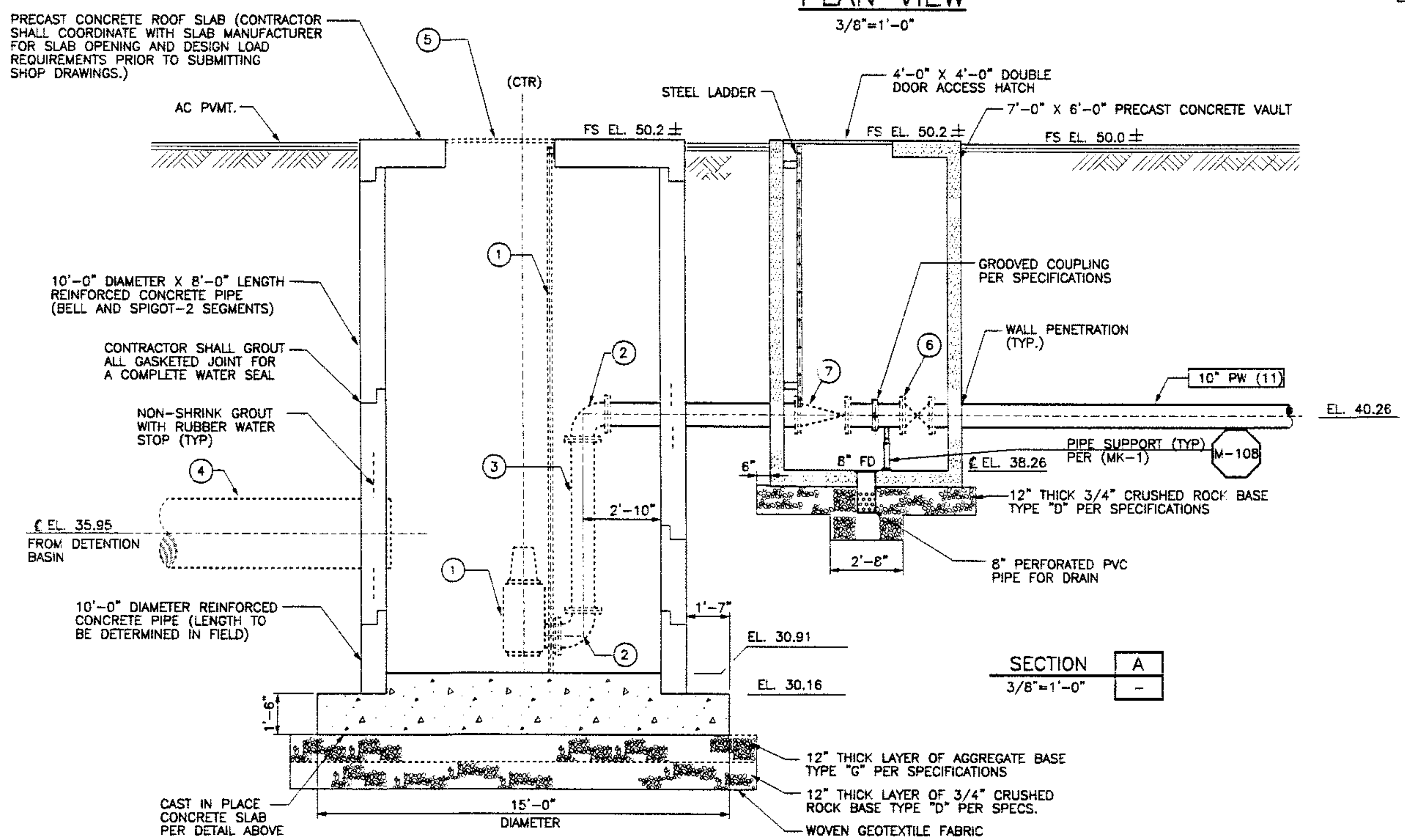
File: n:\Projects\davis\cip8544\mec\gm01a.dgn Plot Date: 16-MAR-2001 16:26 Job No: 1076081



STORM DRAIN PUMP STATION
PLAN VIEW
3/8"=1'-0"



CONCRETE SLAB REINFORCEMENT DETAIL
3/4"=1'-0"



SECTION A
3/8"=1'-0"

SALVAGED COMPONENTS

1. REHABILITATE AND REINSTALL TWO (2) FLYGT DUPLEX CP-3140-614, 14 HP SUBMERSIBLE PUMPS WITH GRIP EYE SYSTEM CHAIN SLING ASSEMBLY.
2. REINSTALL THREE (3) 10" DIA. DUCTILE IRON FLANGE 90-DEGREE FITTINGS.
3. REINSTALL 10" DIA. DUCTILE IRON PIPE (CONTRACTOR TO FIELD VERIFY LENGTH REQUIRED).
4. REINSTALL 30" DIA. REINFORCED CONCRETE PIPE (CONTRACTOR TO FIELD VERIFY LENGTH REQUIRED).
5. REINSTALL TWO (2) 3'-0" X 4'-0" ALUMINUM ACCESS DOORS.
6. REINSTALL TWO (2) 10" GATE VALVES WITH MANUAL OPERATORS.
7. REINSTALL TWO (2) 10" CHECK VALVES.
8. REINSTALL ELECTRICAL CONTROL PANEL (SEE ELECTRICAL SHEETS FOR LOCATION).
9. REINSTALL ELECTRICAL TRANSFORMER (CONTRACTOR TO PROVIDE CONCRETE PAD SEE ELECTRICAL SHEETS FOR LOCATION).

REGISTERED PROFESSIONAL ENGINEER WILLIAM A. TAPLIN No. 35541 Exp. 9-30-01 CIVIL STATE OF CALIFORNIA

Job No: 1076081 File: n:\Projects\davis\cip8544\mec\m04.dgn Plot Date: 15-MAR-2001 14:51

REV	DATE	BY	DESCRIPTION

SCALE: AS SHOWN

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED J. GUTIERREZ
DRAWN B. LIN
CHECKED B. TAPLIN

SUBMITTED BY: WILLIAM A. TAPLIN, LICENSE NO. 35541, DATE 3/16/01
CHRISTINE LINDOW, LICENSE NO. 38780, DATE 3-16-01

MONTGOMERY WATSON
Walnut Creek, California

Davis California

CITY OF DAVIS
WATER STORAGE TANK PROJECT, CIP 8544
STORM DRAIN PUMP STATION
PLAN, SECTIONS AND DETAILS

SHEET M-4
55 .75

105-03-01

2 pumps run in Alternate

NAMEPLATE DATA

Equipment Number & Name SDS I.D. No. 7

Motor

Brand Name	Flygt Submersible
Model	CP3140-614
Serial	
HP	14
RPM	1150
Volts	460
Amps	
pH	3
Frame	
S.F.	1.15
Max. Amb.	
Rating	
Design	
Ins. Class	F
Type	
Code	

Driven Unit

Brand Name	
Model	
Serial	
GPM	1500
Size	10 Discharge

Other

Brand Name	
Model	

Gear Box

Model	
Serial	

Manufacturers Rep

J:\PW\DRN\PLTDATA2.DR

FLYGT PERFORMANCE CURVE

PRODUCT	TYPE
CP3140.180	LT
CURVE NO 63-614-00-6810	ISSUE 2

DATE 1999-07-19

PROJECT

	1/1-LOAD	3/4-LOAD	1/2-LOAD
POWER FACTOR	0.85	0.80	0.71
EFFICIENCY	84.0 %	84.0 %	81.5 %
MOTOR DATA	---	---	---

COMMENTS

INLET/OUTLET - /200 mm

IMP. THROUGHLET 82 mm

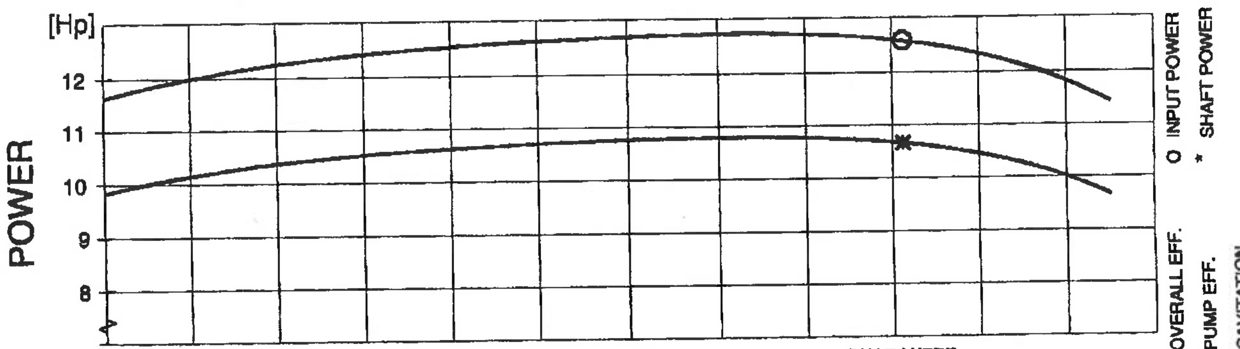
RATED POWER	14.0	Hp
STARTING CURRENT ...	98	A
RATED CURRENT ...	18	A
RATED SPEED	1160	rpm
TOT.MOM.OF INERTIA ...	0.24	kgm2
NO. OF BLADES	2	

IMPELLER DIAMETER 242 mm

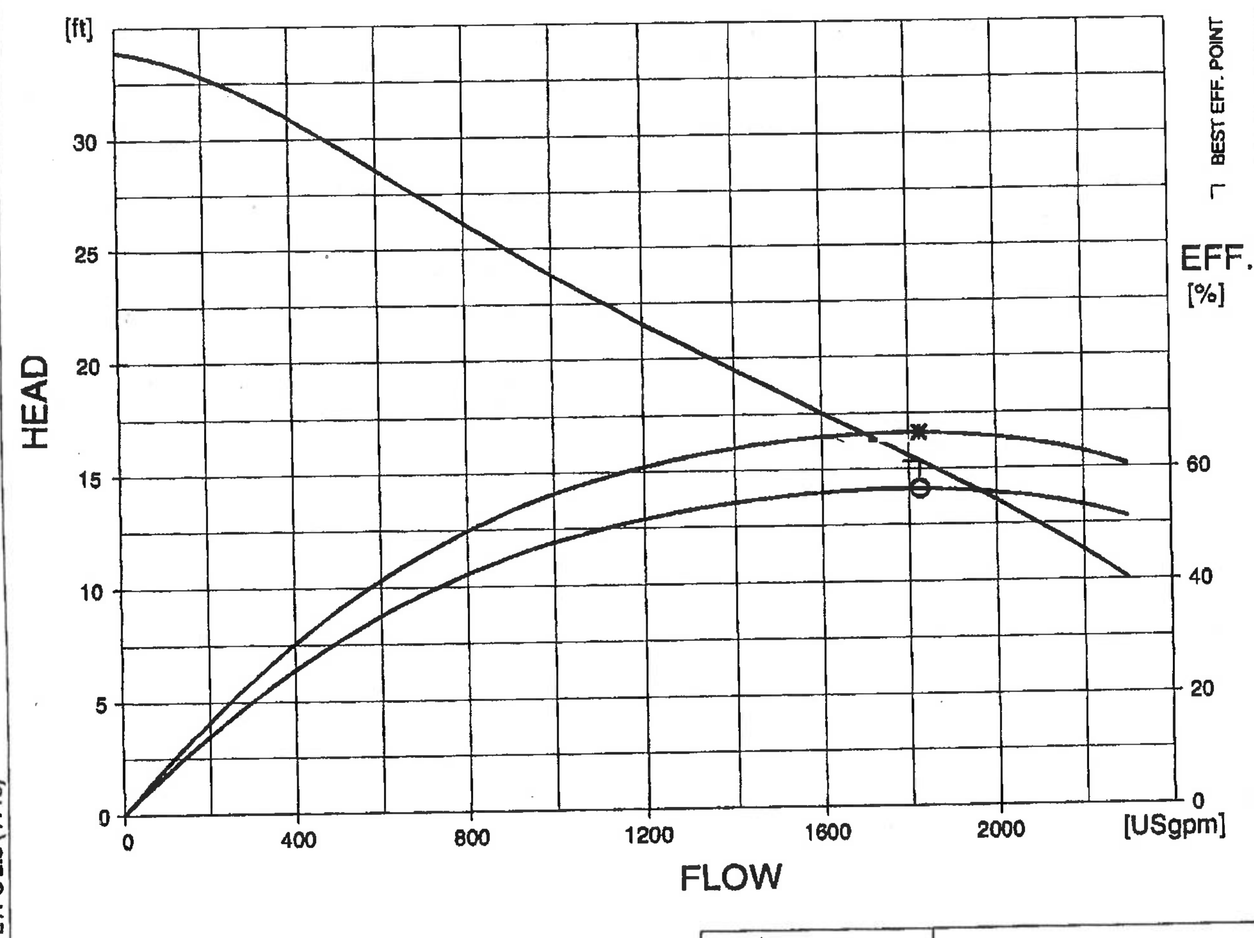
MOTOR #	STATOR	REV
25-15-6AA	37YSER	10

FREQ.	PHASES	VOLTAGE	POLES
60 Hz	3	460 V	6

GEARTYPE	RATIO
---	---



DUTY-POINT:	FLOW[USgpm]	HEAD[ft]	POWER[Hp]	EFF.[%]		GUARANTEE
B.E.P.:	1825.42	15.34	12.58 (10.66)	58.3 (68.5)	---	



Performance with clear water and ambient temp 40 °C

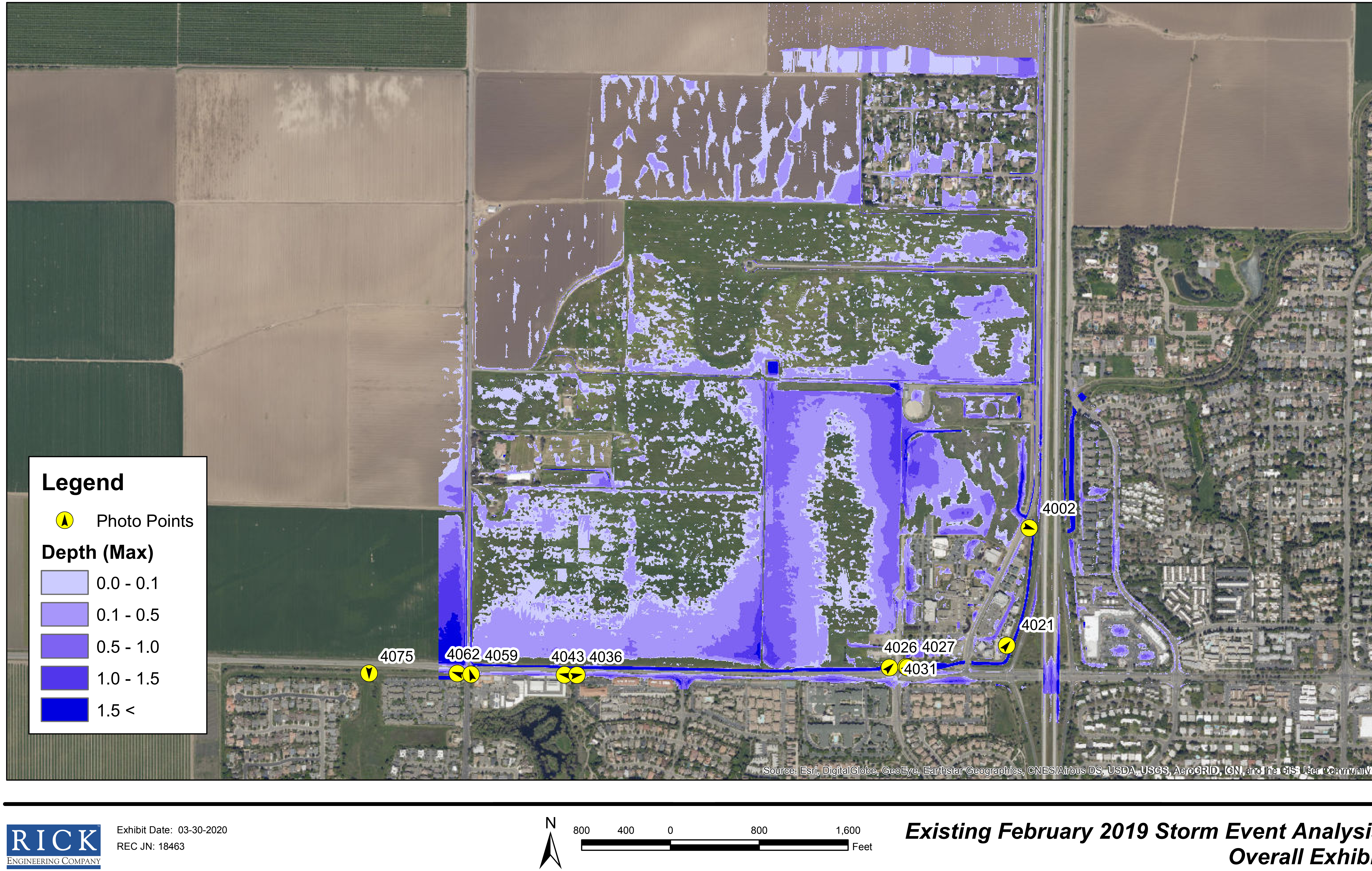
FLYGT CURVE

Appendix 6

Electronic Files

Appendix 7

February 2019 Storm Analysis



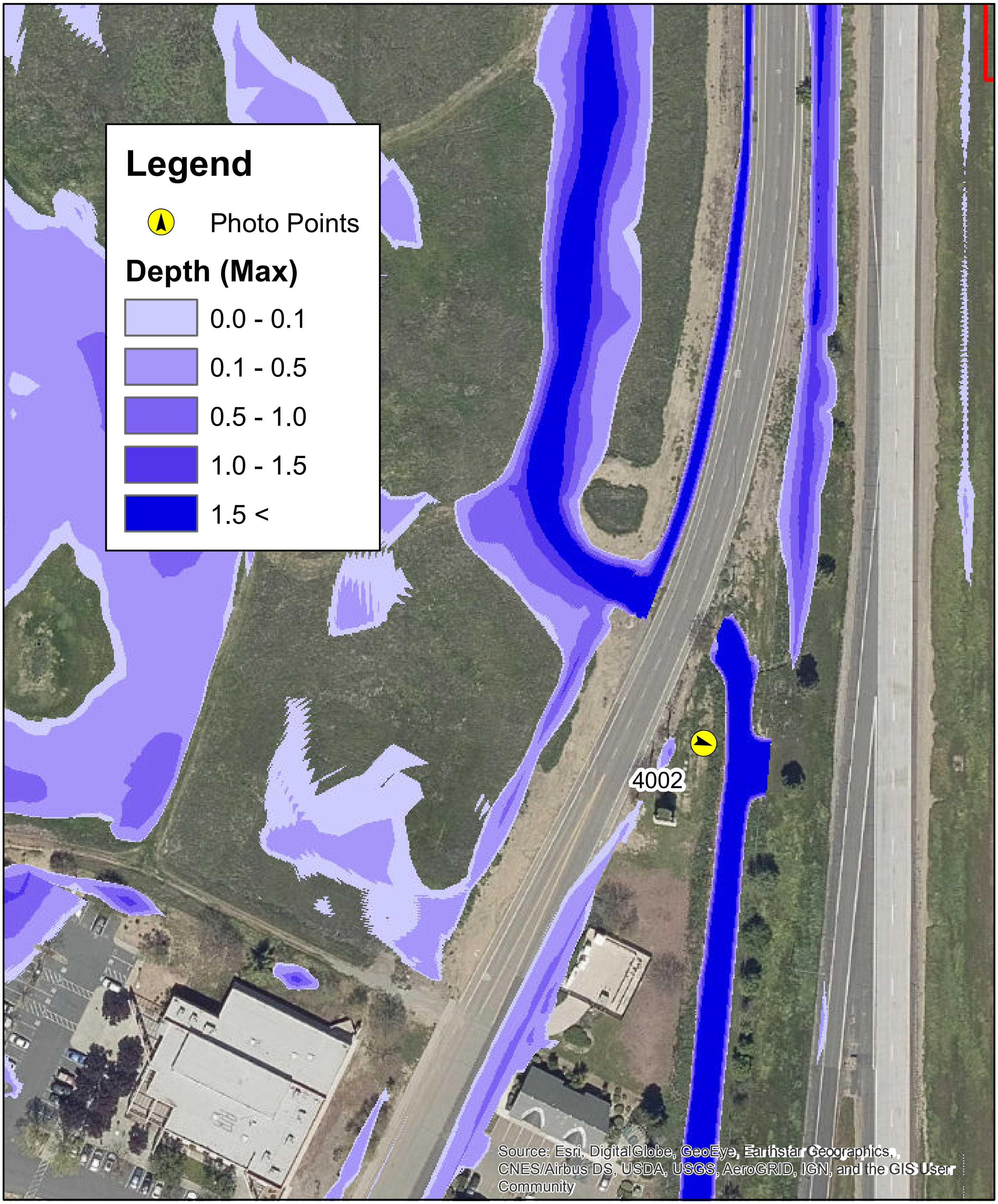
RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020

REC JN: 18463

Existing February 2019 Storm Event Analysis

Overall Exhibit



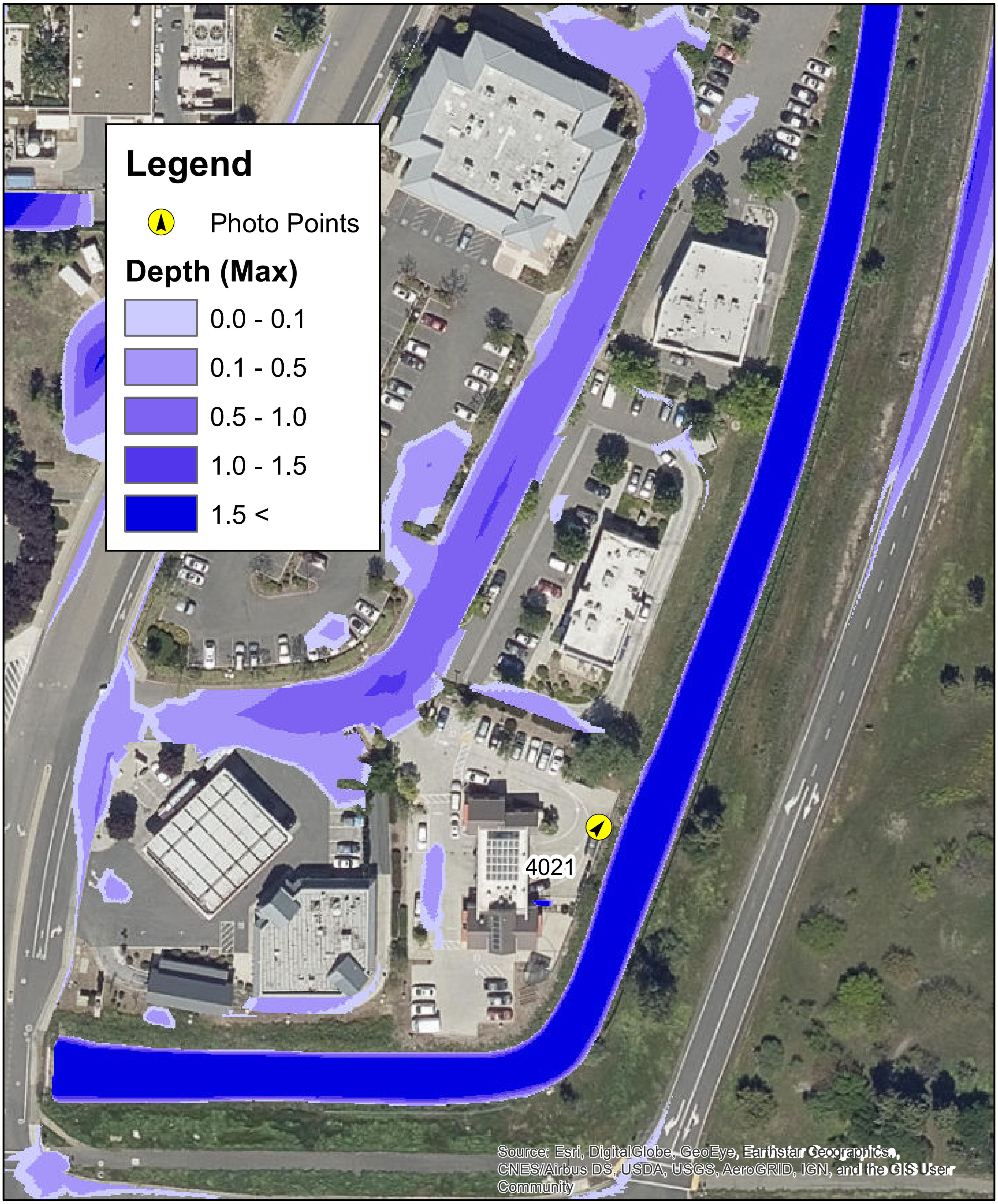
RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020
REC JN: 18463

N

100 50 0 100 Feet

Existing February 2019 Storm Event Analysis
Photo 4002



RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020

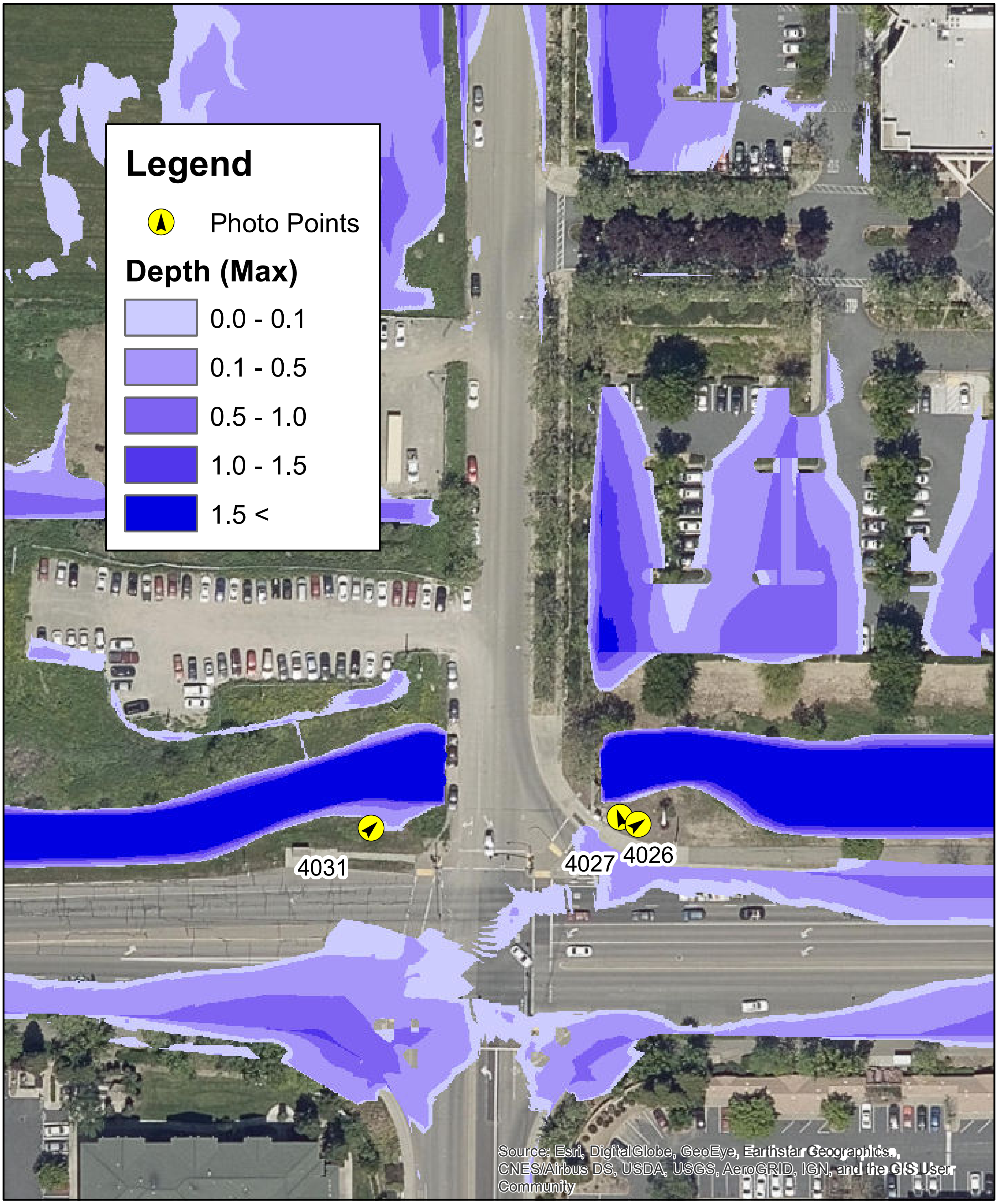
REC JN: 18463

N

100 50 0 100 Feet

Existing February 2019 Storm Event Analysis

Photo 4021



RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020

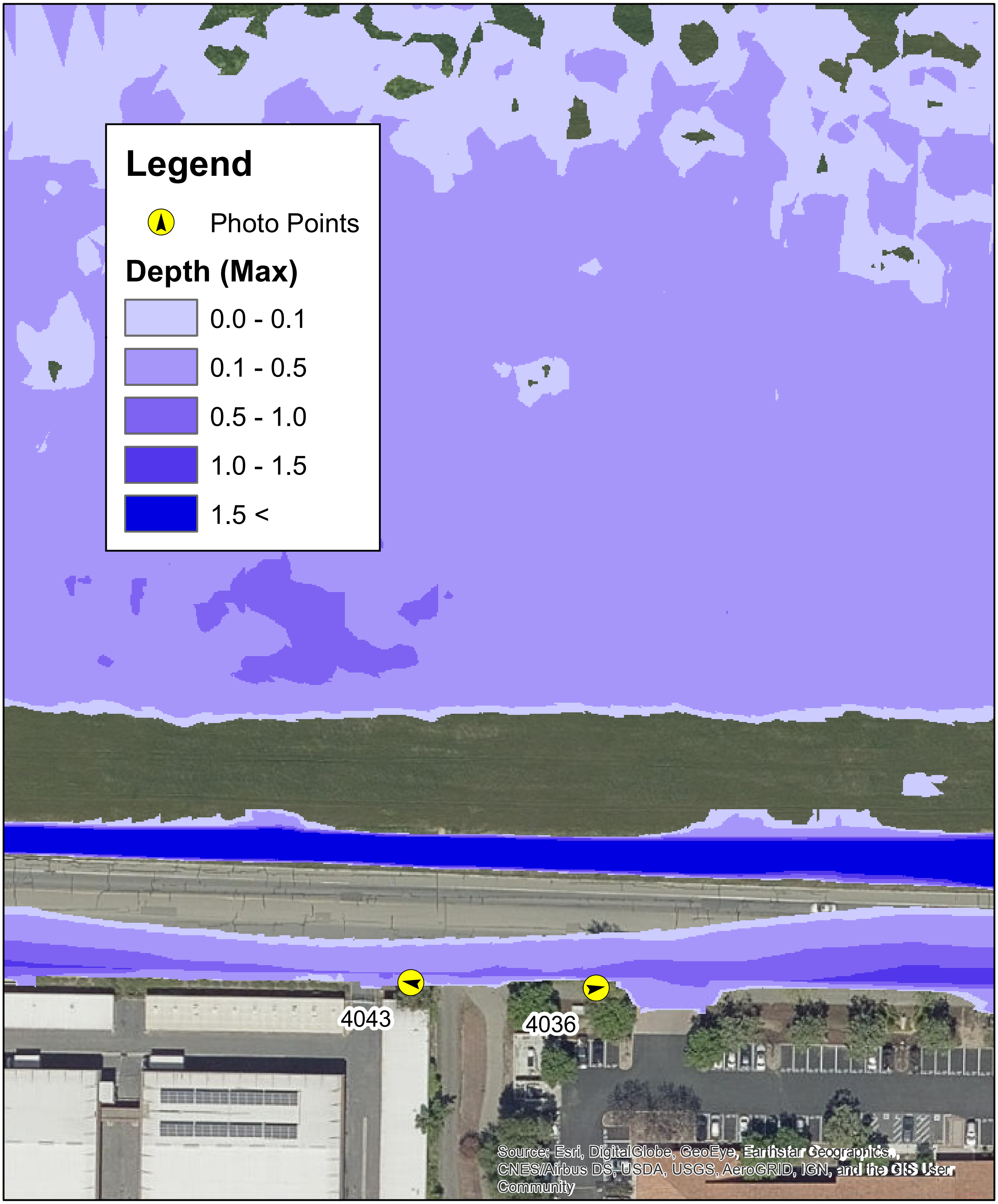
REC JN: 18463

N

100 50 0 100 Feet

Existing February 2019 Storm Event Analysis

Photos 4026, 4027, and 4031



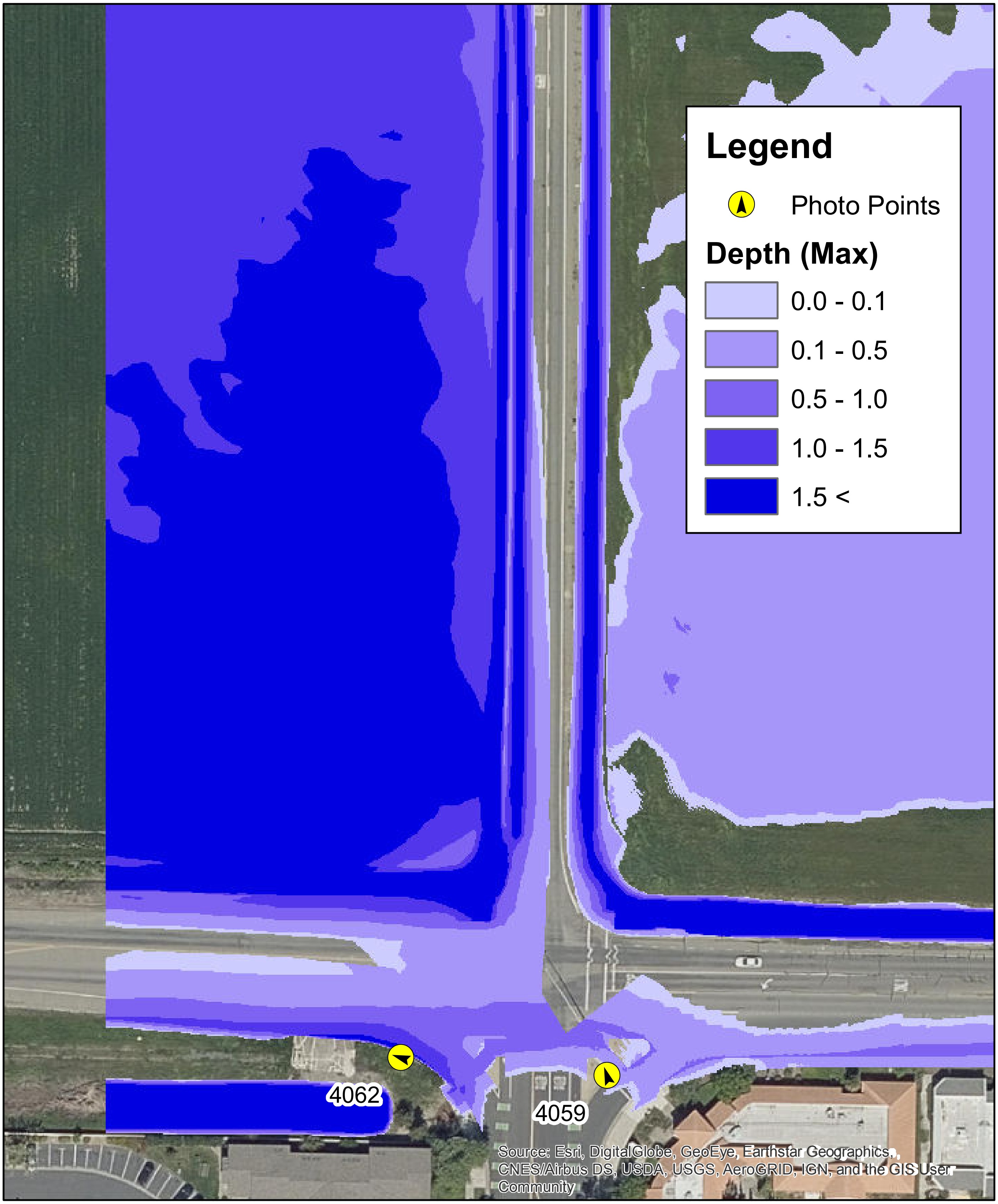
RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020
REC JN: 18463

N

100 50 0 100
Feet

Existing February 2019 Storm Event Analysis
Photos 4036 and 4043



RICK ENGINEERING COMPANY

Exhibit Date: 03-30-2020
REC JN: 18463

N
100 50 0 100
Feet

Existing February 2019 Storm Event Analysis
Photos 4059 and 4062

Image Number: 4002 February 27, 2019

Image Number: 4021 February 27, 2019


Image Number: 4026 February 27, 2019

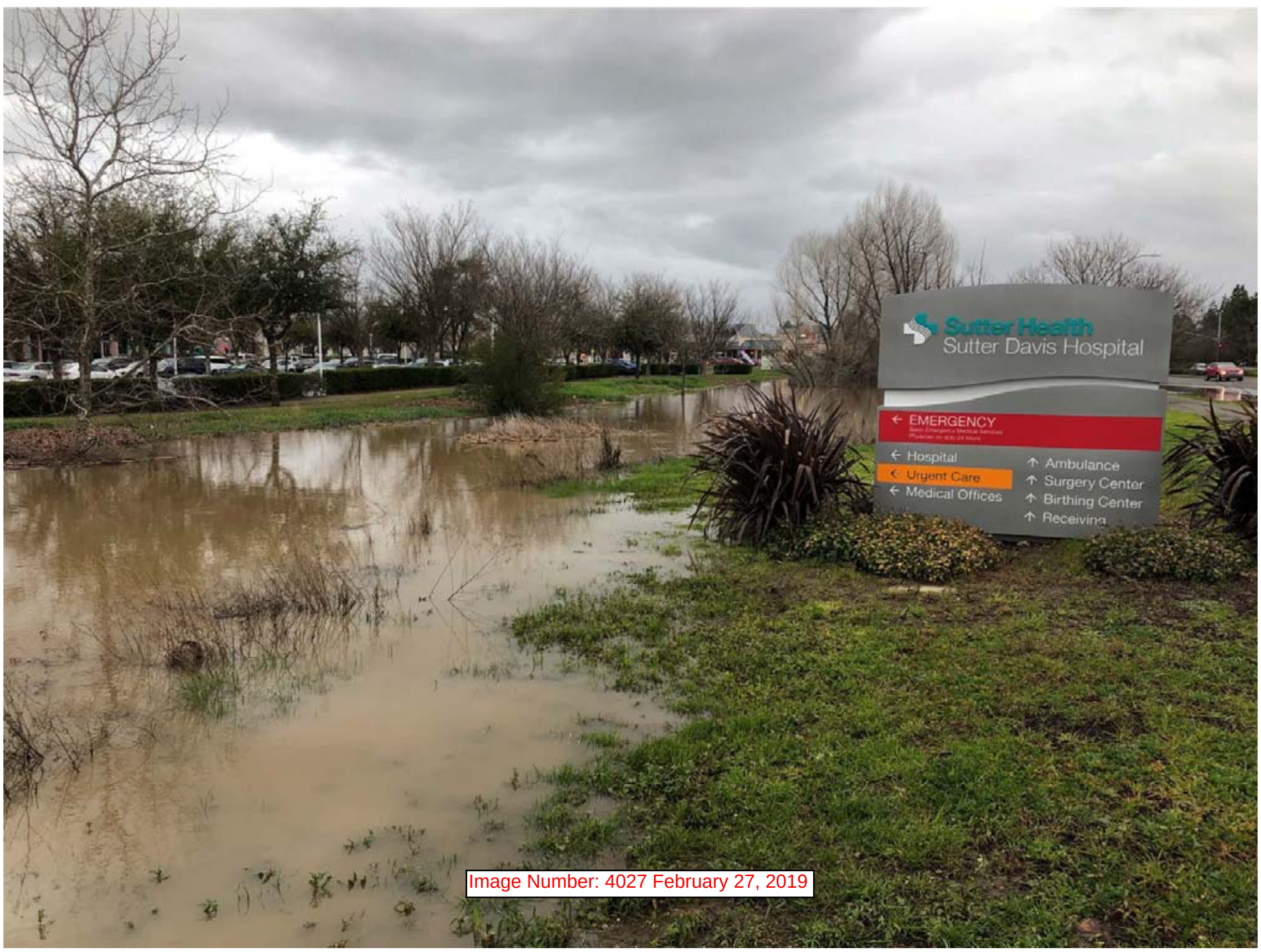


Image Number: 4027 February 27, 2019

Image Number: 4031 February 27, 2019

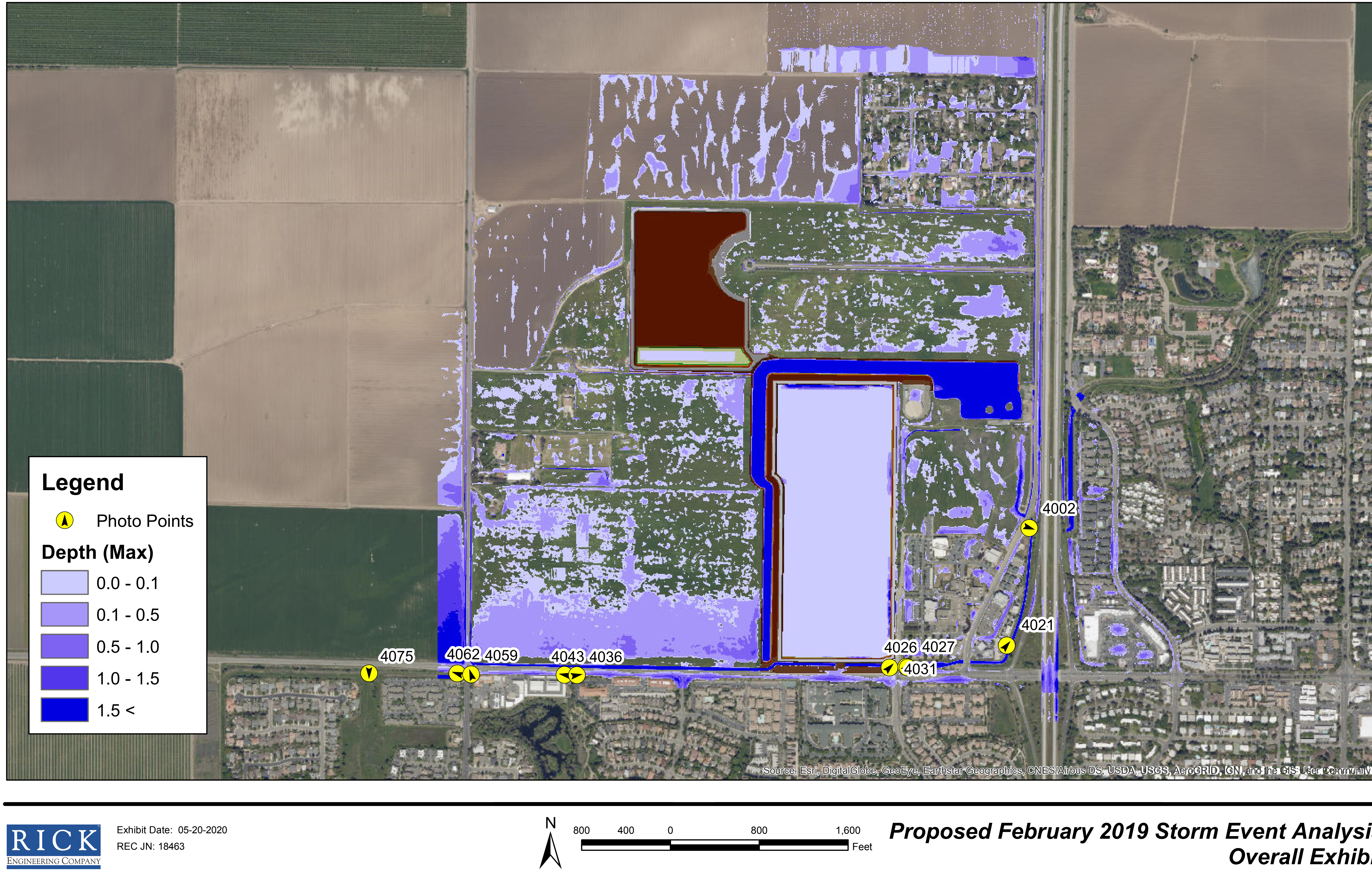
Image Number: 4036 February 27, 2019


Image Number: 4043 February 27, 2019

Image Number: 4059 February 27, 2019


Image Number: 4062 February 27, 2019

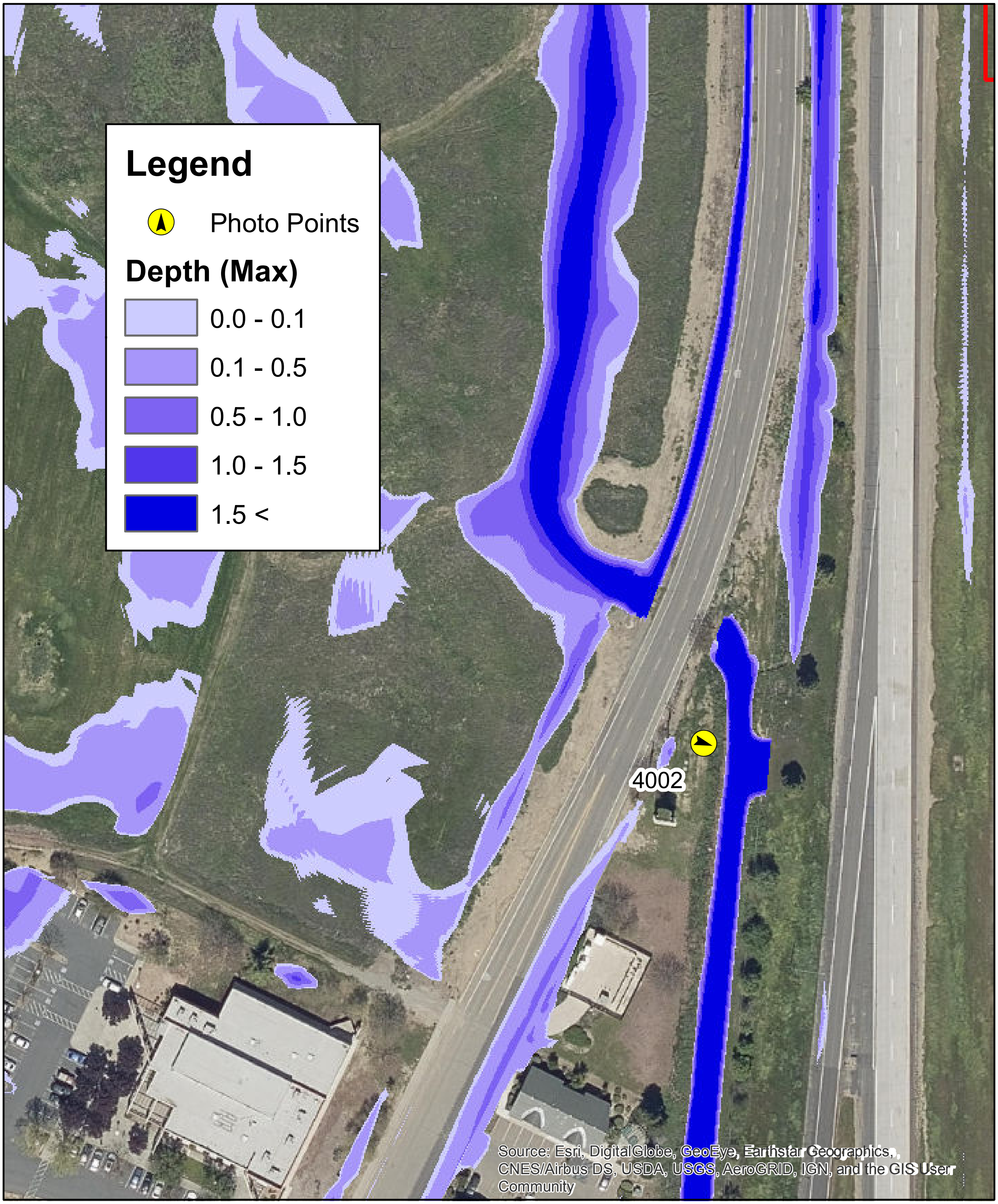

Image Number: 4075 February 27, 2019



RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020
REC JN: 18463

Proposed February 2019 Storm Event Analysis
Overall Exhibit



RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

REC JN: 18463

N

100 50 0 100 Feet

Proposed February 2019 Storm Event Analysis

Photo 4002

RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

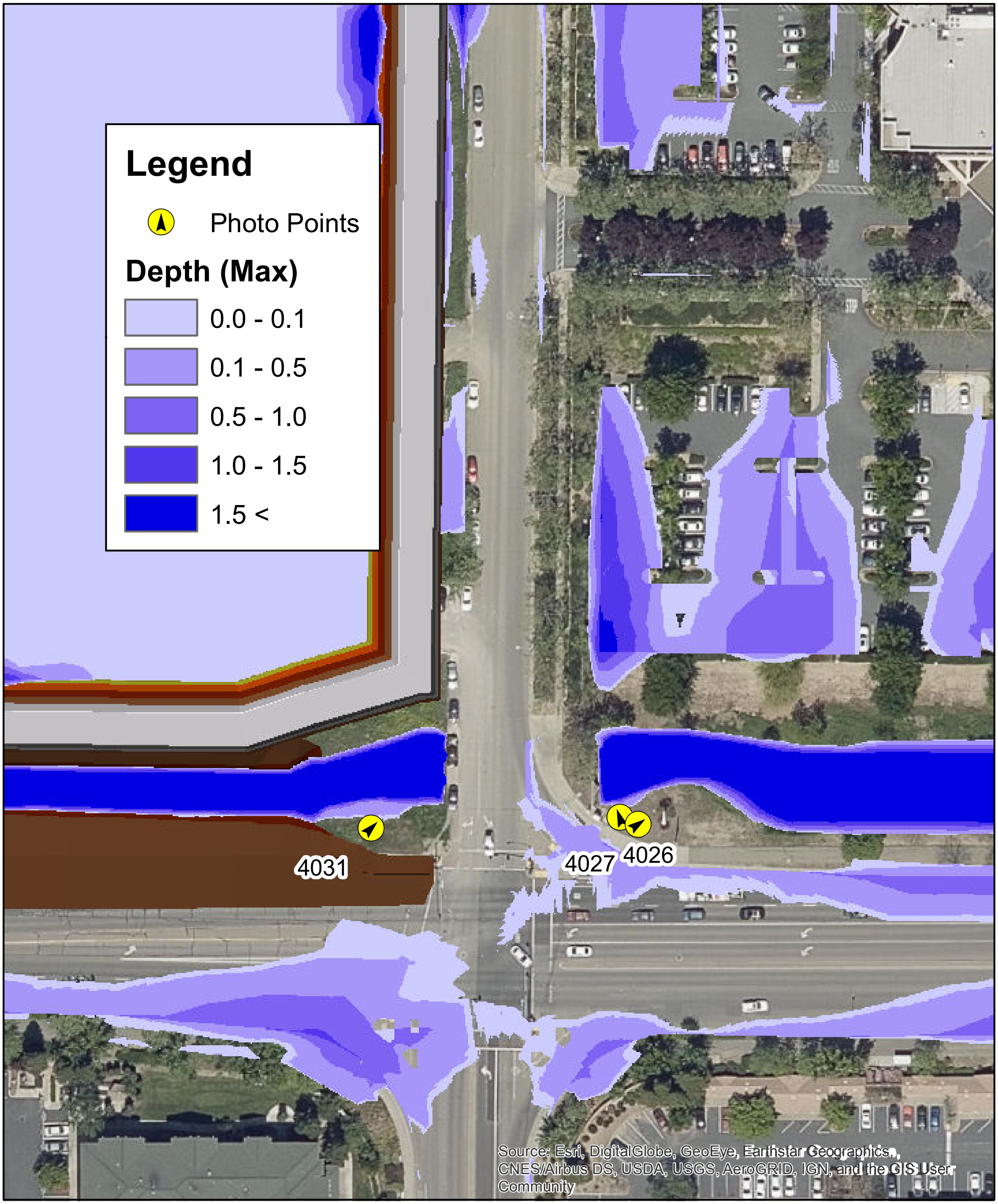
REC JN: 18463

N

100 50 0 100 Feet

Proposed February 2019 Storm Event Analysis

Photo 4021



RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

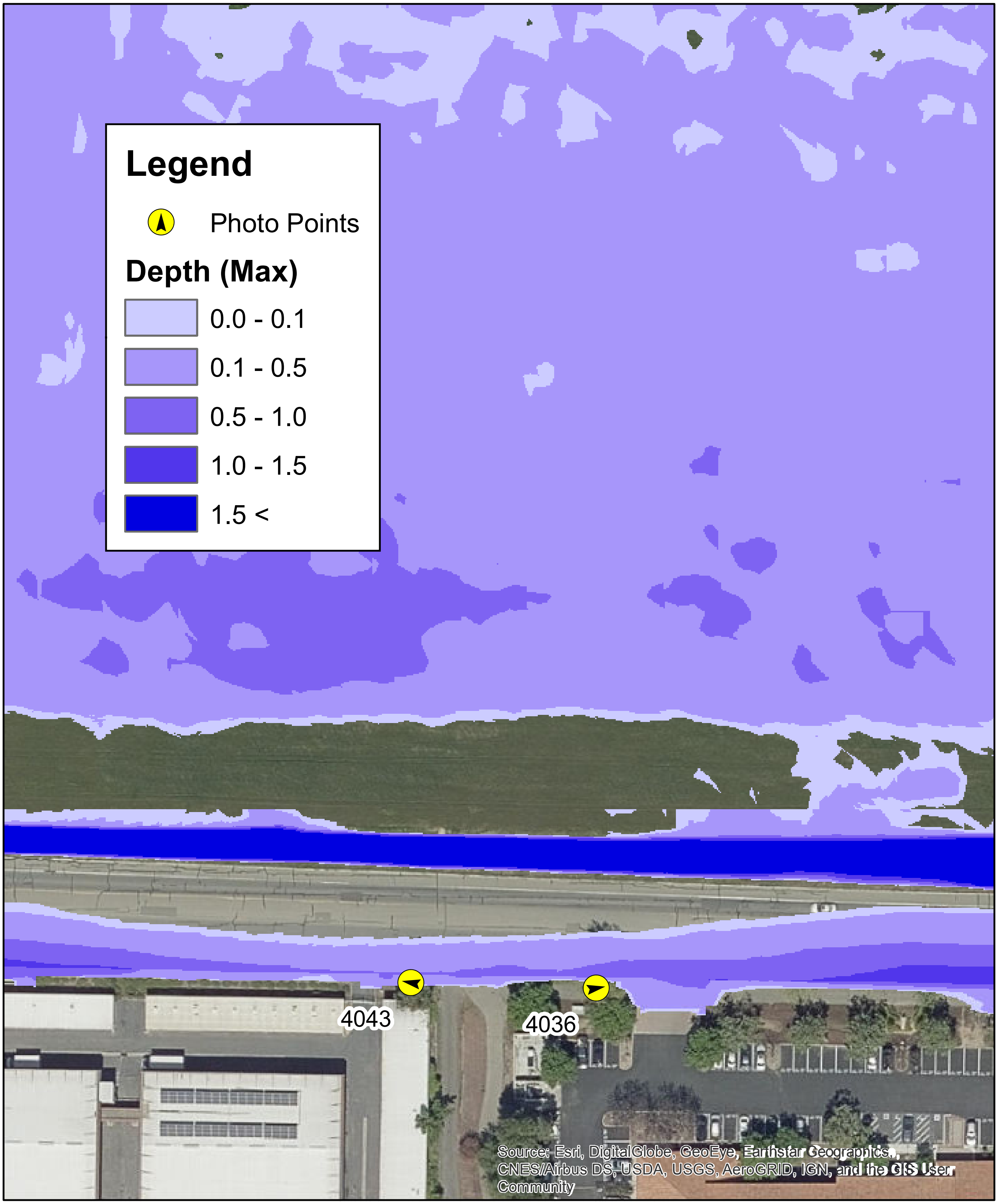
REC JN: 18463

N

100 50 0 100 Feet

Proposed February 2019 Storm Event Analysis

Photos 4026, 4027, and 4031



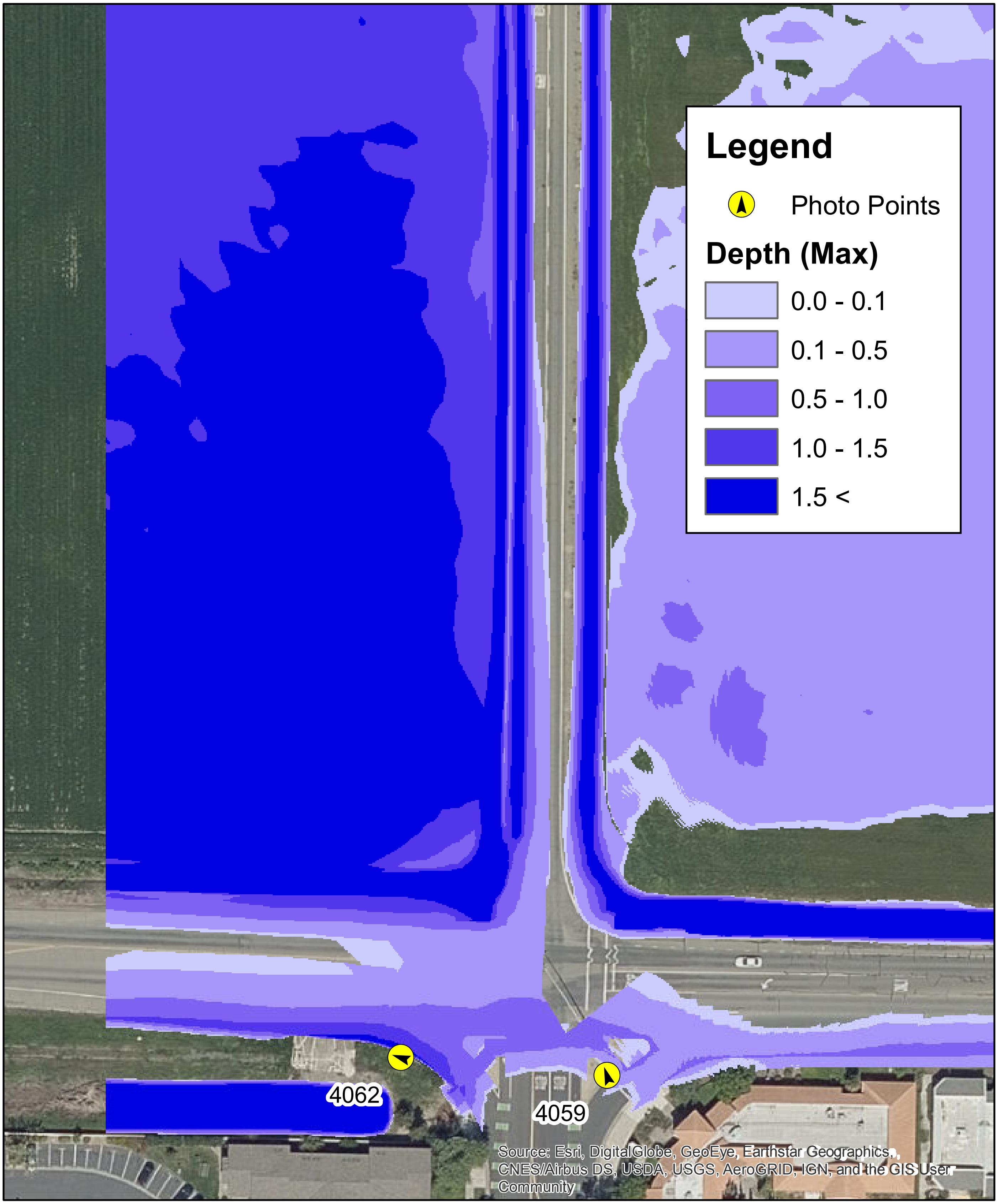
RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

REC JN: 18463

Proposed February 2019 Storm Event Analysis

Photos 4036 and 4043



RICK ENGINEERING COMPANY

Exhibit Date: 05-20-2020

REC JN: 18463

N

100 50 0 100 Feet

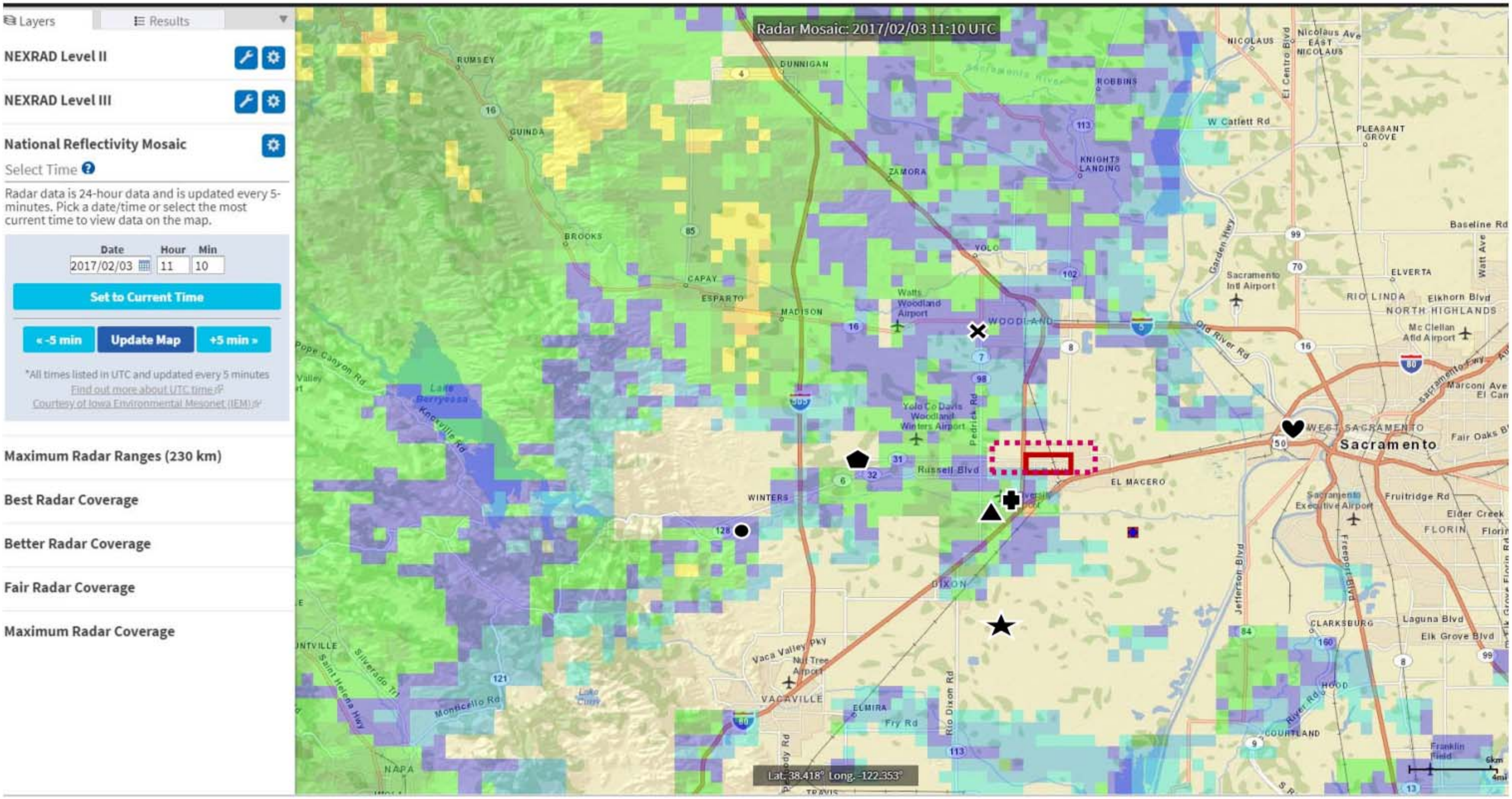
Proposed February 2019 Storm Event Analysis

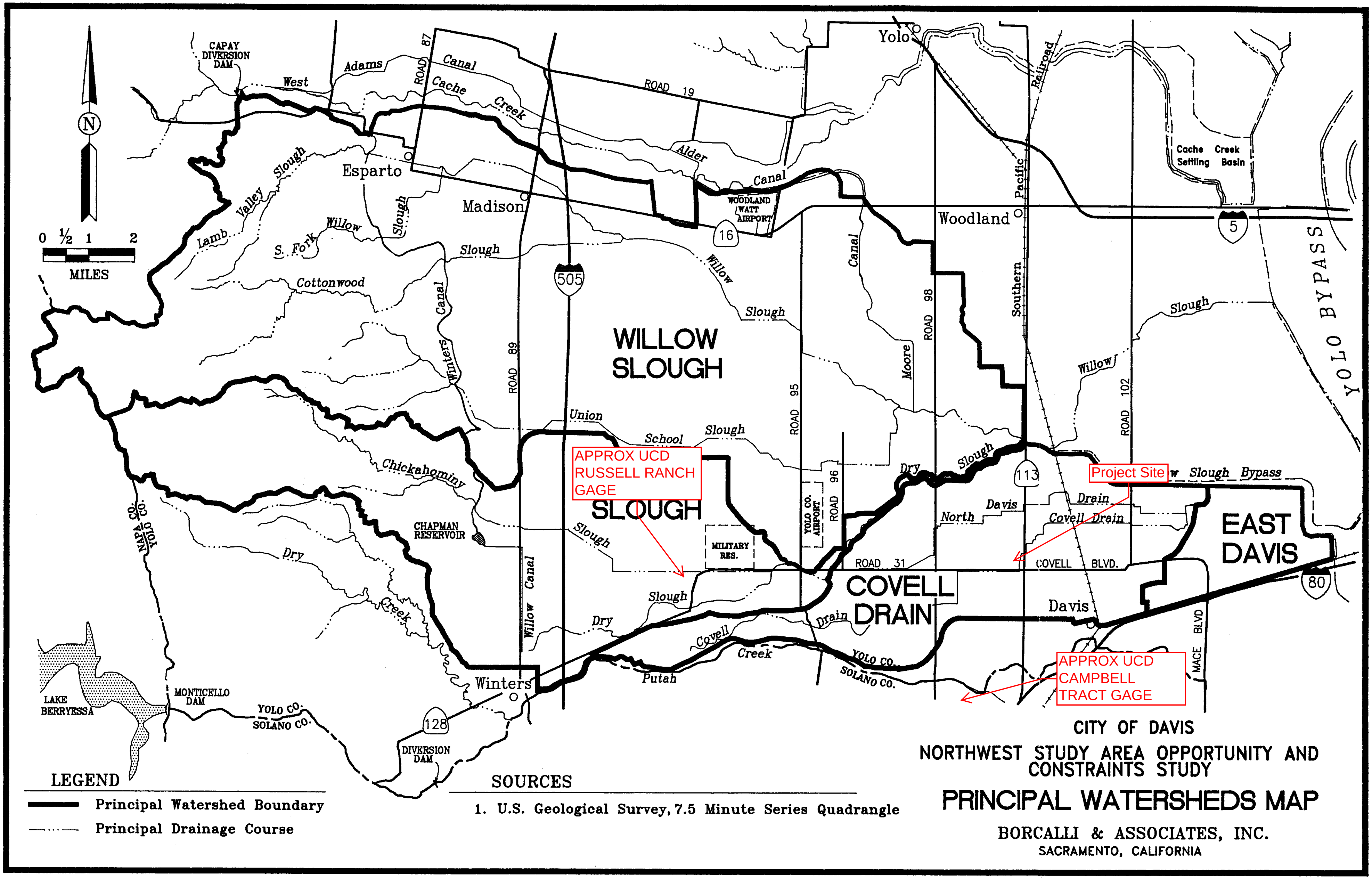
Photos 4059 and 4062

✚ CIMIS Davis ★ CIMIS Dixon ● CIMIS Winters ♥ CIMIS Bryte ✖ CIMIS Woodland

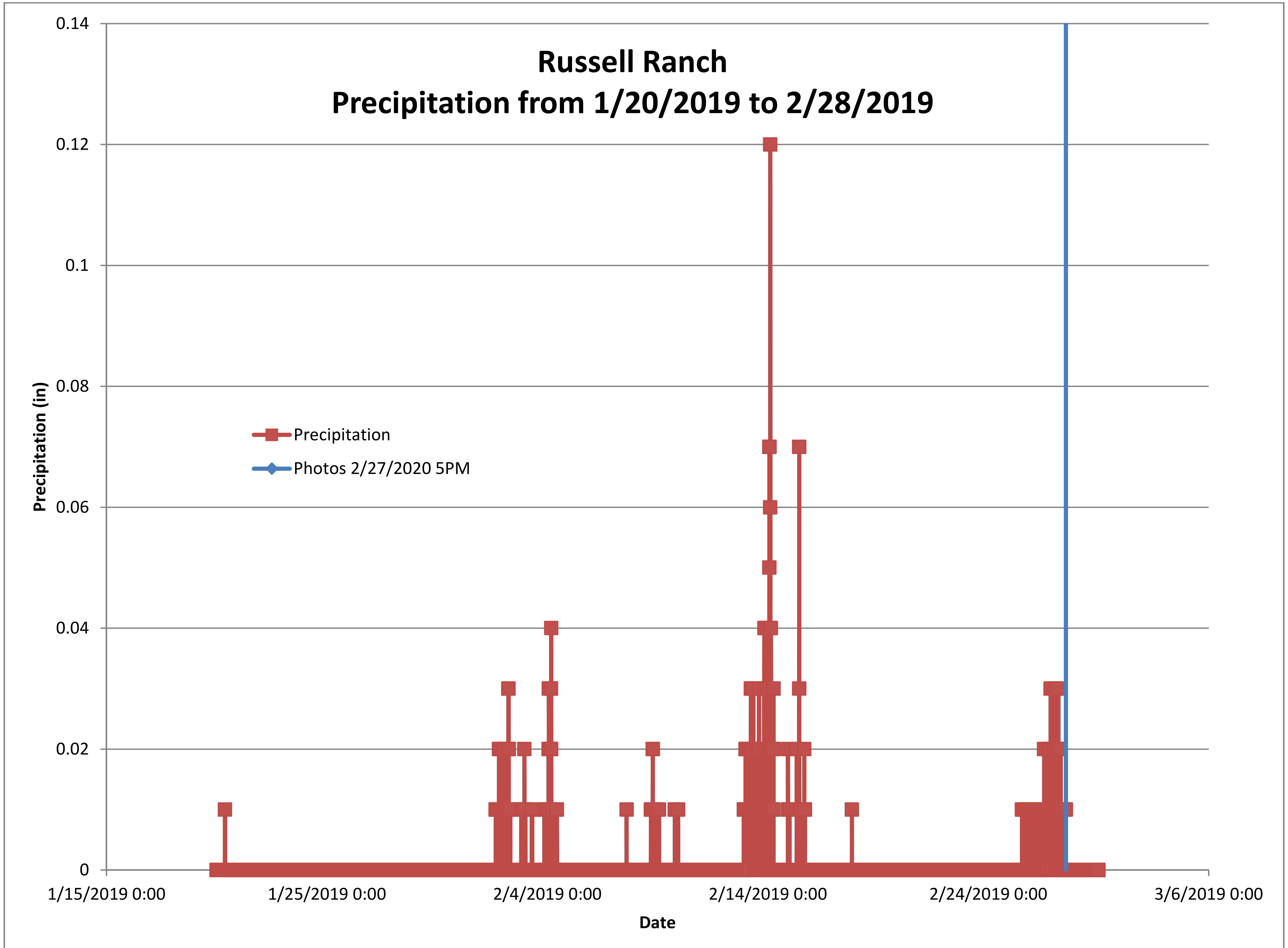
⬟ UCD Russell Ranch ▲ UCD Campbell Tract ▭ H Street Pump Station Watershed ⬚ Channel A Watershed

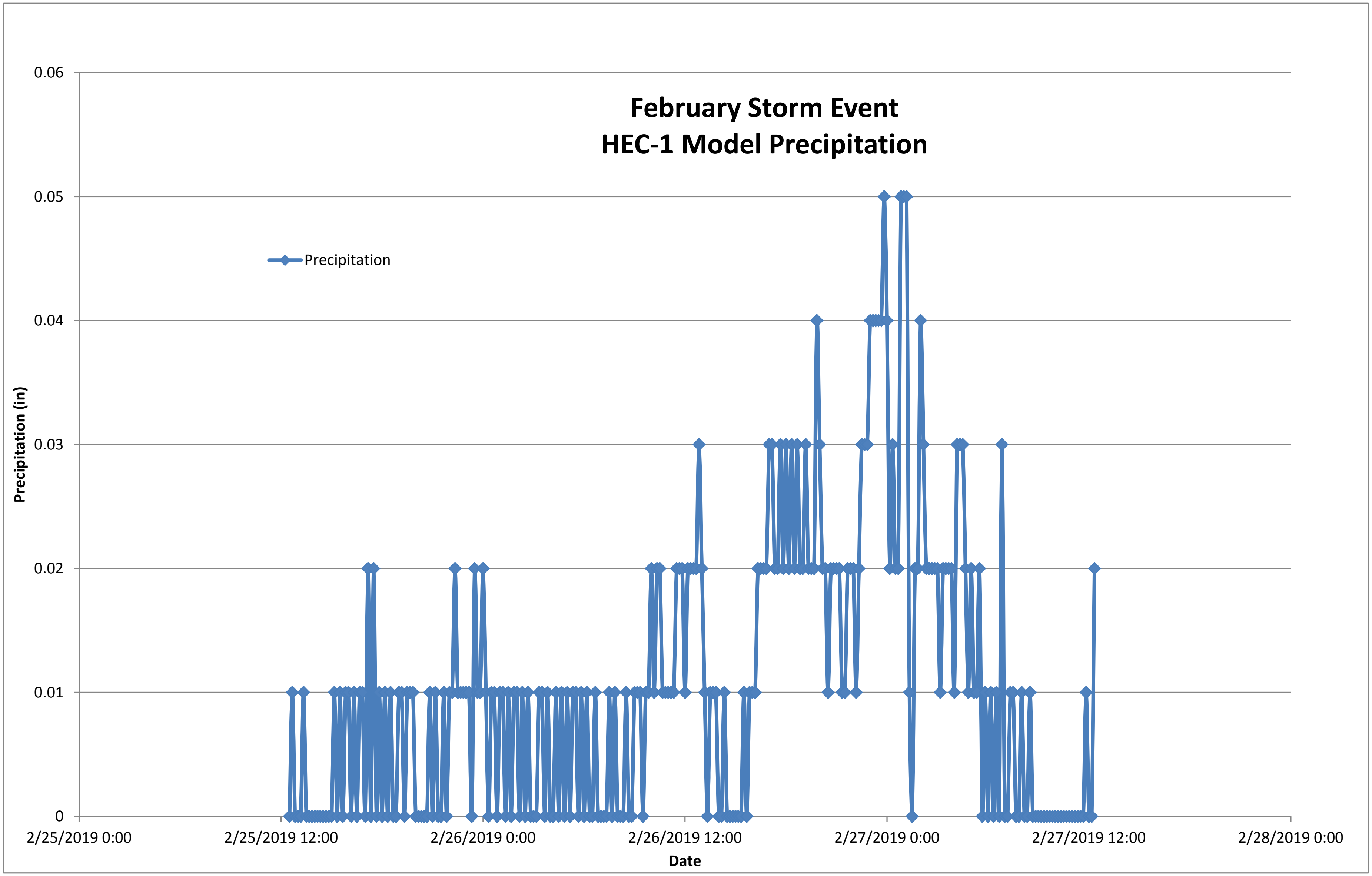
Image 1: Start of Storm: 2/3/2017, 4:10 am (11:10 UTC)

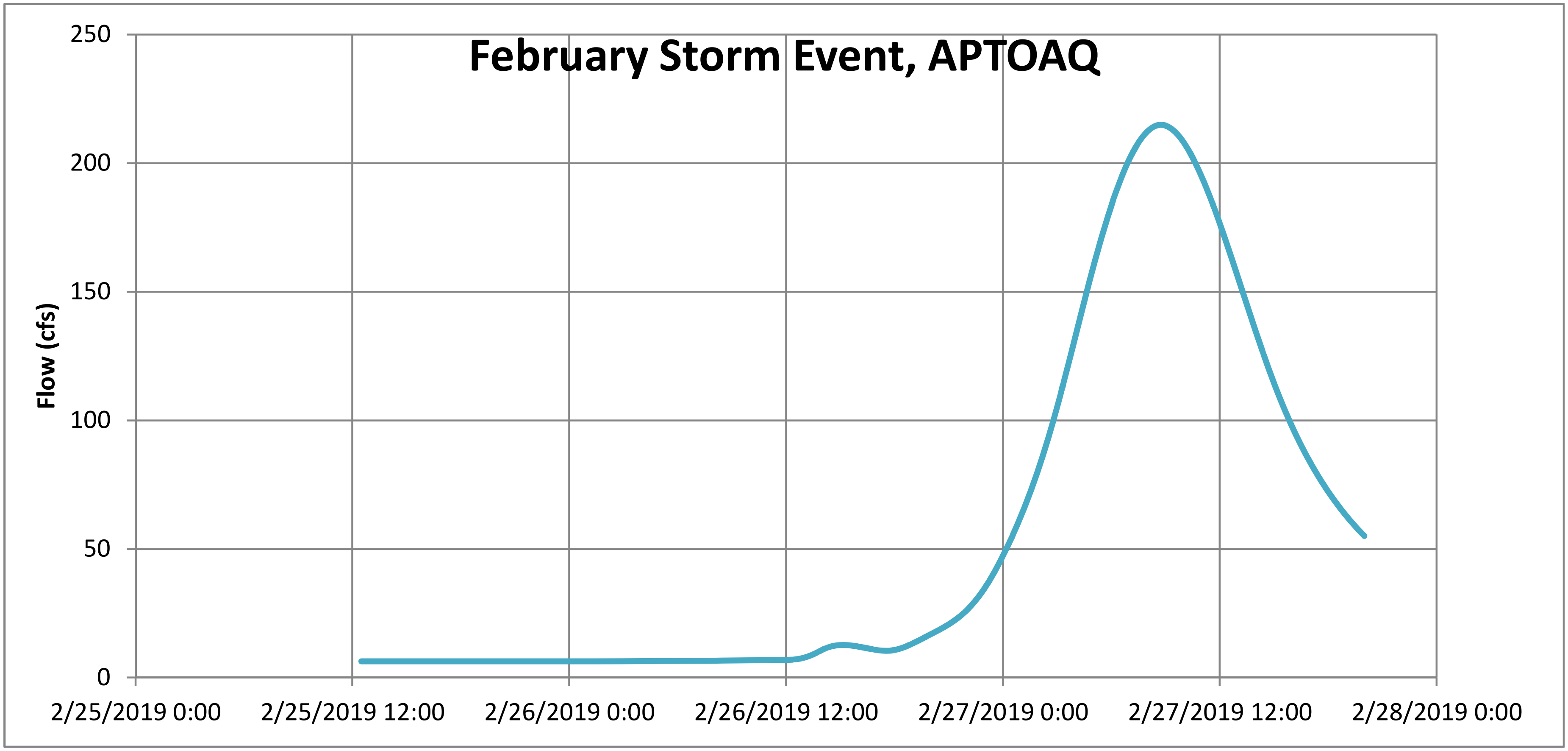


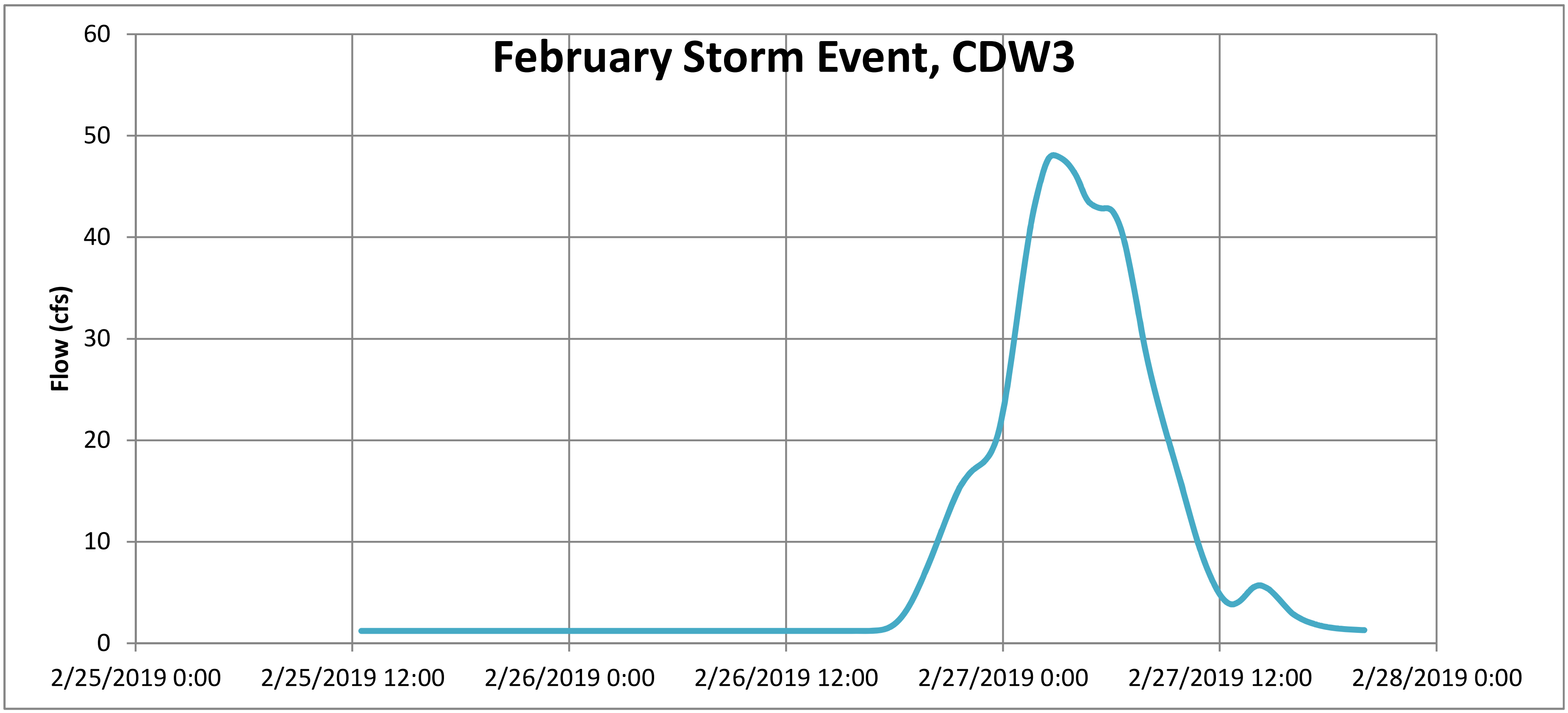

CITY OF DAVIS
NORTHWEST STUDY AREA OPPORTUNITY AND CONSTRAINTS STUDY
PRINCIPAL WATERSHEDS MAP
BORCALLI & ASSOCIATES, INC.
SACRAMENTO, CALIFORNIA
LEGEND
Principal Watershed Boundary
Principal Drainage Course
SOURCES
1. U.S. Geological Survey, 7.5 Minute Series Quadrangle
0 1/2 1 2
MILES
N
WILLOW SLOUGH
SLOUGH
COVELL DRAIN
EAST DAVIS
APPROX UCD RUSSELL RANCH GAGE
APPROX UCD CAMPBELL TRACT GAGE
Project Site
CAPAY DIVERSION DAM
West Adams Canal
Cache Creek
Esparto
Madison
Yolo
Woodland
Davis
Winters
ROAD 87
ROAD 19
ROAD 89
ROAD 95
ROAD 96
ROAD 98
ROAD 102
ROAD 31
COVELL BLVD.
MACE BLVD
505
16
113
5
80
128
Alder Canal
WOODLAND WATT AIRPORT
Southern Pacific Railroad
Cache Creek Settling Basin
YOLO BYPASS
Lamb Valley Slough
S. Fork Willow Slough
Cottonwood
Winters Canal
Willow Slough
Moore Canal
Union School Slough
Dry Slough
North Davis Drain
Covell Drain
Willow Slough Bypass
Chickahominy
CHAPMAN RESERVOIR
Dry Creek
MILITARY RES.
YOLO CO. AIRPORT
Willow Canal
Dry Slough
Covell Creek
Putah Creek
Drain
NAPA CO. YOLO CO.
YOLO CO. SOLANO CO.
LAKE BERRYESSA
MONTICELLO DAM
DIVERSION DAM

MAP 1

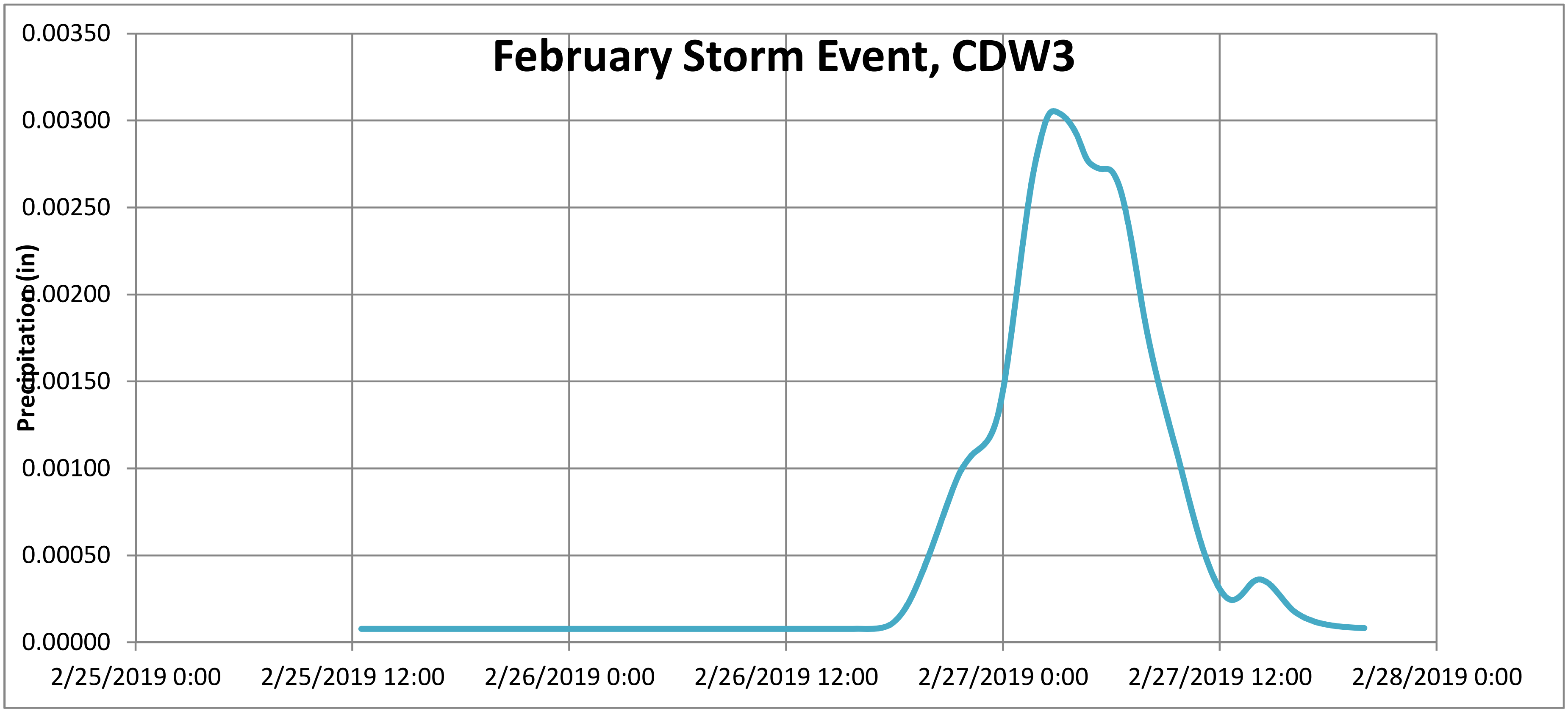

Russell Ranch
Precipitation from 1/20/2019 to 2/28/2019
Precipitation (in)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Precipitation
Photos 2/27/2020 5PM
1/15/2019 0:00
1/25/2019 0:00
2/4/2019 0:00
2/14/2019 0:00
2/24/2019 0:00
3/6/2019 0:00
Date


February Storm Event
HEC-1 Model Precipitation
Precipitation
Precipitation (in)
Date
0.06
0.05
0.04
0.03
0.02
0.01
0
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00

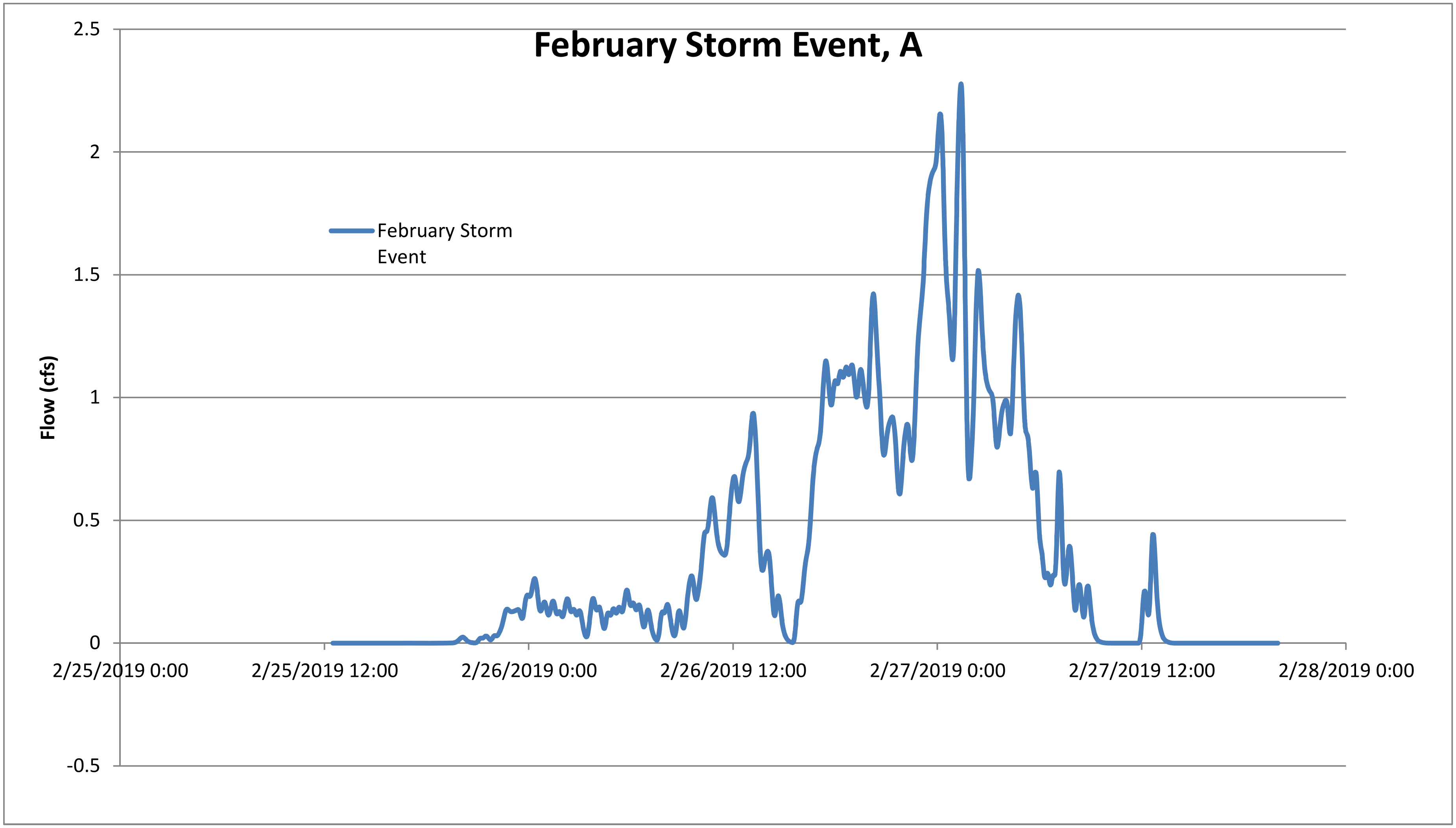

February Storm Event, APTOAQ
Flow (cfs)
250
200
150
100
50
0
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00

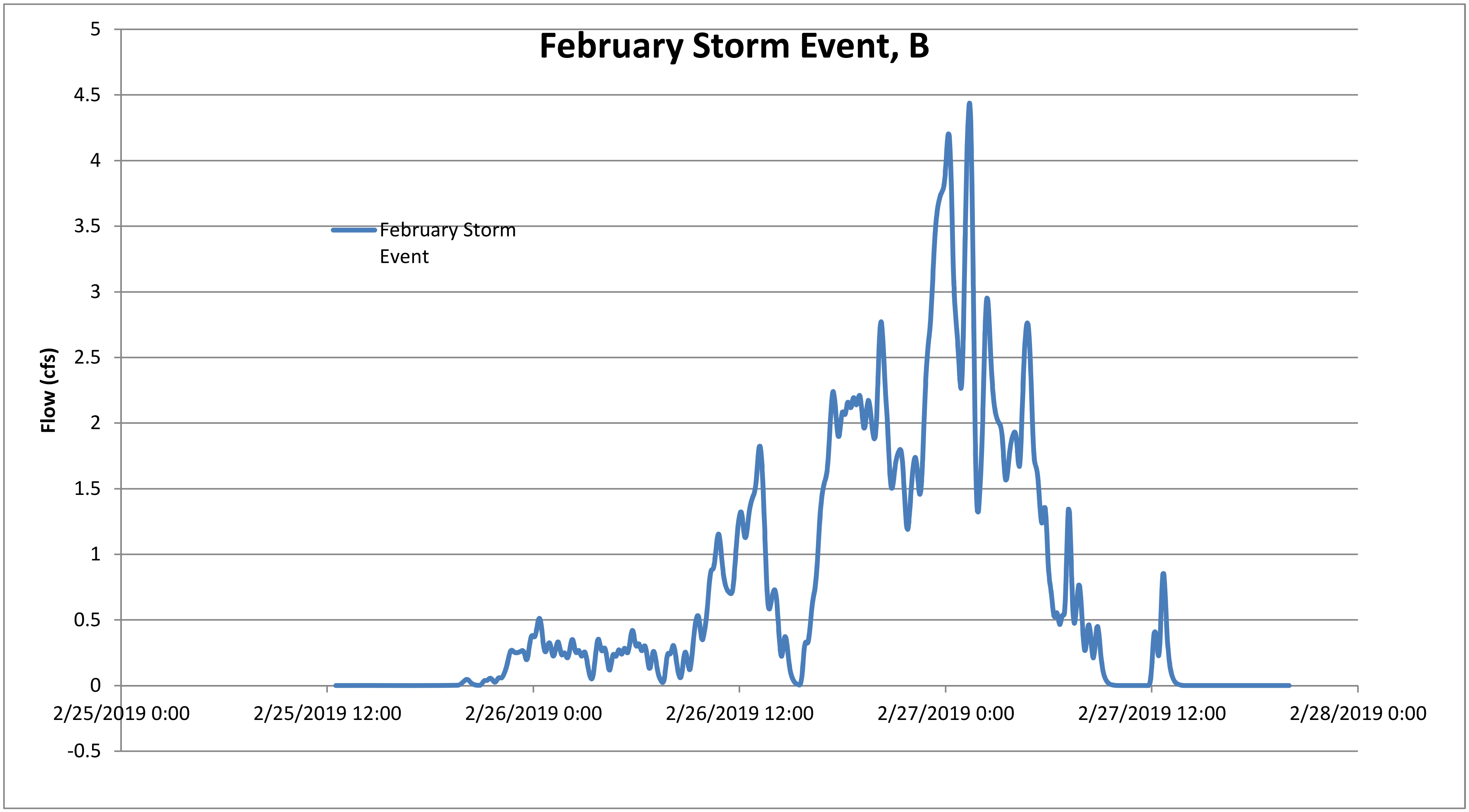


February Storm Event, CDW3
Flow (cfs)
60
50
40
30
20
10
0
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00

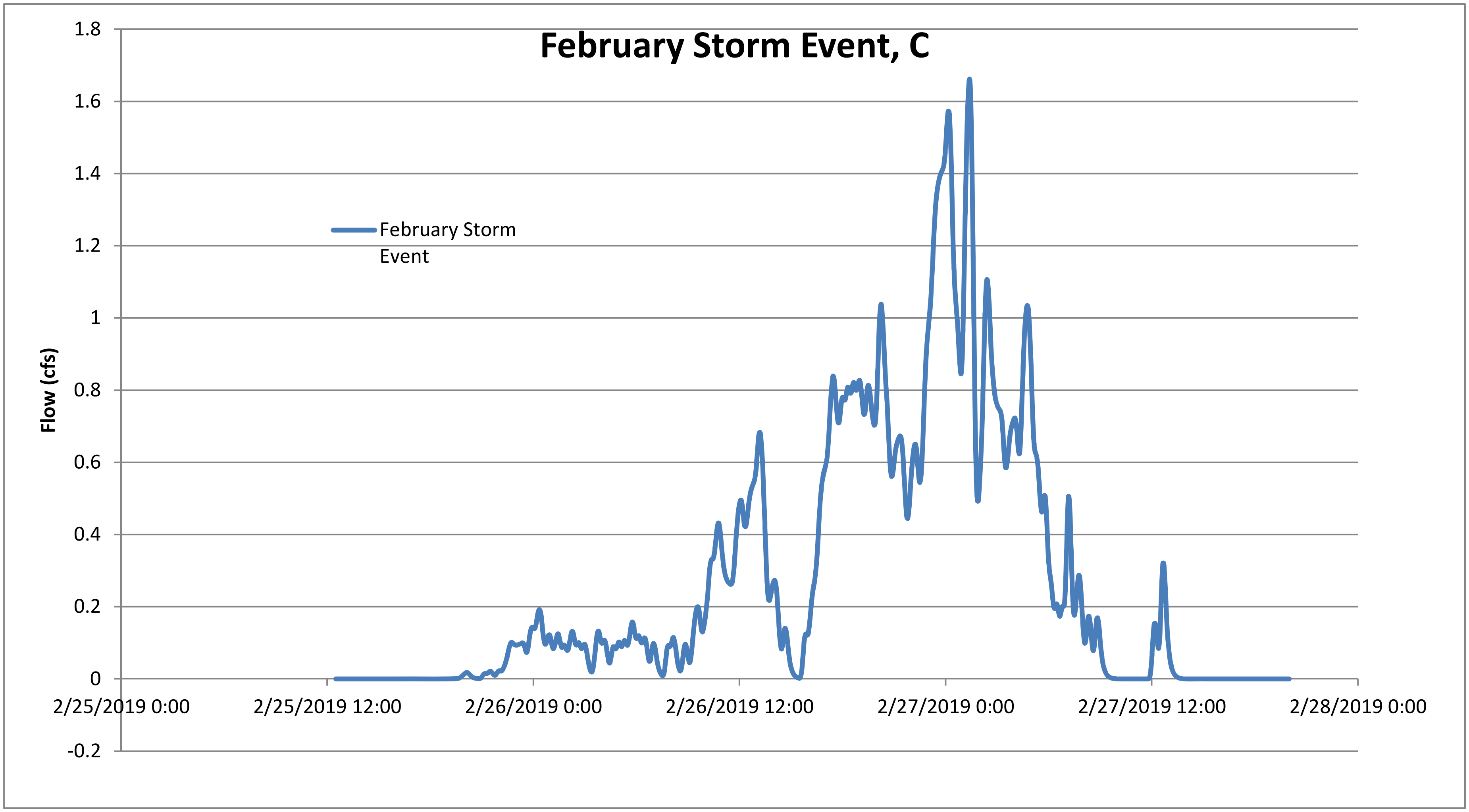


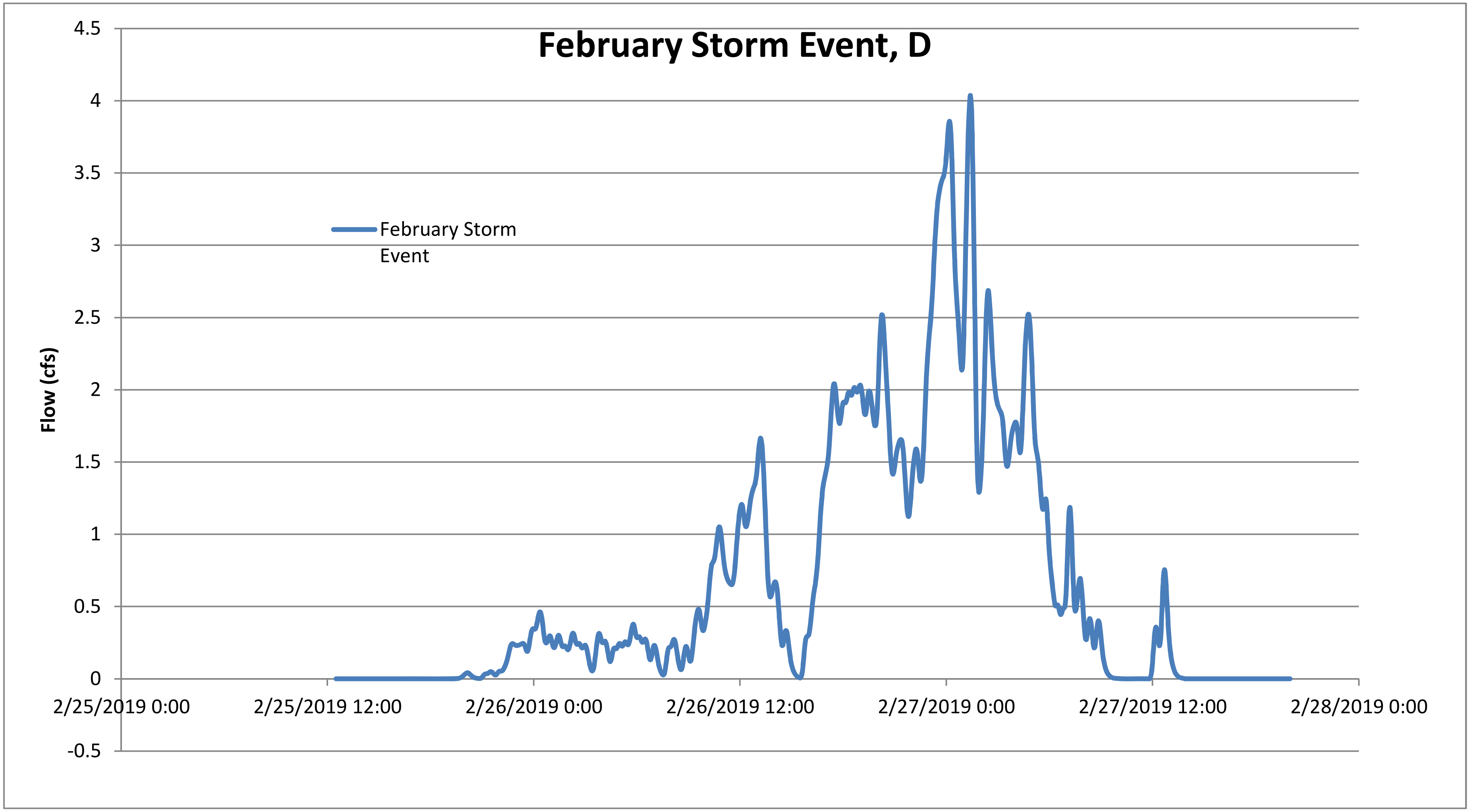
February Storm Event, CDW3
Precipitation (in)
0.00350
0.00300
0.00250
0.00200
0.00150
0.00100
0.00050
0.00000
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00


February Storm Event, A
2.5
2
1.5
1
0.5
0
-0.5
Flow (cfs)
February Storm Event
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00

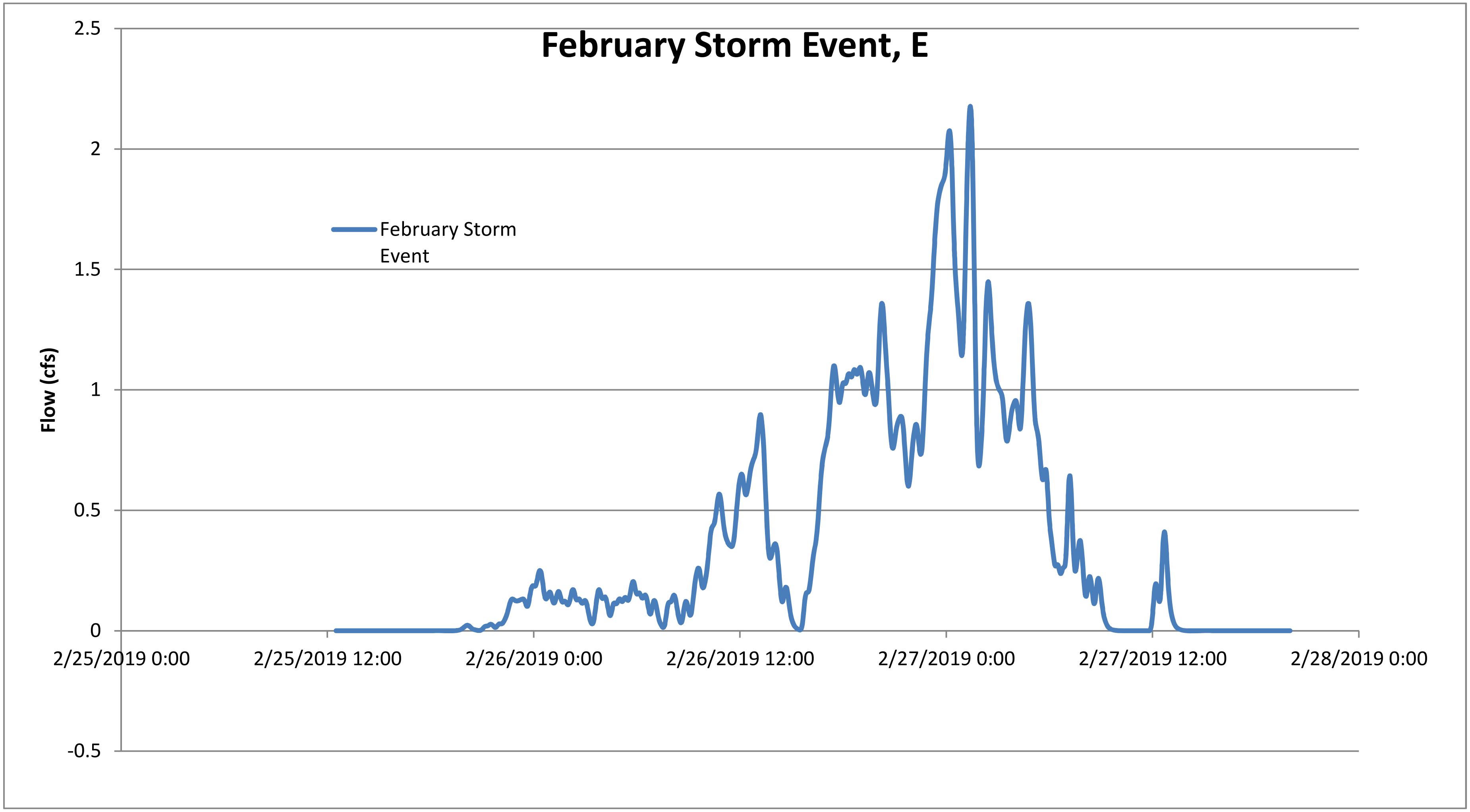


February Storm Event, B
Flow (cfs)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00
February Storm Event

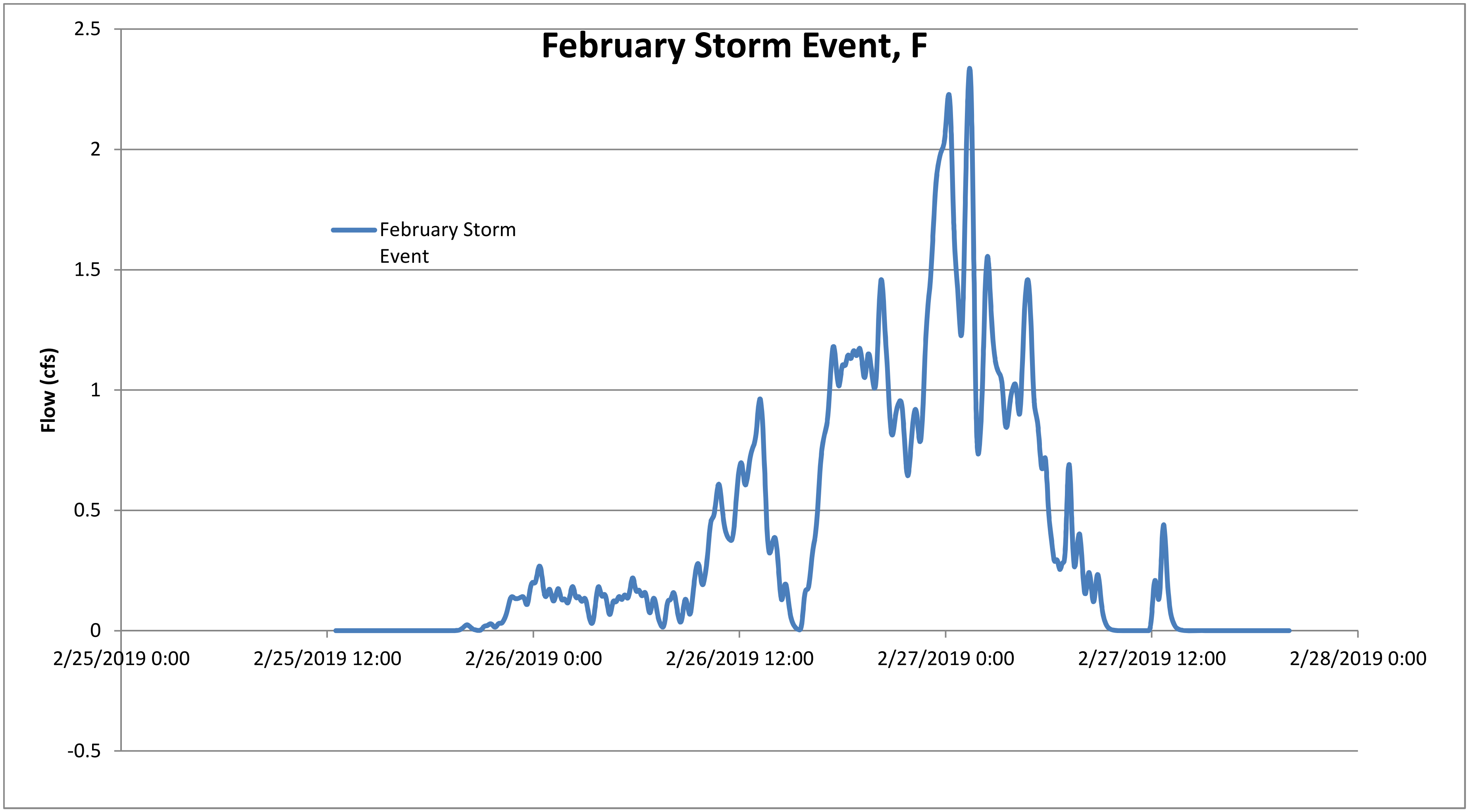

February Storm Event, C
February Storm Event
Flow (cfs)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00



February Storm Event, D
Flow (cfs)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
February Storm Event
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00



February Storm Event, E
Flow (cfs)
2.5
2
1.5
1
0.5
0
-0.5
February Storm Event
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00


February Storm Event, F
Flow (cfs)
2.5
2
1.5
1
0.5
0
-0.5
February Storm Event
2/25/2019 0:00
2/25/2019 12:00
2/26/2019 0:00
2/26/2019 12:00
2/27/2019 0:00
2/27/2019 12:00
2/28/2019 0:00