TETRA TECH EC, INC.

January 15, 2010

California Energy Commission
Docket No. 09-AFC-8
1516 9th St.
Sacramento, CA 95814

Genesis Solar Energy Project - Docket Number 09-AFC-8

Docket Clerk:

Included with this letter is one hard copy and one electronic copy of the ***Storm Water Flood Routing Calculation Report for the Genesis Solar Energy Project.***

The FLO- 2D modeling files that supplement the report will be submitted next week under separate cover.

Sincerely,

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Project Manager/Tetra Tech EC

cc: Mike Monasmith /CEC Project Manager

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STORM WATER FLOOD ROUTING CALCULATION

Prepared for

- INCLUDING CONCEPUAL GRADING AND DRAINAGE PLANS

Genesis Solar Energy Project
Riverside County, California

52004617
January 15, 2010

WorleyParsons
resources & energy

CALCULATION COVER SHEET

CLIENT	Genesis Solar, LLC		
PROJECT	Genesis Solar Energy Project		
SUBJECT	Stormwater Flood Routing Calculation		
JOB NUMBER	52011206	WBS NUMBER	024
CALCULATION NO.:	GENI-0-DC-024-C-001	PAGE 1 OF	14

DESCRIPTION/PURPOSE

Perform a dynamic flood routing model to simulate unconfined overland flow and channel flow in order to do a conceptual design of stormwater channels capable of diverting the 100-year storm around the proposed Genesis Solar Energy Project site. Perform an analysis of pre-project flow conditions and an analysis of post-project flow conditions to determine changes in flow patterns due to construction of the project. Channels and outlet protection shall be designed to withstand erosion and discharge flows to down gradient undisturbed areas. The channel outlets shall be designed to distribute flows back to the down gradient of the site area to the maximum extent possible.

METHOD OF ANALYSIS

FLO-2D Software is used for dynamic flood routing. Flowmaster is used for calculating flow depths in channels and comparing to depths from FLO-2D. Culvertmaster is used to design box culverts and flood distribution outlet structures.

CODES AND STANDARDS

None applicable.

INFORMATION SOURCES

1. Worleyparsons, Drainage, Erosion and Sediment Control Plan, August 19, 2009.
2. USGS 10-meter topographic data (www.USGS.gov).
3. California Soil Resource Lab, STATSGO CA, Mapunit Browser.
4. USDA, TR-55 Manual, June 1986.
5. FLO-2D Reference Manual 2009.
6. "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4.
7. Airborne Laser Terrain Mapping, LIDAR data set, 2007.
8. CASQA, California Stormwater Quality Association, California Stormwater BMP Handbook, Construction, January 2003.

Software Used

Title	Version	Validated (Yes/No/NA)
FLO-2D	2009.06	Yes
Flowmaster	08.01.066.00	Yes
Culvertmaster	03.01.009.00	Yes

REV	DATE	DESCRIPTION	PAGES REVISED	PAGES ADDED	PAGES DELETED	BY/DATE	REV/DATE	LDE/DATE
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C								
B	1-15-10	Revision B	ALL	N/A	N/A	D. Sheth	E. Leiby	B. Anders
A	12-3-09	ORIGINAL ISSUE	NA	NA	NA	D. Sheth	E. Leiby	B. Anders

ASSUMPTIONS

Contained in the body of the calculation.

RESULTS AND CONCLUSIONS

This calculation validates that capturing the up gradient flows and channeling them around and through the solar facility site is a sound engineering solution to storm water management and the impacts from this design solution can be minimized by spreading the flow released from the diversion channels.

This calculation also shows that engineering variables and computation methods play a significant role in calculating the up gradient storm flow volumes that reach the project location and that, due to the very flat site topography, use of USGS 10 meter topographic data or LIDAR data yield similar results. The effects of engineering variables is shown in table 2 that provides channel flows for the 100 year storm event using two different CN values, and section 1.4.3 “Sensitivity Analysis” shows the 100 year and 5 year storm flows using two different infiltration methods. Attachment “L” provides a comparison of the outlet flow distribution using the two different topographic data indicating that the outflow results are similar. Additionally, this calculation shows that a comparison of down gradient conditions using the 10 meter USGS topographic data for “pre project” and LIDAR topographic data for “post project” conditions yields a conservative impact.

The “pre project” flow analysis, both up gradient and down gradient of the proposed project site, was preformed using USGS 10 meter topographic information. The development of the site intercepts the up gradient flows, channels the flows around and through the proposed site, and discharges those flows down gradient of the proposed site. Analysis of the “post project” flow was used performing topographic data from a LIDAR survey of the site.

By comparing the “post project” flow from Channel A using LIDAR (Run 4) with the “post project” flow from Channel A using the 10 meter USGS topography (Run 4A), it is shown that the down gradient “post project” flow patterns are similar and that using LIDAR data for the “pre project” flow analysis down gradient of the site will not yield additional information. For the purpose of this write up, the “impact” down gradient of the project is identifying locations that may now not see the influence of up gradient flows. By comparing the two runs in Attachment “L”, one can see that the use of the LIDAR data for the “post project” analysis yields a very slight increase in the area that does not see the influence of up gradient flows. These results are consistent with site conditions, where the slope of the site is extremely gradual (approximately 0.4%), and where the locations of flow across the site are extremely shallow, wide and braided.

This calculation also shows that input parameters to the hydraulic calculations/model and the hydraulic/calculation model used have a large impact on flow volume reaching the site from up gradient. From one method, it is shown that up gradient storm flows from a 5-yr storm event have limited effect on the site and flows from up gradient of the site do not necessarily reach the down gradient area of the site. These results are consistent with on-site detailed channel and geomorphology investigations that indicate this phenomenon (see Geomorphology Investigation prepared by Dr. Miles Kenney).

The diversion channels will be sized to handle the 100 year flow using the more conservative SCS method. The “Sensitivity Analysis” in section 1.4.3 provides data on flow rates using the SCS method and an alternate method. This provides an indication of why it is stated the SCS method is more conservative. Utilization of the SCS method will ensure that the channels will be sized adequately to handle flows even larger than may be expected to reach the site. See Conceptual Grading Plans GENI-1-DW-112-716-004-001 through -007 and Conceptual Grading Details GENI-1-DW-112-726-005.

For comparison of down gradient flows and effects due to the project development, this calculation also provides a conservative analysis of these impacts. In the existing condition, it is assumed that all overland flow from the up gradient portion of the site drain down gradient of the site as sheet flow. This is shown on Runs 1 & 2, which uses the USGS data for the "pre-project" conditions for the 100 year storm. This run indicates that, in a 100 year storm, the entire down gradient area of the site "sees" a small amount of sheet flow that is generally uniformly distributed over the entire down gradient area. Based on the on site observations and by a review of aerial photographs it appears that there are various portions of the area down gradient of the proposed site in the existing conditions that do not see any up gradient flow. Although this is not shown in a FLO 2D analysis that uses the LIDAR data to model the down gradient "pre project" flows, this can be seen in the comparison of Run 4 and 4A (Attachment L). Run 4 and 4A are "post project" runs that show the storm water release from Channel A. In Run 4 (using the LIDAR topographic data) small areas where the flow has separated and re-connected can be seen. Where the flow separates, small areas are shown that do not "see" flow. In comparison, run 4A (using USGS 10 meter topographic data) shows these small areas receiving some level of flow. Therefore, by using the USGS 10 meter topographic data for pre-project flows and comparing this to the post project flows using LIDAR data, a conservatively larger area of "potential impact" is identified. For the purposes of this report, the "area of potential impact" is that area down gradient of the site that received flows from up gradient during the "pre project" 100 year storm event (Run 1) compared to that area down gradient of the site that received flows from up gradient during the "post project" 100 year storm event (Runs 4, 5, and 6). This same analysis is completed for the 5 year storm flows (Run 7 for "pre project", and Runs 8, 9, and 10 for "post project").

Actual field observations indicate that water sourced from up-gradient only appears to reach the site during larger (less frequent that 5 years or so) storm events and that the main source of water to many areas is only the rainfall that falls over them. Additionally, field observations indicate that even during periods where overland flow occurs, every small channel or gully does not flow from up gradient of the site to the down gradient area of the site. Some channels start and end within a short distance. The post-development impacts down gradient of the site occur in areas where water that flowed from up gradient or within the site to down gradient of the site no longer reaches the down gradient areas due to development of the site. Design measures are implemented to minimize these impacts by releasing the diverted flows across a large area of the southern boundary.

ATTACMENT M

Attachment M is provided to validate the earlier comment that impacts from this design solution can be minimized by spreading the flow released from the diversion channels. In Attachment M, an exhibit is provided titled "Run 8-9-10 Combined 5 Year". This exhibit combines the outflows from all three channels and shows how those flows, from a 5 year event, are distributed based on the conceptual design referenced herein. This shows that, based on the current design, the 5 Year flow can and is distributed along a large portion of the southern boundary of the site. This exhibit does not include the flow distribution from the on-site detention pond. Flows from the on-site detention pond, which is located in the SW corner of each of the solar fields, can be distributed to provide additional storm water discharges to the down gradient area of the site. These runs (runs 8, 9, and 10) only show the outflow from the channels to indicate how those flows that are 'captured" from up gradient are distributed. These runs do not include the rain that falls locally, down gradient of the site, nor do they include the outflow from the detention ponds.

Additional FLO 2D runs can be completed that provide the outflow from the detention pond hydrographs (5 Year storm), and incorporate rainfall in the area down gradient of the site. These measures will provide additional storm flows from areas up gradient or within the project site to areas down gradient of the project site.

Additionally, channel outflow structures and detention basin outflow structures can be located and engineered during detailed design to align channel outflow with locations desired, thus ensuring that up gradient flows are directed to the desired locations (i.e. the jurisdictional waters, the number size and location of which are yet to be agreed upon).

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Attachments

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E. Pre-development analysis - FLO-2D Graphical Results for Velocity and Depth
F. Channel Design - FLO-2D Spreadsheet, Flowmaster and Culvertmaster Results
G. Cross Section Hydrographs
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1.1 Introduction

Genesis Solar, LLC, is proposing a Solar Thermal Power Generating Project to be built near Ford Dry Lake in Riverside County, State of California. The Project site will be located in the Colorado Desert between the communities of Blythe, CA (approximately 24 miles east) and Desert Center, CA (approximately 27 miles west).

The purpose of this calculation is to perform a pre-development flood analysis using FLO-2D and examine the effects of the 100-yr storm in the area (mainly up gradient) of the proposed solar plant site [what about 5 yr? And don't you need to explain why you chose the 100 yr and 5 yr?]. Following this, perform a post-development flood analysis by approximately locating diversion channels in the FLO-2D model around the proposed site in order to examine the effects of the diversion channels at the down gradient end and to examine the effects of the project on changes in flow patterns. The velocities at the up gradient and down gradient end of the channels will be reviewed so that proper erosion control methods are implemented.

1.2 Hydrologic Setting

The project site lies near the toe of alluvial fans emanating from the Palen Mountains to the north and the McCoy Mountains to the east. The eastern portion of the Site is underlain by a broad valley-axial drainage that extends southward between these mountains and drains to the Ford Dry Lake playa located about 1 mile south of the Site.

1.3 Site Development

From Reference 1, off-site storm water flows are sourced from a large area to the north of the Site (approximately 91,627 acres). Due to the magnitude and type of terrain, a main concern is the presence of storm flushed flood events. In order to address this concern, the runoff originated by the up gradient areas will be diverted around Units 1 and 2 using berms and channels capable of conveying flows for a 100-yr, 24 hour storm event.

1.4 FLO-2D Analyses

The following is a list of the analyses that were run in FLO-2D and are explained in further detail in the following sections.

TABLE 1

Run Number	Topography Data	Storm Event	Grid System	Description
Run 1 (Attachment E)	10-m USGS	100-yr	200'x200'	Pre-Development Analysis using soils map with CN values for fair condition to determine flows to each channel.
Run 2 (Attachment E)	10-m USGS	100-yr	200'x200'	Pre-Development Analysis using soils map with CN values for poor condition to determine flows to each channel.
Run 2A	10-m USGS	100-yr	200'x200'	Pre-Development Analysis using Green-Ampt infiltration parameters to determine flows to each channel for comparison with RUN 2.
Run 3	10-m USGS	100-yr	200'x200'	Post-Development – Analysis to determine depths in channels for comparison with Flowmaster.
Run 4	LIDAR data set	100-yr	20'x20'	Post-Development – Using hydrographs from

(Attachment H, L)				RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel A
Run 4A (Attachment L)	10-m USGS	100-yr	200'x200'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel A. This is for comparison with LIDAR data, and Run 4.
Run 5 (Attachment I)	LIDAR data set	100-yr	20'x20'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel B/C.
Run 6 (Attachment J)	LIDAR data set	100-yr	20'x20'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel D/E.
Run 7 (Attachment E)	10-m USGS	5-yr	200'x200'	Pre-Development Analysis using soils map with CN values for poor condition to determine flows to each channel.
Run 7A	10-m USGS	5-yr	200'x200'	Pre-Development Analysis using Green-Ampt infiltration parameters to determine flows to each channel for comparison with RUN 7.
Run 8 (Attachment H)	LIDAR data set	5-yr	20'x20'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel A
Run 9 (Attachment I)	LIDAR data set	5-yr	20'x20'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel B/C.
Run 10 (Attachment J	LIDAR data set	5-yr	20'x20'	Post-Development – Using hydrographs from RUNS 1& 2 and using it as the inflow hydrograph at the down gradient end of channel D/E.

1.4.1 Pre-development Analyses

FLO-2D was used to evaluate the maximum flows to each channel from a 5-yr and 100-yr storm event using the entire tributary area. The pre-development run was done using a grid system of 200 ft by 200 ft using elevation data from 10 meter DEM (Reference 2) and the input parameters as identified below.

A. Soils

From Reference 3, the soils with their hydrologic soil group (HSG) on the site are classified as follows:

Soil Unit	Description	
CA907	Rock Outcrop-Tecopa-Lithic-Torriorthents	HSG D
CA913	Rock Outcrop-Lithic-Torriorthents-Calvista	HSG D
CA918	Rock Outcrop-Laposa-Quiltosa	HSG C
CA921	Rositas-Carsitas-DuneLand	HSG A
CA923	Playas-Rositas-Meloland	HSG D

CA927 Gunsight-Rillito-Chuckwalla HSG B
CA928 Cherioni-Hyder-Cipriano HSG D

See Attachment A.

B. Manning's N-value(s)

Based on engineering judgment the value used in the run is 0.025, conservatively. Note that this value normally corresponds to bare soils with minimum vegetation. The watershed consists of steep slopes from the Palen Mountains to the north and the McCoy Mountains to the east. The CN value of 0.025 is considered conservative (i.e. it will yield higher flows).

C. Infiltration Parameters

The percentage of ground cover for the entire site cannot be exactly determined. Therefore, in the pre-development analysis, the CN values for both the poor and fair conditions were used as the infiltration parameters. Run 1 used CN values for fair condition and Run 2 used CN values for poor condition determined from the TR-55 Manual (Reference 4). The average of the flows was used in the design of the diversion channels for the 100-yr storm event. For simplicity, only the CN values for the poor condition were used for the 5-yr storm event. See Attachment B.

FOR SECTION 1.4.3 SENSITIVITY ANALYSIS (GREEN-AMPT METHOD PARAMETERS):

By examining the soils as listed above, most of the soils fall in the range of medium to rapid runoff with moderate permeability. Therefore, one set of parameters were used for the entire watershed to simplify the FLO-2D analysis.

From Reference 5, the FLO-2D Reference Manual, Tables 2 through 5 in Section 4.12 give parameters for various soils and surface covers for initial abstraction, hydraulic conductivity and porosity, soil suction, and volumetric moisture deficiency (see Attachment C). The following are the parameters for the site:

The initial abstraction includes all losses before runoff begins, and includes water retained in surface depressions, water taken up by vegetation, evaporation, and infiltration. The surface cover is natural however, since the upper portion of watershed contains steep slopes and infiltration will be less, conservatively a value of 0.20 inches is used.

With sandy soils and a moderate permeability, the hydraulic conductivity value is 0.5 in/hr, the porosity is 0.4, and the soil suction is 4.3 inches, conservatively.

The volumetric moisture deficiency is evaluated as the difference between the initial and final soil saturation conditions. For dry sand and loamy sand, the difference is 35%. However, to account for areas of the watershed that do not fall under this condition, the difference is taken as 20%.

D. Rainfall

Based on the Site location, the (NRCS/SCS) Type II rainfall distribution was used when running FLO-2D. For the 5-yr and 100-yr, 24 hour storm event, the rainfall is 1.61 inches and 3.51 inches [shouldn't these be reversed? Shouldn't the 5 year number be smaller than the 100 yr number?],

respectively (Reference 6). In FLO-2D, the rainfall fraction versus time is entered in the RAIN.DAT file.

E. Results

With the conservative input parameters used in the pre-development run, the total Qpeak is still less than the 10,022 cfs that was calculated using TR-55 methods (Reference 1). The total Qpeak is approximately 7,600 cfs. In FLO-2D, floodplain cross sections are taken within the grid elements around the up gradient perimeter of the proposed site so that the FLO-2D model calculates a hydrograph and compiles hydraulic results for the flow across the cross section. From these cross sections, a total peak flow is determined for each channel. Therefore, each diversion channel will be designed properly to capture the flow. See Attachment D.

TABLE 2

Channels	100-yr Storm Event			5-yr Storm Event
	Run 1 (Fair condition)	Run 2 (Poor condition)	Avg. of Runs 1 & 2	Run 7
Channel A	646.11 cfs	1156.37 cfs	901.24 cfs	92.5 cfs
Channel B	2148.52 cfs	4086.17 cfs	3117.35 cfs	115.77 cfs
Channel C	567.55 cfs	2006.55 cfs	1287.05 cfs	60.24
Channel B/C	2716.07 cfs	6092.72 cfs	4404.40 cfs	176.01
Channel D	1489.68 cfs	2600.43 cfs	2045.06 cfs	105.71
Channel E	219.63 cfs	253.75 cfs	236.69 cfs	47.40
Channel D/E	1709.31 cfs	2854.18 cfs	2281.75 cfs	153.11

In Attachment E, up gradient velocities are shown in a graphical view so that the non-erosive channel lining, such as soil-cement, and other erosion control methods can be utilized for final design. From the graphical sketch, the maximum velocities from the 100-yr storm event in the area of the proposed site range from 0.5 fps to 3 fps. Additionally, a depth profile plot and a maximum depth sketch up gradient of the proposed site show depths in the range of 0.1 ft to 0.6 ft and are also included in Attachment E.

1.4.2 Post-development Analyses

Using all the same input parameters from the pre-development run; a post-development analysis (Run 3) was done in FLO-2D to evaluate the maximum depths and velocities from a 5-yr and 100-yr storm through the proposed diversion channels. The run was also done using a grid system of 200 ft x 200 ft. The results from FLO-2D were compared against results from Flowmaster.

A. Channel Locations

Channel A flows from east to west and is located north of Module A. Channel B is located northeast of the Module A and from a common high point with Channel A, this channel drains southeast. Channel C is located north of the Module B and drains from east to west. Channels B and C both tie in between Modules A & B and this combined Channel B/C flows south through the middle of the site and runs west and south to spread flows back down gradient of Module A. Channel D runs southeast from a common high point with Channel C. This channel drains the area north and east of Module B. Channel E runs west and drains a small area into Channel D. Channels D and E both

tie in together and the combined Channel D/E runs further south and west to spread flows back down gradient of Module B. This channel drains the area north and east of Module B. See Conceptual Grading Plans.

B. Channel Geometry & Lining

Based on the pre-development flow and hydrograph results, the channels will be tapered starting at the up gradient end with a minimum width of 20 ft. At the outlet, the channel invert will tie into the existing grade. If the depth of the channel is not sufficient, a berm will be constructed to constrain the flows within the channel and outside of the solar development. It is proposed that the channels will be lined with soil-cement; therefore, a Manning's N-value of 0.022 is used.

A spreadsheet in Attachment F is provided that lists the channel information from FLO-2D. The most significant information is the calculated FLO-2D channel depths. These depths are compared to depths from Flowmaster results. Additionally, due to the layout of the proposed site, there are some constricted areas. In these areas, box culverts are used to pass the flow under the proposed roads using Culvertmaster. For the given flows, all channels and box culverts are designed adequately with maximum one foot of freeboard and minimum of 0.5 foot. The Flowmaster and Culvertmaster results are given in Attachment F.

The channel and box culvert locations along with the grading are shown on the conceptual grading plans.

C. Channel Down gradient Flood Distribution

To examine the flood distribution at the down gradient of each channel, more analyses were done in FLO-2D. Each channel outflow was separated into different runs. An inflow hydrograph was placed at the down gradient of each channel; however, no rainfall was used in FLO-2D. In reality, there will be rainfall, but using only the hydrograph shows the flood distribution based on the outflow from the channels. The hydrographs from the pre-development FLO-2D analyses for each cross section are given in Attachment G. The applicable hydrographs are then added for each channel. For example, for Channel A, the hydrographs from cross sections 1, 7, and 8 are added. To simulate the flooding, the LIDAR data set is used in the FLO-2D analyses (Reference 7).

From Runs 4 & 8, the flow distribution is shown at the down gradient end of the Channel A for the 5-yr and 100-yr storms in Attachment H. The maximum velocities reach 5 fps for a 100-yr storm and a grouted riprap apron for a length of 15 ft and final width of 60 ft will be placed as outlet protection. The minimum rip rap D_{50} diameter shall be 6 inches and placed at a thickness of 1.5 times D_{max}. The rip rap will be grouted so that only a portion (no more that 2 inches) of the rock is protruding from the grout. Also, the rip rap will be placed so that the distance from one rock protrusion to the next is no less than 8 inches. These measures will ensure the grouted rip rap can be placed without an entrapment possibility for small tortoises. See Attachment H (Reference 8).

From Runs 5 & 9, the flow distribution is shown at the down gradient end of the Channel B/C for the 5-yr and 100-yr storms in Attachment I. For the channel portion running south, the maximum velocities reach about 9 fps and a standing block energy dissipater along with a grouted riprap apron for a length of 75 feet will be placed as outlet protection. For the channel portion running west, a series of pipes along with one long emergency spillway (1500'), for low flow and high flow conditions respectively, will be constructed for maximum flow distribution down gradient of the

proposed site. The pipes outlets were located by reviewing the aerial topography to return flows back to existing down gradient channels to the extent possible. The 5-yr flow for Channel B/C is about 88 cfs and nine 12" pipes will be placed along the invert of the channel to distribute the flows. The flow from the 100-yr storm for Channel B/C west is about 2,200 cfs. The emergency spillway can handle about 1600 cfs with a depth of 0.5 ft and the remaining flow of 600 cfs is controlled by the nine 12" pipes and ten 24" pipes placed along the channel. The depth from the 5-yr flow in the 250' wide channel is about 0.4 ft; therefore, the 24" pipes are to be constructed at an invert of at least 0.4 ft higher than the 12" pipe with the highest invert elevation. The outfall of the spillway will be constructed at a slope of 10H:1V. The velocity at the toe of the spillway is about 6.5 cfs. At the outlet of all the pipes and spillway, appropriate forms of energy dissipation will be utilized to slow down these velocities and will be detailed on final design drawings. See Attachment I.

From Runs 6 & 10, the flow distribution is shown at the down gradient end of the Channel D/E for the 5-yr and 100-yr storms in Attachment J. A series of pipes along with one long emergency spillway (1500'), for low flow and high flow conditions respectively, will be constructed for maximum flow distribution down gradient of the proposed site. The pipes outlets were located by reviewing the aerial topography to return flows back to existing down gradient channels to the extent possible. The 5-yr flow for Channel D/E is about 153 cfs and sixteen 12" pipes are placed along the invert of the channel to flood distribution. The flow from the 100-yr storm for Channel D/E is about 2,281 cfs. The emergency spillway can handle about 2150 cfs with a depth of 0.6 ft and the remaining is taken by the sixteen 12" pipes placed along the channel. The outfall of the spillway will be constructed at a slope of 10H:1V. The velocity at the toe of the spillway is about 7.3 cfs. At the outlet of all the pipes and spillway, appropriate forms of energy dissipation will be utilized to slow these velocities and will be detailed on final design drawings. See Attachment J.

1.4.3 Sensitivity Analysis

The sensitivity analysis is completed to validate the results for the "pre" condition using the 10-meter USGS topographic data. This is since at the down gradient area of each channel, the post-development FLO-2D analyses were done using the LIDAR data, but for the pre-development analyses, the 10-meter USGS map was used.

The sensitivity analysis also demonstrates the variability in the quantity of flow based on factors other than just the topographic resolution. The existing up gradient conditions, whether it is the topography, the infiltration parameters, or other factors, do not exactly match what they are in the field and sound engineering judgment is used to determine modeling input.

First, using two different infiltration methods, the SCS curve number method and the Green-Ampt method; more FLO-2D runs (Run 2A & 7A) were done to compare the total flows to the site. Secondly, another run (Run 4A) was done to show the flow distribution at the outlet of Channel A using 10-meter USGS topographic data versus the LIDAR data set that was used in Run 4.

The total flows across the site using the two different infiltration methods (SCS Method versus the Green-Ampt Method) are as follows:

Note: Green-Ampt parameters are given under Section 1.41C.

100-yr SCS Method = 7,590 cfs (Runs 1&2)
100-yr Green-Ampt Method = 424 cfs (Run 2A)

5-yr SCS Method = 422 cfs (Run 7)
5-yr Green-Ampt Method = 33 cfs (Run 7A)

See Attachment K for output from Runs 2A and 7A. The quantity of flow draining to the site from the SCS method is approximately between 12 to 18 times the quantity of flow draining to the site as determined by the Green-Ampt method. From the 5-yr Green-Ampt method, the final floodplain depths at 60 hours are approximately 0.02 ft throughout the entire watershed. The maximum depth is approximately 0.06 ft in the vicinity of the proposed site peaking at about 12 hours (see Attachment K). It can be inferred that there is no overland flow due to a 5-yr storm that is generated from up gradient of the project site.

Therefore, the use of the SCS Method for sizing the channels is conservative since this produces the higher flows and is based on conventional methods.

At the outlet of Channel A, Runs 4 and 4A show a little variation of the flood distribution. For both runs 4 and 4A, the water spreads approximately the same distance in the beginning. Additionally, the flow depths are very similar as the water spreads from the outlet. The coloring in the legend is different in Run 4 from Run 4A, so the values of the depths should be carefully reviewed to make this comparison. Using the LIDAR data at a grid system of 20' x 20', some areas further down gradient of the Channel outlet are not receiving any flow. However, in both runs, the water spreads back out as it reaches closer to Ford Dry Lake. The location of the computational boundary in Run 4 causes the water depth to be high at data boundary limit, and not show it spread out similar to Run 4A, which is what would actually occur. However, the outputs are reasonably close given the difference in the resolution of the two sets of the topographic data.

See Attachment L for flood distribution maps for comparisons between Runs 4 & 4A.

1.5 Results and Conclusions

This calculation validates that capturing the up gradient flows and channeling them around and through the solar facility site is a sound engineering solution to storm water management and the impacts from this design solution can be minimized by spreading the flow released from the diversion channels.

This calculation also shows that engineering variables and computation methods play a significant role in calculating the up gradient storm flow volumes that reach the project location and that, due to the very flat site topography, use of USGS 10 meter topographic data or LIDAR data yield similar results. The effects of engineering variables is shown in table 2 that provides channel flows for the 100 year storm event using two different CN values, and section 1.4.3 "Sensitivity Analysis" shows the 100 year and 5 year storm flows using two different infiltration methods. Attachment "L" provides a comparison of the outlet flow distribution using the two different topographic data indicating that the outflow results are similar. Additionally, this calculation shows that a comparison of down gradient conditions using the 10 meter USGS topographic data for "pre project" and LIDAR topographic data for "post project" conditions yields a conservative impact.

The "pre project" flow analysis, both up gradient and down gradient of the proposed project site, was preformed using USGS 10 meter topographic information. The development of the site intercepts the up gradient flows, channels the flows around and through the proposed site, and discharges those flows

down gradient of the proposed site. Analysis of the "post project" flow was used performing topographic data from a LIDAR survey of the site.

By comparing the "post project" flow from Channel A using LIDAR (Run 4) with the "post project" flow from Channel A using the 10 meter USGS topography (Run 4A), it is shown that the down gradient "post project" flow patterns are similar and that using LIDAR data for the "pre project" flow analysis down gradient of the site will not yield additional information. For the purpose of this write up, the "impact" down gradient of the project is identifying locations that may now not see the influence of up gradient flows. By comparing the two runs in Attachment "L", one can see that the use of the LIDAR data for the "post project" analysis yields a very slight increase in the area that does not see the influence of up gradient flows. These results are consistent with site conditions, where the slope of the site is extremely gradual (approximately 0.4%), and where the locations of flow across the site are extremely shallow, wide and braided.

This calculation also shows that input parameters to the hydraulic calculations/model and the hydraulic/calculation model used have a large impact on flow volume reaching the site from up gradient. From one method, it is shown that up gradient storm flows from a 5-yr storm event have limited effect on the site and flows from up gradient of the site do not necessarily reach the down gradient area of the site. These results are consistent with on-site detailed channel and geomorphology investigations that indicate this phenomenon (see Geomorphology Investigation prepared by Dr. Miles Kenney).

The diversion channels will be sized to handle the 100 year flow using the more conservative SCS method. The "Sensitivity Analysis" in section 1.4.3 provides data on flow rates using the SCS method and an alternate method. This provides an indication of why it is stated the SCS method is more conservative. Utilization of the SCS method will ensure that the channels will be sized adequately to handle flows even larger than may be expected to reach the site. See Conceptual Grading Plans GENI-1-DW-112-716-004-001 through -007 and Conceptual Grading Details GENI-1-DW-112-726-005.

For comparison of down gradient flows and effects due to the project development, this calculation also provides a conservative analysis of these impacts. In the existing condition, it is assumed that all overland flow from the up gradient portion of the site drain down gradient of the site as sheet flow. This is shown on Runs 1 & 2, which uses the USGS data for the "pre-project" conditions for the 100 year storm. This run indicates that, in a 100 year storm, the entire down gradient area of the site "sees" a small amount of sheet flow that is generally uniformly distributed over the entire down gradient area. Based on the on site observations and by a review of aerial photographs it appears that there are various portions of the area down gradient of the proposed site in the existing conditions that do not see any up gradient flow. Although this is not shown in a FLO 2D analysis that uses the LIDAR data to model the down gradient "pre project" flows, this can be seen in the comparison of Run 4 and 4A (Attachment L). Run 4 and 4A are "post project" runs that show the storm water release from Channel A. In Run 4 (using the LIDAR topographic data) small areas where the flow has separated and re-connected can be seen. Where the flow separates, small areas are shown that do not "see" flow. In comparison, run 4A (using USGS 10 meter topographic data) shows these small areas receiving some level of flow. Therefore, by using the USGS 10 meter topographic data for pre-project flows and comparing this to the post project flows using LIDAR data, a conservatively larger area of "potential impact" is identified. For the purposes of this report, the "area of potential impact" is that area down gradient of the site that received flows from up gradient during the "pre project" 100 year storm event (Run 1) compared to that area down gradient of the site that received flows from up gradient during the "post project" 100 year storm event (Runs 4, 5, and 6). This same analysis is completed for the 5 year storm flows (Run 7 for "pre project", and Runs 8, 9, and 10 for "post project").

Actual field observations indicate that water sourced from up-gradient only appears to reach the site during larger (less frequent that 5 years or so) storm events and that the main source of water to many areas is only the rainfall that falls over them. Additionally, field observations indicate that even during periods where overland flow occurs, every small channel or gully does not flow from up gradient of the site to the down gradient area of the site. Some channels start and end within a short distance. The post-development impacts down gradient of the site occur in areas where water that flowed from up gradient or within the site to down gradient of the site no longer reaches the down gradient areas due to development of the site. Design measures are implemented to minimize these impacts by releasing the diverted flows across a large area of the southern boundary.

ATTACMENT M

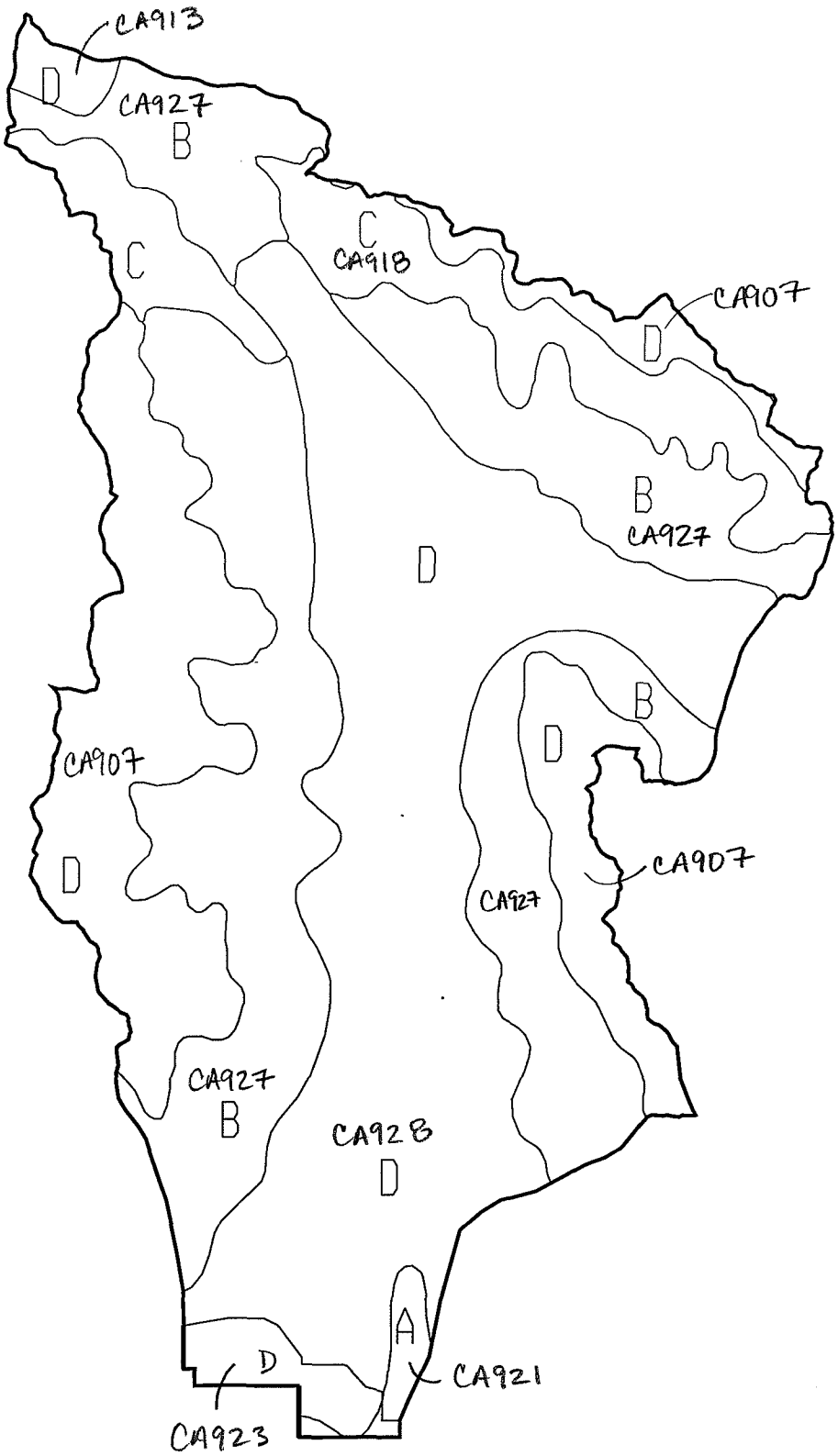
Attachment M is provided to validate the earlier comment that impacts from this design solution can be minimized by spreading the flow released from the diversion channels. In Attachment M, an exhibit is provided titled “Run 8-9-10 Combined 5 Year”. This exhibit combines the outflows from all three channels and shows how those flows, from a 5 year event, are distributed based on the conceptual design referenced herein. This shows that, based on the current design, the 5 Year flow can and is distributed along a large portion of the southern boundary of the site. This exhibit does not include the flow distribution from the on-site detention pond. Flows from the on-site detention pond, which is located in the SW corner of each of the solar fields, can be distributed to provide additional storm water discharges to the down gradient area of the site. These runs (runs 8, 9, and 10) only show the outflow from the channels to indicate how those flows that are ‘captured” from up gradient are distributed. These runs do not include the rain that falls locally, down gradient of the site, nor do they include the outflow from the detention ponds.

Additional FLO 2D runs can be completed that provide the outflow from the detention pond hydrographs (5 Year storm), and incorporate rainfall in the area down gradient of the site. These measures will provide additional storm flows from areas up gradient or within the project site to areas down gradient of the project site.

Additionally, channel outflow structures and detention basin outflow structures can be located and engineered during detailed design to align channel outflow with locations desired, thus ensuring that up gradient flows are directed to the desired locations (i.e. the jurisdictional waters, the number size and location of which are yet to be agreed upon).

ATTACHMENT A

SOILS MAP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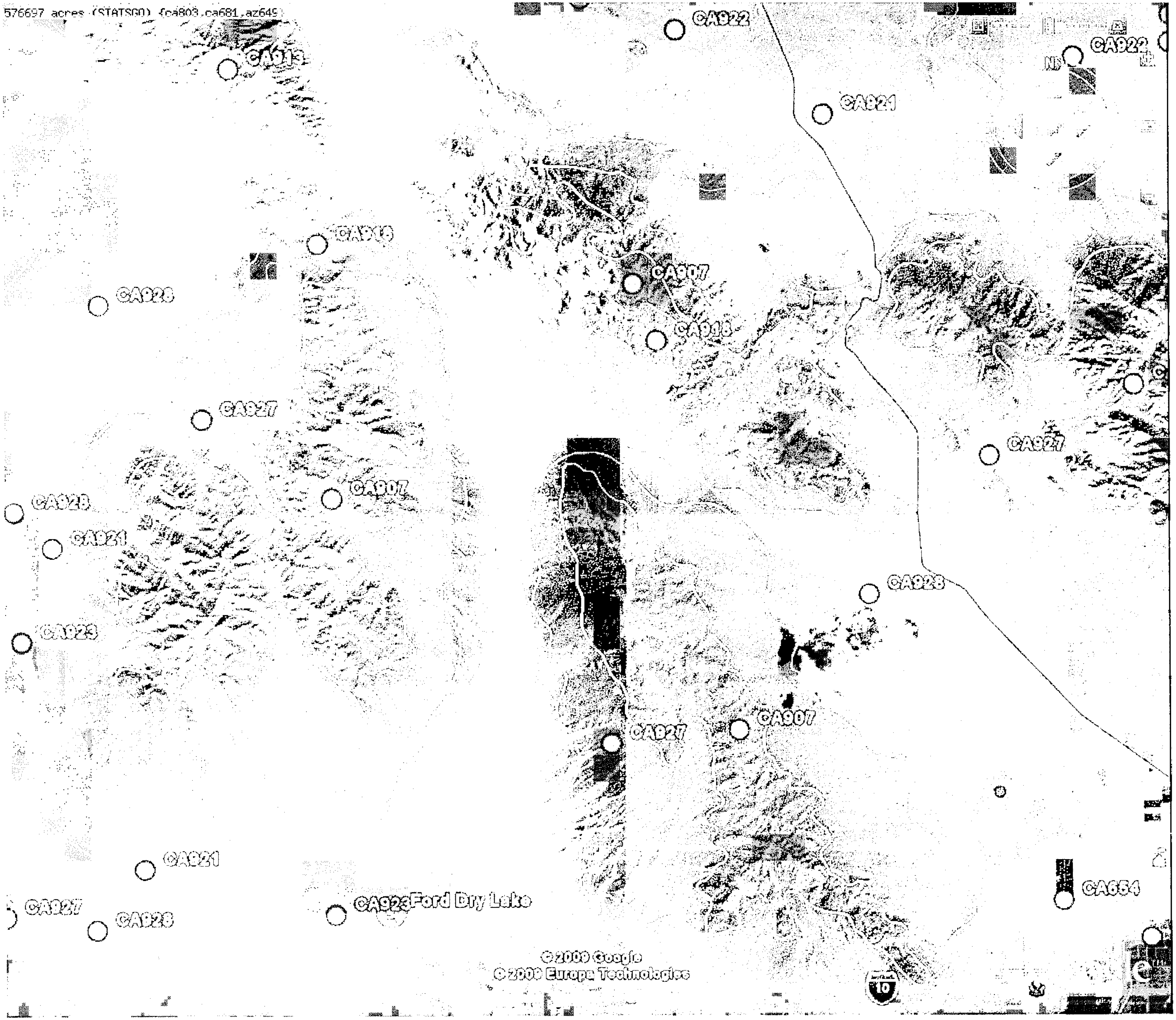
576697 acres (STATSGO) {ca803,ca681,az649}
CA913
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CA928
CA923Ford Dry Lake
© 2009 Google
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ATTACHMENT B

Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2]	A [3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

ATTACHMENT C

from the grid system. As example of the application of NEXRAD rainfall on an alluvial fan and watershed near Tucson. Arizona is shown in Figure 18. You can accomplish the same result with gridded network data from a system of rain gages. After the GDS interpolation, each FLO-2D grid element will have a rainfall hyetograph to represent the storm. This is the ultimate temporal and spatial discretization of a storm event and the flood replication has proven to be very accurate.

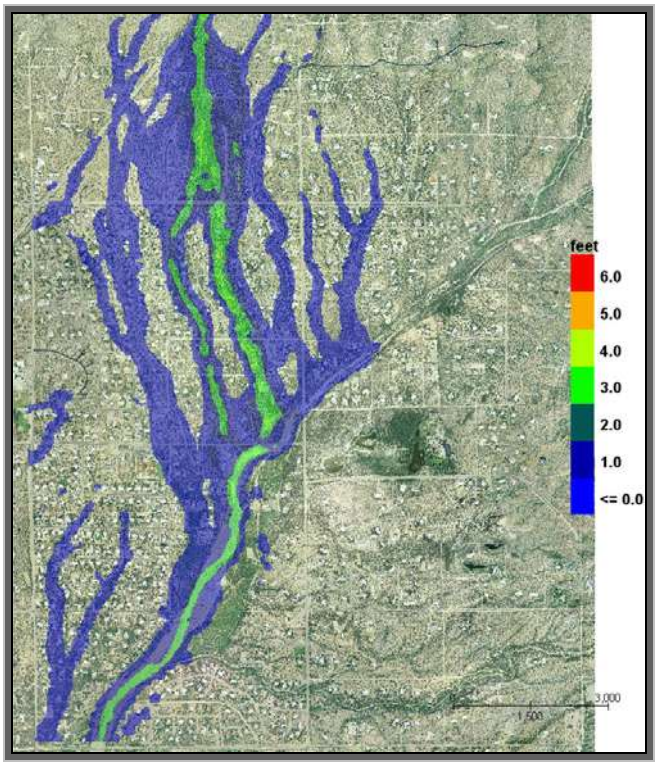


Figure 18. Flooding Replicated from NEXRAD Data near Tucson, Arizona

4.12 Infiltration and Abstraction

Precipitation losses, abstraction (interception) and infiltration are simulated in the FLO-2D model. The initial abstraction is filled prior to simulating infiltration and typical initial abstraction values are presented in Table 2. Infiltration is simulated using either the Green-Ampt infiltration model or the SCS curve number method. The infiltration parameters can be assigned global or the spatial variation of infiltration over the grid system can be modeled by assigning unique hydraulic conductivity and soil suction values to each grid element with the GDS. No infiltration is calculated for assigned streets, buildings or impervious surfaces in the grid elements. Channel infiltration can be also be simulated. Although channel bank seepage is usually only minor portion of the total infiltration losses in the system, it can affect the floodwave progression in an ephemeral channel. The surface area of a natural channel is used to approximate the wetted perimeter to compute the infiltration volume.

The Green-Ampt (1911) equation was selected to compute infiltration losses in the FLO-2D model because it is sensitive to rainfall intensity. When the rainfall exceeds the potential infiltration, then runoff is generated. The infiltration continues after the rainfall has ceased until all the available water has run off or has been infiltrated. The Green-Ampt equation is based on the following assumptions:

- Air displacement from the soil has a negligible effect on the infiltration process;
- Infiltration is a vertical process represented by a distinct piston wetting front;
- Soil compaction due to raindrop impact is insignificant;

- Hysteresis effects of the saturation and desaturation process are neglected;
- Flow depth has limited effect on the infiltration processes.

Table 2. Initial Abstraction

Surface Cover	Abstraction (inches)
Natural[1]	
Desert and rangeland	0.35
Hillslopes Sonoran desert	0.15
Mountain with vegetation	0.25
Developed – Residential[1]	
Lawns	0.20
Desert landscape	0.10
Pavement	0.05
Agricultural fields and pasture	0.50
Conifers[2]	0.01 - 0.36
Hardwoods[2]	0.001 - 0.08
Shrubs[2]	0.01 - 0.08
Grass[2]	0.04 - 0.06
Forest floor[2]	0.02 - 0.44

[1]Maricopa County Drainage Design Manual, 1992.
[2]W. T. Fullerton, Masters Thesis, CSU, 1983

A derivation of the Green-Ampt infiltration modeling procedure can be found in Fullerton (1983). To utilize the Green-Ampt model, hydraulic conductivity, soil suction, volumetric moisture deficiency and the percent impervious area must be specified. Typical hydraulic conductivity, porosity and soil suction parameters are presented in Tables 3 and 4. The volumetric moisture deficiency is evaluated as the difference between the initial and final soil saturation conditions (See Table 5). Depression storage is an initial loss from the potential surface flow (TOL value in TOLER.DAT). This is the amount of water stored in small surface depressions that does not become part of the overland runoff or infiltration.

Table 3. Green Ampt Infiltration - Hydraulic Conductivity and Porosity

Classification	(in/hr)[1]	(in/hr)[2]	(in/hr)[3]	Porosity[4]
sand and loamy sand	1.20	1.21 - 4.14	2.41 - 8.27	0.437
sandy loam	0.40	0.51	1.02	0.437
loam	0.25	0.26	0.52	0.463
silty loam	0.15	0.14	0.27	0.501
silt	0.10			
sandy clay loam	0.06	0.09	0.17	0.398
clay loam	0.04	0.05	0.09	0.464
silty clay loam	0.04	0.03	0.06	0.471
sandy clay	0.02	0.03	0.05	0.430
silty clay	0.02	0.02	0.04	0.479
clay	0.01	0.01	0.02	0.475
very slow			< 0.06[3]	
slow			0.06-.20[3]	
moderately slow			0.20-0.63[3]	
moderate			0.63-2.0[3]	
rapid			2.0-6.3[3]	
very rapid			> 6.3[3]	

[1]Maricopa County Drainage Design Manual, 1992.
[2]James, et. al., Water Resources Bulletin Vol. 28, 1992.
[3]W. T. Fullerton, Masters Thesis, CSU, 1983.
[4]COE Technical Engineering and Design Guide, No. 19, 1997

Table 4. Green Ampt Infiltration - Soil Suction

Classification	(in)[1]	(in)[2]	(in)[3]
sand and loamy sand	2.4	1.9-2.4	
sandy loam	4.3	4.3	
Loam	3.5	3.5	
silty loam	6.6	6.6	
Silt	7.5		
sandy clay loam	8.6	8.6	
clay loam	8.2	8.2	
silty clay loam	10.8	10.8	
sandy clay	9.4	9.4	
silty clay	11.5	11.5	
Clay	12.4	12.5	
Nickel gravel-sand loam			2.0 - 4.5
Ida silt loam			2.0 - 3.5
Poudre fine sand			2.0 - 4.5
Plainfield sand			3.5 - 5.0
Yolo light clay			5.5 - 10.0
Columbia sandy loam			8.0 - 9.5
Guelph loam			8.0 - 13.0
Muren fine clay			15.0 - 20.0

[1]Maricopa County Drainage Design Manual, 1992.
[2]James, W.P., Warinner, J., Reedy, M., Water Resources Bulletin Vol. 28, 1992.
[3]W. T. Fullerton, Masters Thesis, CSU, 1983.

Table 5. Green Ampt Infiltration -Volumetric Moisture Deficiency

Classification	Dry (% Diff)	Normal (% Diff)
sand and loamy sand[1]	35	30
sandy loam	35	25
loam	35	25
silty loam	40	25
silt	35	15
sandy clay loam	25	15
clay loam	25	15
silty clay loam	30	15
sandy clay	20	10
silty clay	20	10
clay	15	5

[1]Maricopa County Drainage Design Manual, 1992.

The SCS runoff curve number (CN) loss method is a function of the total rainfall depth and the empirical curve number parameter which ranges from 1 to 100. The rainfall loss is a function of hydrologic soil type, land use and treatment, surface condition and antecedent moisture condition. The method was developed on 24 hour hydrograph data on mild slope eastern rural watersheds in the United

States. Runoff curve numbers have been calibrated or estimated for a wide range of urban areas, agricultural lands and semi-arid range lands. The SCS CN method does not account for variation in rainfall intensity. The method was developed for predicting rainfall runoff from ungaged watersheds and its attractiveness lies in its simplicity. For large basins (especially semi-arid basins) which have unique or variable infiltration characteristics such as channels, the method tends to over-predict runoff (Ponce, 1989).

The SCS curve number parameters can be assigned graphically in the GDS to allow for spatially variable rainfall runoff. Shape files can used to interpolate SCS-CNs from ground cover and soil attributes. The SCS-CN method can be combined with the Green-Ampt infiltration method to compute both rainfall-runoff and overland flow transmission losses. The SCS-CN method will be applied to grid elements with rainfall during the model computational timestep and the Green-Ampt method will compute infiltration for grid elements that do have rainfall during the timestep. This enables transmission losses to be computed with Green-Ampt on alluvial fans and floodplains while the SCS-CN is used to compute the rainfall loss in the watershed basin.

4.13 Evaporation

An open water surface evaporation routine accounts for evaporation losses for long duration floods in large river systems. This component was implemented for the 173 mile Middle Rio Grande model from Cochiti Dam to Elephant Butte Reservoir in New Mexico. The open water surface evaporation computation is based on a total monthly evaporation that is prorated for the number of flood days in the given month. The user must input the total monthly evaporation in inches or mm for each month along with the presumed diurnal hourly percentage of the daily evaporation and the clock time at the start of the flood simulation. The total evaporation is then computed by summing the wetted surface area on both the floodplain and channel grid elements for each timestep. The floodplain wetted surface area excludes the area defined by ARF area reduction factors. The evaporation loss does not include evapotranspiration from floodplain vegetation. The total evaporation loss is reported in the SUMMARY.OUT file and should be compared with the infiltration loss for reasonableness.

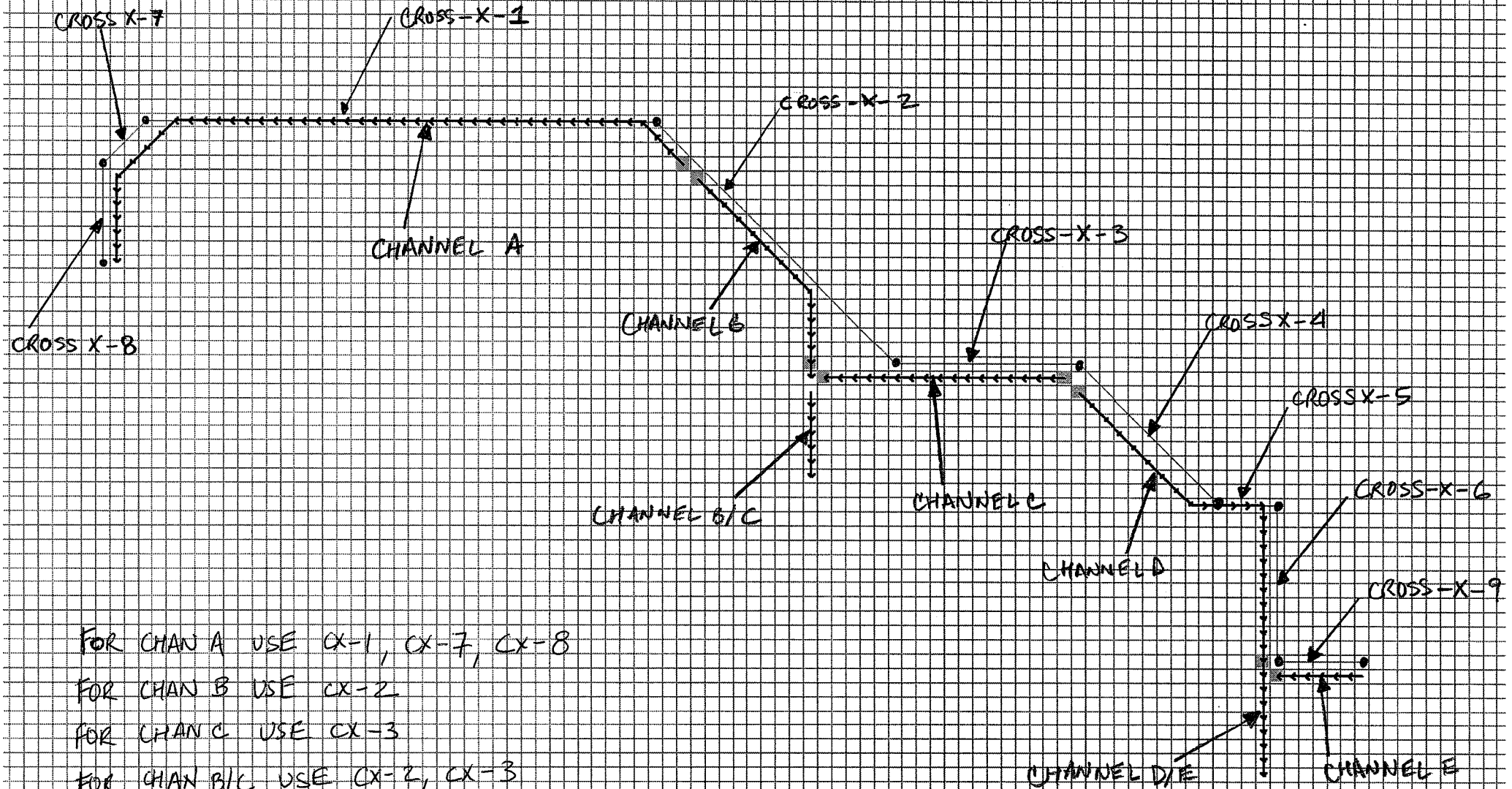
4.14 Overland Multiple Channel Flow

The purpose of the multiple channel flow component is to simulate the overland flow in rills and gullies rather than as overland sheet flow. Surface water is often conveyed in small channels, even though they occupy only a fraction of the potential flow area. Simulating rill and gully flow concentrates the discharge and may improve the timing of the runoff routing. The multiple channel routine calculates overland flow as sheet flow within the grid element and flow between the grid elements is computed as rill and gully flow. No overland sheet flow is exchanged between grid elements if both elements have assigned multiple channels. The gully geometry is defined by a maximum depth, width and flow roughness. The multiple channel attributes can be spatially variable on the grid system and can be edited with the GDS program.

If the gully flow exceeds the specified gully depth, the multiple channel can be expanded by a specified incremental width. This channel widening process assumes these gullies are alluvial channels and will widen to accept more flow as the flow reaches bankfull discharge. There is no gully overbank discharge to the overland surface area within the grid element. The gully will continue to widen until the gully width exceeds the width of the grid element, then the flow routing between grid elements will revert to sheet flow. This enables the grid element to be overwhelmed by flood flows. During the falling limb of the hydrograph when the flow depth is less than 1 ft (0.3 m), the gully width will decrease to confine the discharge until the original width is again attained.

ATTACHMENT D

FLOODPLAIN CROSS-SECTIONS



FOR CHAN A USE CX-1, CX-7, CX-8

FOR CHAN B USE CX-2

FOR CHAN C USE CX-3

FOR CHAN B/C USE CX-2, CX-3

FOR CHAN D USE CX-4, CX-5, CX-6

FOR CHAN E USE CX-9

FOR CHAN D/E USE CX-4, CX-5, CX-6, CX-9

RUN 1 - PRE-DEVELOPMENT ANALYSIS
USING CN FOR FAIR CONDITION

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 517.89 CFS AT TIME: 26.38 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 12.20 CFS AT TIME 24.88 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 5.57 AF

THE MAXIMUM DISCHARGE FROM NODE 169362 IS: 3.61 CFS AT TIME 25.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 2.72 AF

THE MAXIMUM DISCHARGE FROM NODE 169363 IS: 2.48 CFS AT TIME 12.54 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 1.84 AF

THE MAXIMUM DISCHARGE FROM NODE 169364 IS: 2.35 CFS AT TIME 12.47 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 1.73 AF

THE MAXIMUM DISCHARGE FROM NODE 169365 IS: 2.34 CFS AT TIME 28.37 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 1.89 AF

THE MAXIMUM DISCHARGE FROM NODE 169366 IS: 12.55 CFS AT TIME 24.26 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 7.71 AF

THE MAXIMUM DISCHARGE FROM NODE 169367 IS: 17.41 CFS AT TIME 25.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 10.58 AF

THE MAXIMUM DISCHARGE FROM NODE 169368 IS: 17.67 CFS AT TIME 24.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 11.34 AF

THE MAXIMUM DISCHARGE FROM NODE 169369 IS: 16.04 CFS AT TIME 24.81 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 10.37 AF

THE MAXIMUM DISCHARGE FROM NODE 169370 IS: 12.35 CFS AT TIME 25.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 7.71 AF

THE MAXIMUM DISCHARGE FROM NODE 169371 IS: 8.82 CFS AT TIME 25.95 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 5.65 AF

THE MAXIMUM DISCHARGE FROM NODE 169372 IS: 4.75 CFS AT TIME 26.15 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 4.78 AF

THE MAXIMUM DISCHARGE FROM NODE 169373 IS: 4.25 CFS AT TIME 26.44 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 4.19 AF

THE MAXIMUM DISCHARGE FROM NODE 169374 IS: 4.42 CFS AT TIME 26.55 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 4.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169375 IS: 4.90 CFS AT TIME 26.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 4.45 AF

THE MAXIMUM DISCHARGE FROM NODE 169376 IS: 5.85 CFS AT TIME 25.78 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 5.15 AF

THE MAXIMUM DISCHARGE FROM NODE 169377 IS: 5.87 CFS AT TIME 25.55 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.18 FEET AND A MAXIMUM VOLUME OF: 5.24 AF

THE MAXIMUM DISCHARGE FROM NODE 169378 IS: 6.10 CFS AT TIME 25.05 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 5.70 AF

THE MAXIMUM DISCHARGE FROM NODE 169379 IS: 15.76 CFS AT TIME 24.27 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 8.60 AF

THE MAXIMUM DISCHARGE FROM NODE 169380 IS: 17.69 CFS AT TIME 24.25 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 15.04 AF

THE MAXIMUM DISCHARGE FROM NODE 169381 IS: 21.65 CFS AT TIME 24.17 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 19.87 AF

THE MAXIMUM DISCHARGE FROM NODE 169382 IS: 23.35 CFS AT TIME 24.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.32 FEET AND A MAXIMUM VOLUME OF: 22.49 AF

THE MAXIMUM DISCHARGE FROM NODE 169383 IS: 17.03 CFS AT TIME 24.29 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 15.69 AF

THE MAXIMUM DISCHARGE FROM NODE 169384 IS: 13.61 CFS AT TIME 23.52 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 11.22 AF

THE MAXIMUM DISCHARGE FROM NODE 169385 IS: 13.24 CFS AT TIME 23.87 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 9.66 AF

THE MAXIMUM DISCHARGE FROM NODE 169386 IS: 12.94 CFS AT TIME 23.86 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 10.77 AF

THE MAXIMUM DISCHARGE FROM NODE 169387 IS: 13.19 CFS AT TIME 29.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 12.71 AF

THE MAXIMUM DISCHARGE FROM NODE 169388 IS: 14.18 CFS AT TIME 28.87 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 14.53 AF

THE MAXIMUM DISCHARGE FROM NODE 169389 IS: 17.02 CFS AT TIME 27.87 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 19.07 AF

THE MAXIMUM DISCHARGE FROM NODE 169390 IS: 21.87 CFS AT TIME 27.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 24.74 AF

THE MAXIMUM DISCHARGE FROM NODE 169391 IS: 29.38 CFS AT TIME 27.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.33 FEET AND A MAXIMUM VOLUME OF: 34.12 AF

THE MAXIMUM DISCHARGE FROM NODE 169392 IS: 38.20 CFS AT TIME 27.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.38 FEET AND A MAXIMUM VOLUME OF: 46.09 AF

THE MAXIMUM DISCHARGE FROM NODE 169393 IS: 40.91 CFS AT TIME 27.64 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.40 FEET AND A MAXIMUM VOLUME OF: 49.57 AF

THE MAXIMUM DISCHARGE FROM NODE 169394 IS: 38.14 CFS AT TIME 27.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.39 FEET AND A MAXIMUM VOLUME OF: 47.17 AF

THE MAXIMUM DISCHARGE FROM NODE 169395 IS: 31.99 CFS AT TIME 27.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 41.16 AF

THE MAXIMUM DISCHARGE FROM NODE 169396 IS: 32.47 CFS AT TIME 27.79 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 44.50 AF

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 41.93 CFS AT TIME 27.81 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 57.21 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 2148.52 CFS AT TIME: 29.30 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 58.81 CFS AT TIME 27.80 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 79.42 AF

THE MAXIMUM DISCHARGE FROM NODE 169811 IS: 39.06 CFS AT TIME 28.44 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.36 FEET AND A MAXIMUM VOLUME OF: 52.56 AF

THE MAXIMUM DISCHARGE FROM NODE 170225 IS: 17.87 CFS AT TIME 29.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 18.87 AF

THE MAXIMUM DISCHARGE FROM NODE 170638 IS: 16.75 CFS AT TIME 29.81 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 19.62 AF

THE MAXIMUM DISCHARGE FROM NODE 171052 IS: 30.52 CFS AT TIME 33.40 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.29 FEET AND A MAXIMUM VOLUME OF: 52.04 AF

THE MAXIMUM DISCHARGE FROM NODE 171465 IS: 46.88 CFS AT TIME 29.57 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 76.22 AF

THE MAXIMUM DISCHARGE FROM NODE 171878 IS: 92.55 CFS AT TIME 28.08 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 106.46 AF

THE MAXIMUM DISCHARGE FROM NODE 172290 IS: 223.79 CFS AT TIME 28.08 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.58 FEET AND A MAXIMUM VOLUME OF: 129.57 AF

THE MAXIMUM DISCHARGE FROM NODE 172702 IS: 111.19 CFS AT TIME 28.10 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.57 FEET AND A MAXIMUM VOLUME OF: 69.31 AF

THE MAXIMUM DISCHARGE FROM NODE 173114 IS: 198.05 CFS AT TIME 28.12 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.68 FEET AND A MAXIMUM VOLUME OF: 95.54 AF

THE MAXIMUM DISCHARGE FROM NODE 173526 IS: 293.32 CFS AT TIME 29.29 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.74 FEET AND A MAXIMUM VOLUME OF: 142.12 AF

THE MAXIMUM DISCHARGE FROM NODE 173938 IS: 405.72 CFS AT TIME 26.95 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.85 FEET AND A MAXIMUM VOLUME OF: 188.93 AF

THE MAXIMUM DISCHARGE FROM NODE 174349 IS: 453.82 CFS AT TIME 26.95 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.99 FEET AND A MAXIMUM VOLUME OF: 214.77 AF

THE MAXIMUM DISCHARGE FROM NODE 174761 IS: 365.76 CFS AT TIME 26.97 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.85 FEET AND A MAXIMUM VOLUME OF: 90.54 AF

THE MAXIMUM DISCHARGE FROM NODE 175172 IS: 296.09 CFS AT TIME 26.99 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.74 FEET AND A MAXIMUM VOLUME OF: 79.03 AF

THE MAXIMUM DISCHARGE FROM NODE 175583 IS: 414.05 CFS AT TIME 27.00 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.96 FEET AND A MAXIMUM VOLUME OF: 132.42 AF

THE MAXIMUM DISCHARGE FROM NODE 175993 IS: 311.61 CFS AT TIME 27.03 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.77 FEET AND A MAXIMUM VOLUME OF: 97.93 AF

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 219.99 CFS AT TIME 30.67 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.62 FEET AND A MAXIMUM VOLUME OF: 75.76 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 567.55 CFS AT TIME: 30.66 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 133.59 CFS AT TIME 30.66 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.62 FEET AND A MAXIMUM VOLUME OF: 47.16 AF

THE MAXIMUM DISCHARGE FROM NODE 176404 IS: 88.59 CFS AT TIME 30.67 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.59 FEET AND A MAXIMUM VOLUME OF: 48.10 AF

THE MAXIMUM DISCHARGE FROM NODE 176405 IS: 56.57 CFS AT TIME 30.66 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.55 FEET AND A MAXIMUM VOLUME OF: 51.45 AF

THE MAXIMUM DISCHARGE FROM NODE 176406 IS: 54.17 CFS AT TIME 30.66 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.55 FEET AND A MAXIMUM VOLUME OF: 58.57 AF

THE MAXIMUM DISCHARGE FROM NODE 176407 IS: 46.26 CFS AT TIME 28.22 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.56 FEET AND A MAXIMUM VOLUME OF: 62.12 AF

THE MAXIMUM DISCHARGE FROM NODE 176408 IS: 30.92 CFS AT TIME 29.02 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.38 FEET AND A MAXIMUM VOLUME OF: 42.80 AF

THE MAXIMUM DISCHARGE FROM NODE 176409 IS: 27.02 CFS AT TIME 28.97 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.33 FEET AND A MAXIMUM VOLUME OF: 36.69 AF

THE MAXIMUM DISCHARGE FROM NODE 176410 IS: 25.53 CFS AT TIME 27.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 33.59 AF

THE MAXIMUM DISCHARGE FROM NODE 176411 IS: 24.57 CFS AT TIME 27.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 30.34 AF

THE MAXIMUM DISCHARGE FROM NODE 176412 IS: 23.62 CFS AT TIME 27.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.29 FEET AND A MAXIMUM VOLUME OF: 26.73 AF

THE MAXIMUM DISCHARGE FROM NODE 176413 IS: 23.15 CFS AT TIME 27.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.29 FEET AND A MAXIMUM VOLUME OF: 24.53 AF

THE MAXIMUM DISCHARGE FROM NODE 176414 IS: 23.04 CFS AT TIME 27.66 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.29 FEET AND A MAXIMUM VOLUME OF: 23.93 AF

THE MAXIMUM DISCHARGE FROM NODE 176415 IS: 25.39 CFS AT TIME 27.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 27.84 AF

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 26.21 CFS AT TIME 27.56 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 32.18 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 1190.69 CFS AT TIME: 27.67 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 33.97 CFS AT TIME 28.43 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 41.77 AF

THE MAXIMUM DISCHARGE FROM NODE 176826 IS: 42.10 CFS AT TIME 27.69 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.35 FEET AND A MAXIMUM VOLUME OF: 48.23 AF

THE MAXIMUM DISCHARGE FROM NODE 177235 IS: 122.27 CFS AT TIME 27.66 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.52 FEET AND A MAXIMUM VOLUME OF: 56.30 AF

THE MAXIMUM DISCHARGE FROM NODE 177643 IS: 292.42 CFS AT TIME 27.66 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.77 FEET AND A MAXIMUM VOLUME OF: 63.73 AF

THE MAXIMUM DISCHARGE FROM NODE 178048 IS: 393.39 CFS AT TIME 27.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.97 FEET AND A MAXIMUM VOLUME OF: 83.04 AF

THE MAXIMUM DISCHARGE FROM NODE 178451 IS: 315.95 CFS AT TIME 27.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.80 FEET AND A MAXIMUM VOLUME OF: 65.56 AF

THE MAXIMUM DISCHARGE FROM NODE 178852 IS: 166.59 CFS AT TIME 27.74 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.62 FEET AND A MAXIMUM VOLUME OF: 37.71 AF

THE MAXIMUM DISCHARGE FROM NODE 179251 IS: 48.91 CFS AT TIME 27.80 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.39 FEET AND A MAXIMUM VOLUME OF: 38.15 AF

THE MAXIMUM DISCHARGE FROM NODE 179648 IS: 156.26 CFS AT TIME 27.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.58 FEET AND A MAXIMUM VOLUME OF: 74.70 AF

THE MAXIMUM DISCHARGE FROM NODE 180043 IS: 276.58 CFS AT TIME 27.77 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.64 FEET AND A MAXIMUM VOLUME OF: 113.21 AF

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 110.95 CFS AT TIME 27.81 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.54 FEET AND A MAXIMUM VOLUME OF: 68.13 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 130.75 CFS AT TIME: 27.81 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 78.87 CFS AT TIME 27.81 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.54 FEET AND A MAXIMUM VOLUME OF: 50.49 AF

THE MAXIMUM DISCHARGE FROM NODE 180437 IS: 22.95 CFS AT TIME 28.79 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.32 FEET AND A MAXIMUM VOLUME OF: 27.10 AF

THE MAXIMUM DISCHARGE FROM NODE 180438 IS: 16.50 CFS AT TIME 28.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 19.86 AF

THE MAXIMUM DISCHARGE FROM NODE 180439 IS: 19.14 CFS AT TIME 28.42 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 27.86 AF

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 14.12 CFS AT TIME 28.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.33 FEET AND A MAXIMUM VOLUME OF: 20.81 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 168.24 CFS AT TIME: 19.73 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 29.98 CFS AT TIME 28.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.33 FEET AND A MAXIMUM VOLUME OF: 44.27 AF

THE MAXIMUM DISCHARGE FROM NODE 180830 IS: 10.38 CFS AT TIME 19.86 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 12.44 AF

THE MAXIMUM DISCHARGE FROM NODE 181218 IS: 3.34 CFS AT TIME 19.24 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 4.21 AF

THE MAXIMUM DISCHARGE FROM NODE 181603 IS: 3.33 CFS AT TIME 32.95 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 3.72 AF

THE MAXIMUM DISCHARGE FROM NODE 181987 IS: 3.57 CFS AT TIME 21.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 4.37 AF

THE MAXIMUM DISCHARGE FROM NODE 182368 IS: 4.19 CFS AT TIME 21.57 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 5.54 AF

THE MAXIMUM DISCHARGE FROM NODE 182747 IS: 7.83 CFS AT TIME 20.47 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 7.31 AF

THE MAXIMUM DISCHARGE FROM NODE 183124 IS: 13.37 CFS AT TIME 20.37 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 10.78 AF

THE MAXIMUM DISCHARGE FROM NODE 183499 IS: 17.74 CFS AT TIME 20.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 16.35 AF

THE MAXIMUM DISCHARGE FROM NODE 183873 IS: 23.15 CFS AT TIME 20.06 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 23.05 AF

THE MAXIMUM DISCHARGE FROM NODE 184244 IS: 30.90 CFS AT TIME 19.64 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 30.01 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 38.75 CFS AT TIME 19.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 36.07 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 57.30 CFS AT TIME: 24.02 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 12.41 CFS AT TIME 23.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 5.64 AF

THE MAXIMUM DISCHARGE FROM NODE 169773 IS: 20.44 CFS AT TIME 23.07 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 8.14 AF

THE MAXIMUM DISCHARGE FROM NODE 170185 IS: 19.33 CFS AT TIME 23.17 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 7.14 AF

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 14.82 CFS AT TIME 23.27 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 7.18 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 70.92 CFS AT TIME: 24.53 HOURS

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 14.82 CFS AT TIME 23.27 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 7.18 AF

THE MAXIMUM DISCHARGE FROM NODE 171009 IS: 14.30 CFS AT TIME 23.37 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 6.99 AF

THE MAXIMUM DISCHARGE FROM NODE 171421 IS: 13.52 CFS AT TIME 25.12 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 6.08 AF

THE MAXIMUM DISCHARGE FROM NODE 171833 IS: 12.49 CFS AT TIME 25.15 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 5.48 AF

THE MAXIMUM DISCHARGE FROM NODE 172244 IS: 11.61 CFS AT TIME 25.18 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 5.50 AF

THE MAXIMUM DISCHARGE FROM NODE 172655 IS: 10.55 CFS AT TIME 25.20 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 5.27 AF

THE MAXIMUM DISCHARGE FROM NODE 173066 IS: 11.01 CFS AT TIME 24.68 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 5.22 AF

THE MAXIMUM DISCHARGE FROM NODE 173477 IS: 11.85 CFS AT TIME 24.85 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 5.30 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 219.63 CFS AT TIME: 19.68 HOURS

THE MAXIMUM DISCHARGE FROM NODE 184619 IS: 31.65 CFS AT TIME 19.17 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.43 FEET AND A MAXIMUM VOLUME OF: 17.24 AF

THE MAXIMUM DISCHARGE FROM NODE 184618 IS: 47.18 CFS AT TIME 19.14 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.60 FEET AND A MAXIMUM VOLUME OF: 28.27 AF

THE MAXIMUM DISCHARGE FROM NODE 184617 IS: 76.77 CFS AT TIME 19.24 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.63 FEET AND A MAXIMUM VOLUME OF: 37.99 AF

THE MAXIMUM DISCHARGE FROM NODE 184616 IS: 69.45 CFS AT TIME 19.32 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.52 FEET AND A MAXIMUM VOLUME OF: 42.27 AF

THE MAXIMUM DISCHARGE FROM NODE 184615 IS: 41.84 CFS AT TIME 19.47 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.48 FEET AND A MAXIMUM VOLUME OF: 38.20 AF

THE MAXIMUM DISCHARGE FROM NODE 184614 IS: 33.15 CFS AT TIME 19.58 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 30.00 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 24.32 CFS AT TIME 19.72 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 22.74 AF

RUN 2 - PRE-DEVELOPMENT ANALYSIS USING CN FOR POOR CONDITION

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 951.55 CFS AT TIME: 24.06 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 20.46 CFS AT TIME 20.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 10.08 AF

THE MAXIMUM DISCHARGE FROM NODE 169362 IS: 4.67 CFS AT TIME 22.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 4.14 AF

THE MAXIMUM DISCHARGE FROM NODE 169363 IS: 3.02 CFS AT TIME 22.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 2.70 AF

THE MAXIMUM DISCHARGE FROM NODE 169364 IS: 2.87 CFS AT TIME 22.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.56 AF

THE MAXIMUM DISCHARGE FROM NODE 169365 IS: 3.09 CFS AT TIME 22.53 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 2.77 AF

THE MAXIMUM DISCHARGE FROM NODE 169366 IS: 20.81 CFS AT TIME 22.21 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 13.96 AF

THE MAXIMUM DISCHARGE FROM NODE 169367 IS: 26.92 CFS AT TIME 22.28 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 18.78 AF

THE MAXIMUM DISCHARGE FROM NODE 169368 IS: 27.88 CFS AT TIME 22.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.32 FEET AND A MAXIMUM VOLUME OF: 20.37 AF

THE MAXIMUM DISCHARGE FROM NODE 169369 IS: 24.51 CFS AT TIME 22.48 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 18.44 AF

THE MAXIMUM DISCHARGE FROM NODE 169370 IS: 18.60 CFS AT TIME 22.38 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 13.69 AF

THE MAXIMUM DISCHARGE FROM NODE 169371 IS: 15.36 CFS AT TIME 22.31 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 10.86 AF

THE MAXIMUM DISCHARGE FROM NODE 169372 IS: 15.00 CFS AT TIME 22.27 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 8.91 AF

THE MAXIMUM DISCHARGE FROM NODE 169373 IS: 11.20 CFS AT TIME 22.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 6.93 AF

THE MAXIMUM DISCHARGE FROM NODE 169374 IS: 10.00 CFS AT TIME 21.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 7.37 AF

THE MAXIMUM DISCHARGE FROM NODE 169375 IS: 11.49 CFS AT TIME 21.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 7.47 AF

THE MAXIMUM DISCHARGE FROM NODE 169376 IS: 13.15 CFS AT TIME 21.95 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 9.33 AF

THE MAXIMUM DISCHARGE FROM NODE 169377 IS: 14.74 CFS AT TIME 21.91 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 8.67 AF

THE MAXIMUM DISCHARGE FROM NODE 169378 IS: 14.60 CFS AT TIME 22.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 10.17 AF

THE MAXIMUM DISCHARGE FROM NODE 169379 IS: 17.74 CFS AT TIME 22.43 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 15.05 AF

THE MAXIMUM DISCHARGE FROM NODE 169380 IS: 23.98 CFS AT TIME 22.34 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 22.14 AF

THE MAXIMUM DISCHARGE FROM NODE 169381 IS: 29.93 CFS AT TIME 22.37 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 29.70 AF

THE MAXIMUM DISCHARGE FROM NODE 169382 IS: 32.59 CFS AT TIME 23.11 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.39 FEET AND A MAXIMUM VOLUME OF: 33.83 AF

THE MAXIMUM DISCHARGE FROM NODE 169383 IS: 24.40 CFS AT TIME 23.38 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 24.56 AF

THE MAXIMUM DISCHARGE FROM NODE 169384 IS: 19.33 CFS AT TIME 24.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 18.47 AF

THE MAXIMUM DISCHARGE FROM NODE 169385 IS: 17.41 CFS AT TIME 24.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 16.40 AF

THE MAXIMUM DISCHARGE FROM NODE 169386 IS: 17.92 CFS AT TIME 24.14 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 17.59 AF

THE MAXIMUM DISCHARGE FROM NODE 169387 IS: 19.82 CFS AT TIME 24.22 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 20.44 AF

THE MAXIMUM DISCHARGE FROM NODE 169388 IS: 21.25 CFS AT TIME 24.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 22.70 AF

THE MAXIMUM DISCHARGE FROM NODE 169389 IS: 25.54 CFS AT TIME 24.17 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.32 FEET AND A MAXIMUM VOLUME OF: 27.84 AF

THE MAXIMUM DISCHARGE FROM NODE 169390 IS: 32.51 CFS AT TIME 24.14 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.36 FEET AND A MAXIMUM VOLUME OF: 35.56 AF

THE MAXIMUM DISCHARGE FROM NODE 169391 IS: 44.70 CFS AT TIME 24.06 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.43 FEET AND A MAXIMUM VOLUME OF: 48.63 AF

THE MAXIMUM DISCHARGE FROM NODE 169392 IS: 159.47 CFS AT TIME 24.06 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.57 FEET AND A MAXIMUM VOLUME OF: 65.92 AF

THE MAXIMUM DISCHARGE FROM NODE 169393 IS: 112.17 CFS AT TIME 25.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.55 FEET AND A MAXIMUM VOLUME OF: 69.11 AF

THE MAXIMUM DISCHARGE FROM NODE 169394 IS: 53.11 CFS AT TIME 24.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.47 FEET AND A MAXIMUM VOLUME OF: 62.72 AF

THE MAXIMUM DISCHARGE FROM NODE 169395 IS: 41.43 CFS AT TIME 25.36 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.40 FEET AND A MAXIMUM VOLUME OF: 53.49 AF

THE MAXIMUM DISCHARGE FROM NODE 169396 IS: 43.26 CFS AT TIME 24.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.40 FEET AND A MAXIMUM VOLUME OF: 57.34 AF

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 100.67 CFS AT TIME 24.95 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.56 FEET AND A MAXIMUM VOLUME OF: 78.12 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 4086.17 CFS AT TIME: 26.58 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 121.77 CFS AT TIME 24.95 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.56 FEET AND A MAXIMUM VOLUME OF: 106.75 AF

THE MAXIMUM DISCHARGE FROM NODE 169811 IS: 48.89 CFS AT TIME 28.12 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 66.54 AF

THE MAXIMUM DISCHARGE FROM NODE 170225 IS: 22.41 CFS AT TIME 28.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 27.04 AF

THE MAXIMUM DISCHARGE FROM NODE 170638 IS: 25.31 CFS AT TIME 27.63 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 30.93 AF

THE MAXIMUM DISCHARGE FROM NODE 171052 IS: 101.17 CFS AT TIME 27.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.42 FEET AND A MAXIMUM VOLUME OF: 78.14 AF

THE MAXIMUM DISCHARGE FROM NODE 171465 IS: 311.64 CFS AT TIME 25.91 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.61 FEET AND A MAXIMUM VOLUME OF: 115.79 AF

THE MAXIMUM DISCHARGE FROM NODE 171878 IS: 417.29 CFS AT TIME 26.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.76 FEET AND A MAXIMUM VOLUME OF: 163.78 AF

THE MAXIMUM DISCHARGE FROM NODE 172290 IS: 488.73 CFS AT TIME 26.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.91 FEET AND A MAXIMUM VOLUME OF: 196.59 AF

THE MAXIMUM DISCHARGE FROM NODE 172702 IS: 314.66 CFS AT TIME 26.59 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.77 FEET AND A MAXIMUM VOLUME OF: 101.51 AF

THE MAXIMUM DISCHARGE FROM NODE 173114 IS: 361.73 CFS AT TIME 25.59 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.81 FEET AND A MAXIMUM VOLUME OF: 139.19 AF

THE MAXIMUM DISCHARGE FROM NODE 173526 IS: 449.15 CFS AT TIME 24.31 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.88 FEET AND A MAXIMUM VOLUME OF: 211.27 AF

THE MAXIMUM DISCHARGE FROM NODE 173938 IS: 538.58 CFS AT TIME 24.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.98 FEET AND A MAXIMUM VOLUME OF: 282.35 AF

THE MAXIMUM DISCHARGE FROM NODE 174349 IS: 546.20 CFS AT TIME 25.29 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 1.04 FEET AND A MAXIMUM VOLUME OF: 312.51 AF

THE MAXIMUM DISCHARGE FROM NODE 174761 IS: 449.12 CFS AT TIME 25.30 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.87 FEET AND A MAXIMUM VOLUME OF: 136.31 AF

THE MAXIMUM DISCHARGE FROM NODE 175172 IS: 416.94 CFS AT TIME 25.31 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.80 FEET AND A MAXIMUM VOLUME OF: 115.00 AF

THE MAXIMUM DISCHARGE FROM NODE 175583 IS: 531.96 CFS AT TIME 25.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 1.00 FEET AND A MAXIMUM VOLUME OF: 187.80 AF

THE MAXIMUM DISCHARGE FROM NODE 175993 IS: 484.54 CFS AT TIME 25.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.89 FEET AND A MAXIMUM VOLUME OF: 140.26 AF

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 423.48 CFS AT TIME 25.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.82 FEET AND A MAXIMUM VOLUME OF: 108.16 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 2006.55 CFS AT TIME: 26.67 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 278.49 CFS AT TIME 25.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.82 FEET AND A MAXIMUM VOLUME OF: 67.24 AF

THE MAXIMUM DISCHARGE FROM NODE 176404 IS: 262.47 CFS AT TIME 25.34 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.79 FEET AND A MAXIMUM VOLUME OF: 68.60 AF

THE MAXIMUM DISCHARGE FROM NODE 176405 IS: 242.03 CFS AT TIME 25.34 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.79 FEET AND A MAXIMUM VOLUME OF: 73.81 AF

THE MAXIMUM DISCHARGE FROM NODE 176406 IS: 272.11 CFS AT TIME 26.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.81 FEET AND A MAXIMUM VOLUME OF: 82.94 AF

THE MAXIMUM DISCHARGE FROM NODE 176407 IS: 299.21 CFS AT TIME 26.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.93 FEET AND A MAXIMUM VOLUME OF: 90.18 AF

THE MAXIMUM DISCHARGE FROM NODE 176408 IS: 228.75 CFS AT TIME 26.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.76 FEET AND A MAXIMUM VOLUME OF: 61.38 AF

THE MAXIMUM DISCHARGE FROM NODE 176409 IS: 198.93 CFS AT TIME 26.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.71 FEET AND A MAXIMUM VOLUME OF: 52.73 AF

THE MAXIMUM DISCHARGE FROM NODE 176410 IS: 156.21 CFS AT TIME 26.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.66 FEET AND A MAXIMUM VOLUME OF: 48.33 AF

THE MAXIMUM DISCHARGE FROM NODE 176411 IS: 49.29 CFS AT TIME 26.69 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.48 FEET AND A MAXIMUM VOLUME OF: 43.43 AF

THE MAXIMUM DISCHARGE FROM NODE 176412 IS: 33.46 CFS AT TIME 26.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.36 FEET AND A MAXIMUM VOLUME OF: 38.71 AF

THE MAXIMUM DISCHARGE FROM NODE 176413 IS: 31.72 CFS AT TIME 25.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.35 FEET AND A MAXIMUM VOLUME OF: 35.75 AF

THE MAXIMUM DISCHARGE FROM NODE 176414 IS: 30.94 CFS AT TIME 25.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.33 FEET AND A MAXIMUM VOLUME OF: 34.80 AF

THE MAXIMUM DISCHARGE FROM NODE 176415 IS: 35.27 CFS AT TIME 24.72 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.37 FEET AND A MAXIMUM VOLUME OF: 39.27 AF

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 137.17 CFS AT TIME 24.63 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.60 FEET AND A MAXIMUM VOLUME OF: 45.20 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 2069.22 CFS AT TIME: 24.63 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 150.22 CFS AT TIME 24.63 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.60 FEET AND A MAXIMUM VOLUME OF: 58.65 AF

THE MAXIMUM DISCHARGE FROM NODE 176826 IS: 331.23 CFS AT TIME 24.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.81 FEET AND A MAXIMUM VOLUME OF: 67.65 AF

THE MAXIMUM DISCHARGE FROM NODE 177235 IS: 489.24 CFS AT TIME 24.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.96 FEET AND A MAXIMUM VOLUME OF: 78.52 AF

THE MAXIMUM DISCHARGE FROM NODE 177643 IS: 543.51 CFS AT TIME 24.63 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 1.09 FEET AND A MAXIMUM VOLUME OF: 89.18 AF

THE MAXIMUM DISCHARGE FROM NODE 178048 IS: 550.61 CFS AT TIME 24.65 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 1.20 FEET AND A MAXIMUM VOLUME OF: 115.73 AF

THE MAXIMUM DISCHARGE FROM NODE 178451 IS: 372.24 CFS AT TIME 24.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.84 FEET AND A MAXIMUM VOLUME OF: 89.49 AF

THE MAXIMUM DISCHARGE FROM NODE 178852 IS: 243.42 CFS AT TIME 24.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.69 FEET AND A MAXIMUM VOLUME OF: 53.77 AF

THE MAXIMUM DISCHARGE FROM NODE 179251 IS: 156.18 CFS AT TIME 26.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.55 FEET AND A MAXIMUM VOLUME OF: 55.10 AF

THE MAXIMUM DISCHARGE FROM NODE 179648 IS: 290.49 CFS AT TIME 26.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.65 FEET AND A MAXIMUM VOLUME OF: 105.78 AF

THE MAXIMUM DISCHARGE FROM NODE 180043 IS: 321.24 CFS AT TIME 26.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.67 FEET AND A MAXIMUM VOLUME OF: 167.75 AF

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 202.27 CFS AT TIME 26.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.57 FEET AND A MAXIMUM VOLUME OF: 106.34 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 288.26 CFS AT TIME: 26.34 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 159.06 CFS AT TIME 26.34 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.57 FEET AND A MAXIMUM VOLUME OF: 76.03 AF

THE MAXIMUM DISCHARGE FROM NODE 180437 IS: 49.95 CFS AT TIME 26.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.50 FEET AND A MAXIMUM VOLUME OF: 44.01 AF

THE MAXIMUM DISCHARGE FROM NODE 180438 IS: 28.82 CFS AT TIME 26.37 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.39 FEET AND A MAXIMUM VOLUME OF: 32.76 AF

THE MAXIMUM DISCHARGE FROM NODE 180439 IS: 30.07 CFS AT TIME 27.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.45 FEET AND A MAXIMUM VOLUME OF: 39.70 AF

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 23.32 CFS AT TIME 27.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.44 FEET AND A MAXIMUM VOLUME OF: 29.36 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 242.95 CFS AT TIME: 27.62 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 48.35 CFS AT TIME 27.07 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.44 FEET AND A MAXIMUM VOLUME OF: 63.23 AF

THE MAXIMUM DISCHARGE FROM NODE 180830 IS: 15.29 CFS AT TIME 27.09 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 17.82 AF

THE MAXIMUM DISCHARGE FROM NODE 181218 IS: 3.49 CFS AT TIME 28.08 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 5.07 AF

THE MAXIMUM DISCHARGE FROM NODE 181603 IS: 3.66 CFS AT TIME 26.42 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 4.95 AF

THE MAXIMUM DISCHARGE FROM NODE 181987 IS: 4.73 CFS AT TIME 27.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 6.17 AF

THE MAXIMUM DISCHARGE FROM NODE 182368 IS: 8.79 CFS AT TIME 28.19 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 8.60 AF

THE MAXIMUM DISCHARGE FROM NODE 182747 IS: 14.05 CFS AT TIME 27.52 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 14.00 AF

THE MAXIMUM DISCHARGE FROM NODE 183124 IS: 18.49 CFS AT TIME 27.54 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 21.03 AF

THE MAXIMUM DISCHARGE FROM NODE 183499 IS: 23.59 CFS AT TIME 27.68 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.24 FEET AND A MAXIMUM VOLUME OF: 28.31 AF

THE MAXIMUM DISCHARGE FROM NODE 183873 IS: 29.52 CFS AT TIME 27.69 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 35.80 AF

THE MAXIMUM DISCHARGE FROM NODE 184244 IS: 35.84 CFS AT TIME 27.74 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.30 FEET AND A MAXIMUM VOLUME OF: 44.09 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 41.56 CFS AT TIME 27.77 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 52.42 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 90.49 CFS AT TIME: 20.41 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 21.53 CFS AT TIME 20.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 10.28 AF

THE MAXIMUM DISCHARGE FROM NODE 169773 IS: 28.54 CFS AT TIME 20.28 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.31 FEET AND A MAXIMUM VOLUME OF: 14.04 AF

THE MAXIMUM DISCHARGE FROM NODE 170185 IS: 26.57 CFS AT TIME 20.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 12.63 AF

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 23.78 CFS AT TIME 20.44 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 12.32 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 114.33 CFS AT TIME: 20.99 HOURS

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 23.78 CFS AT TIME 20.44 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 12.32 AF

THE MAXIMUM DISCHARGE FROM NODE 171009 IS: 23.13 CFS AT TIME 20.53 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 12.09 AF

THE MAXIMUM DISCHARGE FROM NODE 171421 IS: 21.66 CFS AT TIME 20.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 10.88 AF

THE MAXIMUM DISCHARGE FROM NODE 171833 IS: 20.83 CFS AT TIME 20.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 9.76 AF

THE MAXIMUM DISCHARGE FROM NODE 172244 IS: 20.01 CFS AT TIME 20.78 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.27 FEET AND A MAXIMUM VOLUME OF: 9.45 AF

THE MAXIMUM DISCHARGE FROM NODE 172655 IS: 18.47 CFS AT TIME 20.87 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 8.76 AF

THE MAXIMUM DISCHARGE FROM NODE 173066 IS: 16.49 CFS AT TIME 20.97 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.29 FEET AND A MAXIMUM VOLUME OF: 8.46 AF

THE MAXIMUM DISCHARGE FROM NODE 173477 IS: 15.51 CFS AT TIME 21.05 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.28 FEET AND A MAXIMUM VOLUME OF: 8.56 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 253.75 CFS AT TIME: 19.36 HOURS

THE MAXIMUM DISCHARGE FROM NODE 184619 IS: 26.10 CFS AT TIME 18.18 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.37 FEET AND A MAXIMUM VOLUME OF: 26.61 AF

THE MAXIMUM DISCHARGE FROM NODE 184618 IS: 39.26 CFS AT TIME 18.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.43 FEET AND A MAXIMUM VOLUME OF: 43.02 AF

THE MAXIMUM DISCHARGE FROM NODE 184617 IS: 47.80 CFS AT TIME 18.26 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.48 FEET AND A MAXIMUM VOLUME OF: 56.68 AF

THE MAXIMUM DISCHARGE FROM NODE 184616 IS: 48.53 CFS AT TIME 18.32 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.49 FEET AND A MAXIMUM VOLUME OF: 60.81 AF

THE MAXIMUM DISCHARGE FROM NODE 184615 IS: 42.19 CFS AT TIME 18.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.46 FEET AND A MAXIMUM VOLUME OF: 53.48 AF

THE MAXIMUM DISCHARGE FROM NODE 184614 IS: 32.69 CFS AT TIME 18.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.39 FEET AND A MAXIMUM VOLUME OF: 41.80 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 26.11 CFS AT TIME 27.77 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.34 FEET AND A MAXIMUM VOLUME OF: 32.86 AF

RUN 7 → PRE-DEVELOPMENT 5-YR RUN SCS Method

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 69.32 CFS AT TIME: 49.10 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 1.94 CFS AT TIME 43.93 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 2.14 AF

THE MAXIMUM DISCHARGE FROM NODE 169362 IS: 0.71 CFS AT TIME 45.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.05 FEET AND A MAXIMUM VOLUME OF: 0.95 AF

THE MAXIMUM DISCHARGE FROM NODE 169363 IS: 0.38 CFS AT TIME 46.60 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.60 AF

THE MAXIMUM DISCHARGE FROM NODE 169364 IS: 0.38 CFS AT TIME 46.91 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.57 AF

THE MAXIMUM DISCHARGE FROM NODE 169365 IS: 0.43 CFS AT TIME 46.48 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.04 FEET AND A MAXIMUM VOLUME OF: 0.64 AF

THE MAXIMUM DISCHARGE FROM NODE 169366 IS: 2.29 CFS AT TIME 45.66 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 2.61 AF

THE MAXIMUM DISCHARGE FROM NODE 169367 IS: 3.33 CFS AT TIME 45.85 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 3.94 AF

THE MAXIMUM DISCHARGE FROM NODE 169368 IS: 3.31 CFS AT TIME 45.35 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 4.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169369 IS: 2.66 CFS AT TIME 45.40 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 3.91 AF

THE MAXIMUM DISCHARGE FROM NODE 169370 IS: 1.72 CFS AT TIME 45.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 3.04 AF

THE MAXIMUM DISCHARGE FROM NODE 169371 IS: 1.10 CFS AT TIME 46.07 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.07 FEET AND A MAXIMUM VOLUME OF: 2.38 AF

THE MAXIMUM DISCHARGE FROM NODE 169372 IS: 0.98 CFS AT TIME 25.24 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.07 FEET AND A MAXIMUM VOLUME OF: 2.05 AF

THE MAXIMUM DISCHARGE FROM NODE 169373 IS: 0.89 CFS AT TIME 25.27 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 1.69 AF

THE MAXIMUM DISCHARGE FROM NODE 169374 IS: 1.00 CFS AT TIME 24.94 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.07 FEET AND A MAXIMUM VOLUME OF: 1.81 AF

THE MAXIMUM DISCHARGE FROM NODE 169375 IS: 0.98 CFS AT TIME 24.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 1.79 AF

THE MAXIMUM DISCHARGE FROM NODE 169376 IS: 1.25 CFS AT TIME 24.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 2.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169377 IS: 0.96 CFS AT TIME 24.55 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 2.05 AF

THE MAXIMUM DISCHARGE FROM NODE 169378 IS: 0.91 CFS AT TIME 27.50 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 2.20 AF

THE MAXIMUM DISCHARGE FROM NODE 169379 IS: 1.25 CFS AT TIME 50.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 3.04 AF

THE MAXIMUM DISCHARGE FROM NODE 169380 IS: 2.13 CFS AT TIME 49.45 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 4.86 AF

THE MAXIMUM DISCHARGE FROM NODE 169381 IS: 3.09 CFS AT TIME 48.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 6.82 AF

THE MAXIMUM DISCHARGE FROM NODE 169382 IS: 3.63 CFS AT TIME 47.70 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 7.91 AF

THE MAXIMUM DISCHARGE FROM NODE 169383 IS: 2.47 CFS AT TIME 47.77 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 5.13 AF

THE MAXIMUM DISCHARGE FROM NODE 169384 IS: 1.74 CFS AT TIME 48.07 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 3.72 AF

THE MAXIMUM DISCHARGE FROM NODE 169385 IS: 1.40 CFS AT TIME 48.42 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 3.15 AF

THE MAXIMUM DISCHARGE FROM NODE 169386 IS: 1.29 CFS AT TIME 48.82 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 3.06 AF

THE MAXIMUM DISCHARGE FROM NODE 169387 IS: 1.29 CFS AT TIME 49.21 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 3.21 AF

THE MAXIMUM DISCHARGE FROM NODE 169388 IS: 1.28 CFS AT TIME 49.49 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 3.24 AF

THE MAXIMUM DISCHARGE FROM NODE 169389 IS: 1.60 CFS AT TIME 58.99 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 3.93 AF

THE MAXIMUM DISCHARGE FROM NODE 169390 IS: 2.34 CFS AT TIME 58.85 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 5.33 AF

THE MAXIMUM DISCHARGE FROM NODE 169391 IS: 3.66 CFS AT TIME 55.14 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 7.98 AF

THE MAXIMUM DISCHARGE FROM NODE 169392 IS: 5.58 CFS AT TIME 55.03 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 11.19 AF

THE MAXIMUM DISCHARGE FROM NODE 169393 IS: 6.26 CFS AT TIME 54.97 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 11.46 AF

THE MAXIMUM DISCHARGE FROM NODE 169394 IS: 4.89 CFS AT TIME 57.25 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 10.09 AF

THE MAXIMUM DISCHARGE FROM NODE 169395 IS: 4.01 CFS AT TIME 58.45 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 8.49 AF

THE MAXIMUM DISCHARGE FROM NODE 169396 IS: 4.49 CFS AT TIME 58.37 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 9.89 AF

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 9.85 CFS AT TIME 59.92 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 14.50 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 115.77 CFS AT TIME: 58.66 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 12.02 CFS AT TIME 59.92 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 19.55 AF

THE MAXIMUM DISCHARGE FROM NODE 169811 IS: 4.23 CFS AT TIME 60.00 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 10.16 AF

THE MAXIMUM DISCHARGE FROM NODE 170225 IS: 1.14 CFS AT TIME 60.00 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 3.20 AF

THE MAXIMUM DISCHARGE FROM NODE 170638 IS: 0.84 CFS AT TIME 24.00 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.05 FEET AND A MAXIMUM VOLUME OF: 2.72 AF

THE MAXIMUM DISCHARGE FROM NODE 171052 IS: 1.52 CFS AT TIME 23.99 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 5.27 AF

THE MAXIMUM DISCHARGE FROM NODE 171465 IS: 2.12 CFS AT TIME 38.85 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 6.73 AF

THE MAXIMUM DISCHARGE FROM NODE 171878 IS: 2.92 CFS AT TIME 38.83 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 8.53 AF

THE MAXIMUM DISCHARGE FROM NODE 172290 IS: 3.61 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 9.75 AF

THE MAXIMUM DISCHARGE FROM NODE 172702 IS: 2.02 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 4.35 AF

THE MAXIMUM DISCHARGE FROM NODE 173114 IS: 3.38 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 5.81 AF

THE MAXIMUM DISCHARGE FROM NODE 173526 IS: 6.06 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 8.65 AF

THE MAXIMUM DISCHARGE FROM NODE 173938 IS: 12.65 CFS AT TIME 59.84 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 12.04 AF

THE MAXIMUM DISCHARGE FROM NODE 174349 IS: 19.19 CFS AT TIME 56.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 15.68 AF

THE MAXIMUM DISCHARGE FROM NODE 174761 IS: 5.74 CFS AT TIME 58.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 6.18 AF

THE MAXIMUM DISCHARGE FROM NODE 175172 IS: 8.21 CFS AT TIME 52.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 6.03 AF

THE MAXIMUM DISCHARGE FROM NODE 175583 IS: 23.13 CFS AT TIME 51.75 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.32 FEET AND A MAXIMUM VOLUME OF: 14.75 AF

THE MAXIMUM DISCHARGE FROM NODE 175993 IS: 22.26 CFS AT TIME 53.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 11.10 AF

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 18.53 CFS AT TIME 55.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 7.29 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 60.24 CFS AT TIME: 59.73 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 11.24 CFS AT TIME 55.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 4.39 AF

THE MAXIMUM DISCHARGE FROM NODE 176404 IS: 14.14 CFS AT TIME 56.42 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 4.83 AF

THE MAXIMUM DISCHARGE FROM NODE 176405 IS: 9.73 CFS AT TIME 57.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 4.61 AF

THE MAXIMUM DISCHARGE FROM NODE 176406 IS: 10.90 CFS AT TIME 57.59 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 4.69 AF

THE MAXIMUM DISCHARGE FROM NODE 176407 IS: 9.18 CFS AT TIME 58.89 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 4.89 AF

THE MAXIMUM DISCHARGE FROM NODE 176408 IS: 4.12 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.18 FEET AND A MAXIMUM VOLUME OF: 2.82 AF

THE MAXIMUM DISCHARGE FROM NODE 176409 IS: 3.54 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 2.30 AF

THE MAXIMUM DISCHARGE FROM NODE 176410 IS: 3.01 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 2.03 AF

THE MAXIMUM DISCHARGE FROM NODE 176411 IS: 2.24 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 1.75 AF

THE MAXIMUM DISCHARGE FROM NODE 176412 IS: 1.48 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 1.52 AF

THE MAXIMUM DISCHARGE FROM NODE 176413 IS: 1.11 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 1.42 AF

THE MAXIMUM DISCHARGE FROM NODE 176414 IS: 1.26 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 1.41 AF

THE MAXIMUM DISCHARGE FROM NODE 176415 IS: 2.33 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 1.68 AF

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 3.47 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 2.04 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 73.72 CFS AT TIME: 59.97 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 4.47 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 2.68 AF

THE MAXIMUM DISCHARGE FROM NODE 176826 IS: 5.20 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 3.29 AF

THE MAXIMUM DISCHARGE FROM NODE 177235 IS: 5.91 CFS AT TIME 59.63 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.18 FEET AND A MAXIMUM VOLUME OF: 4.00 AF

THE MAXIMUM DISCHARGE FROM NODE 177643 IS: 6.26 CFS AT TIME 59.70 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 4.50 AF

THE MAXIMUM DISCHARGE FROM NODE 178048 IS: 10.46 CFS AT TIME 58.55 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 6.93 AF

THE MAXIMUM DISCHARGE FROM NODE 178451 IS: 8.10 CFS AT TIME 58.25 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 5.25 AF

THE MAXIMUM DISCHARGE FROM NODE 178852 IS: 3.91 CFS AT TIME 58.80 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 2.86 AF

THE MAXIMUM DISCHARGE FROM NODE 179251 IS: 3.50 CFS AT TIME 57.11 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.64 AF

THE MAXIMUM DISCHARGE FROM NODE 179648 IS: 8.30 CFS AT TIME 57.11 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 6.10 AF

THE MAXIMUM DISCHARGE FROM NODE 180043 IS: 18.80 CFS AT TIME 55.77 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.26 FEET AND A MAXIMUM VOLUME OF: 12.33 AF

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 4.61 CFS AT TIME 57.83 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 6.64 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 8.97 CFS AT TIME: 43.75 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 3.45 CFS AT TIME 57.89 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 4.73 AF

THE MAXIMUM DISCHARGE FROM NODE 180437 IS: 1.59 CFS AT TIME 60.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 2.83 AF

THE MAXIMUM DISCHARGE FROM NODE 180438 IS: 1.68 CFS AT TIME 38.71 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.90 AF

THE MAXIMUM DISCHARGE FROM NODE 180439 IS: 2.87 CFS AT TIME 35.58 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 4.93 AF

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 2.39 CFS AT TIME 35.22 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 3.82 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 23.02 CFS AT TIME: 38.64 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 5.00 CFS AT TIME 35.15 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 8.19 AF

THE MAXIMUM DISCHARGE FROM NODE 180830 IS: 1.24 CFS AT TIME 35.74 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.07 FEET AND A MAXIMUM VOLUME OF: 2.02 AF

THE MAXIMUM DISCHARGE FROM NODE 181218 IS: 0.36 CFS AT TIME 35.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.65 AF

THE MAXIMUM DISCHARGE FROM NODE 181603 IS: 0.36 CFS AT TIME 39.61 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.61 AF

THE MAXIMUM DISCHARGE FROM NODE 181987 IS: 0.46 CFS AT TIME 39.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.77 AF

THE MAXIMUM DISCHARGE FROM NODE 182368 IS: 0.63 CFS AT TIME 38.40 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.04 FEET AND A MAXIMUM VOLUME OF: 1.03 AF

THE MAXIMUM DISCHARGE FROM NODE 182747 IS: 0.94 CFS AT TIME 38.67 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.05 FEET AND A MAXIMUM VOLUME OF: 1.41 AF

THE MAXIMUM DISCHARGE FROM NODE 183124 IS: 1.40 CFS AT TIME 38.75 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.06 FEET AND A MAXIMUM VOLUME OF: 2.03 AF

THE MAXIMUM DISCHARGE FROM NODE 183499 IS: 1.99 CFS AT TIME 38.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.08 FEET AND A MAXIMUM VOLUME OF: 2.84 AF

THE MAXIMUM DISCHARGE FROM NODE 183873 IS: 2.75 CFS AT TIME 38.78 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 3.89 AF

THE MAXIMUM DISCHARGE FROM NODE 184244 IS: 3.67 CFS AT TIME 38.86 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 5.17 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 4.77 CFS AT TIME 37.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 6.50 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 9.77 CFS AT TIME: 44.22 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 2.04 CFS AT TIME 43.79 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 2.16 AF

THE MAXIMUM DISCHARGE FROM NODE 169773 IS: 3.31 CFS AT TIME 43.84 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 2.99 AF

THE MAXIMUM DISCHARGE FROM NODE 170185 IS: 2.97 CFS AT TIME 44.20 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 2.77 AF

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 2.35 CFS AT TIME 44.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.75 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 13.41 CFS AT TIME: 47.68 HOURS

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 2.35 CFS AT TIME 44.76 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.75 AF

THE MAXIMUM DISCHARGE FROM NODE 171009 IS: 2.19 CFS AT TIME 45.10 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 2.70 AF

THE MAXIMUM DISCHARGE FROM NODE 171421 IS: 1.97 CFS AT TIME 45.54 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 2.46 AF

THE MAXIMUM DISCHARGE FROM NODE 171833 IS: 1.81 CFS AT TIME 46.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.09 FEET AND A MAXIMUM VOLUME OF: 2.20 AF

THE MAXIMUM DISCHARGE FROM NODE 172244 IS: 1.77 CFS AT TIME 46.40 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 2.11 AF

THE MAXIMUM DISCHARGE FROM NODE 172655 IS: 1.70 CFS AT TIME 46.81 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 1.96 AF

THE MAXIMUM DISCHARGE FROM NODE 173066 IS: 1.69 CFS AT TIME 47.33 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 1.90 AF

THE MAXIMUM DISCHARGE FROM NODE 173477 IS: 1.66 CFS AT TIME 47.73 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 1.90 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 47.40 CFS AT TIME: 37.37 HOURS

THE MAXIMUM DISCHARGE FROM NODE 184619 IS: 3.48 CFS AT TIME 30.94 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 4.34 AF

THE MAXIMUM DISCHARGE FROM NODE 184618 IS: 11.29 CFS AT TIME 32.89 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.25 FEET AND A MAXIMUM VOLUME OF: 7.85 AF

THE MAXIMUM DISCHARGE FROM NODE 184617 IS: 12.91 CFS AT TIME 33.62 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 10.79 AF

THE MAXIMUM DISCHARGE FROM NODE 184616 IS: 13.18 CFS AT TIME 35.82 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.23 FEET AND A MAXIMUM VOLUME OF: 10.67 AF

THE MAXIMUM DISCHARGE FROM NODE 184615 IS: 9.99 CFS AT TIME 35.55 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.22 FEET AND A MAXIMUM VOLUME OF: 8.26 AF

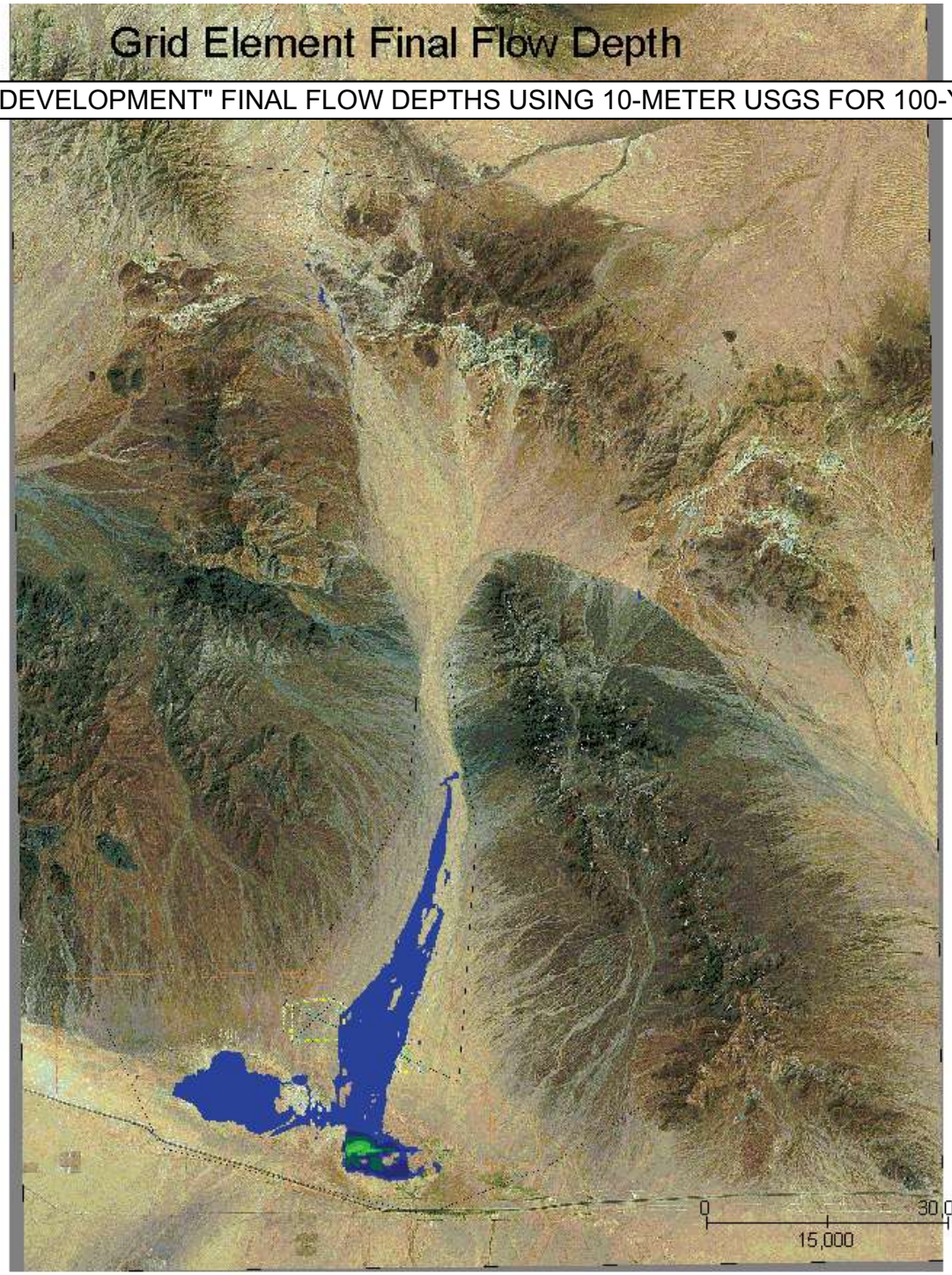
THE MAXIMUM DISCHARGE FROM NODE 184614 IS: 4.83 CFS AT TIME 36.15 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.19 FEET AND A MAXIMUM VOLUME OF: 5.78 AF

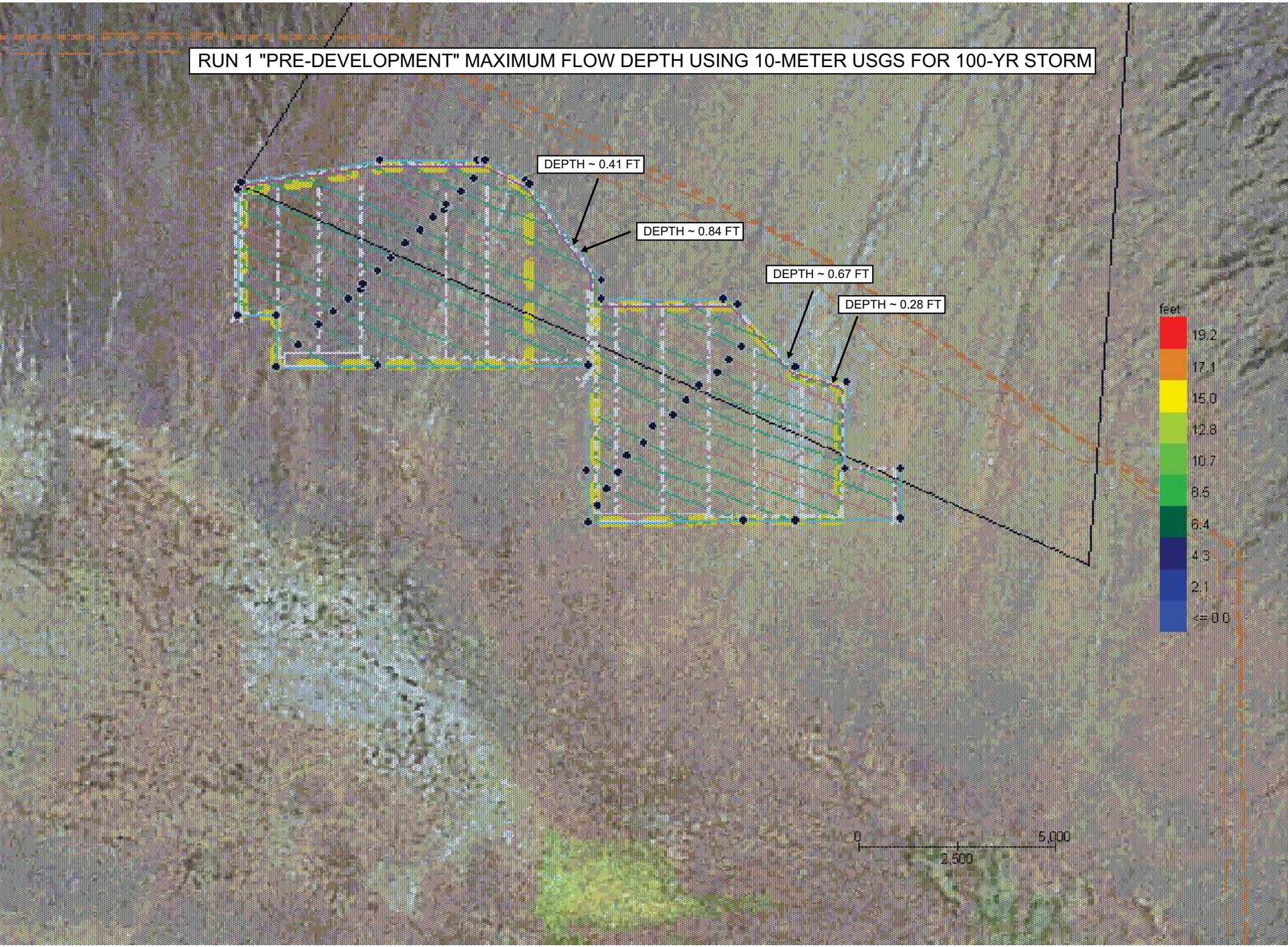
THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 3.01 CFS AT TIME 37.21 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 4.03 AF

ATTACHMENT E

Grid Element Final Flow Depth

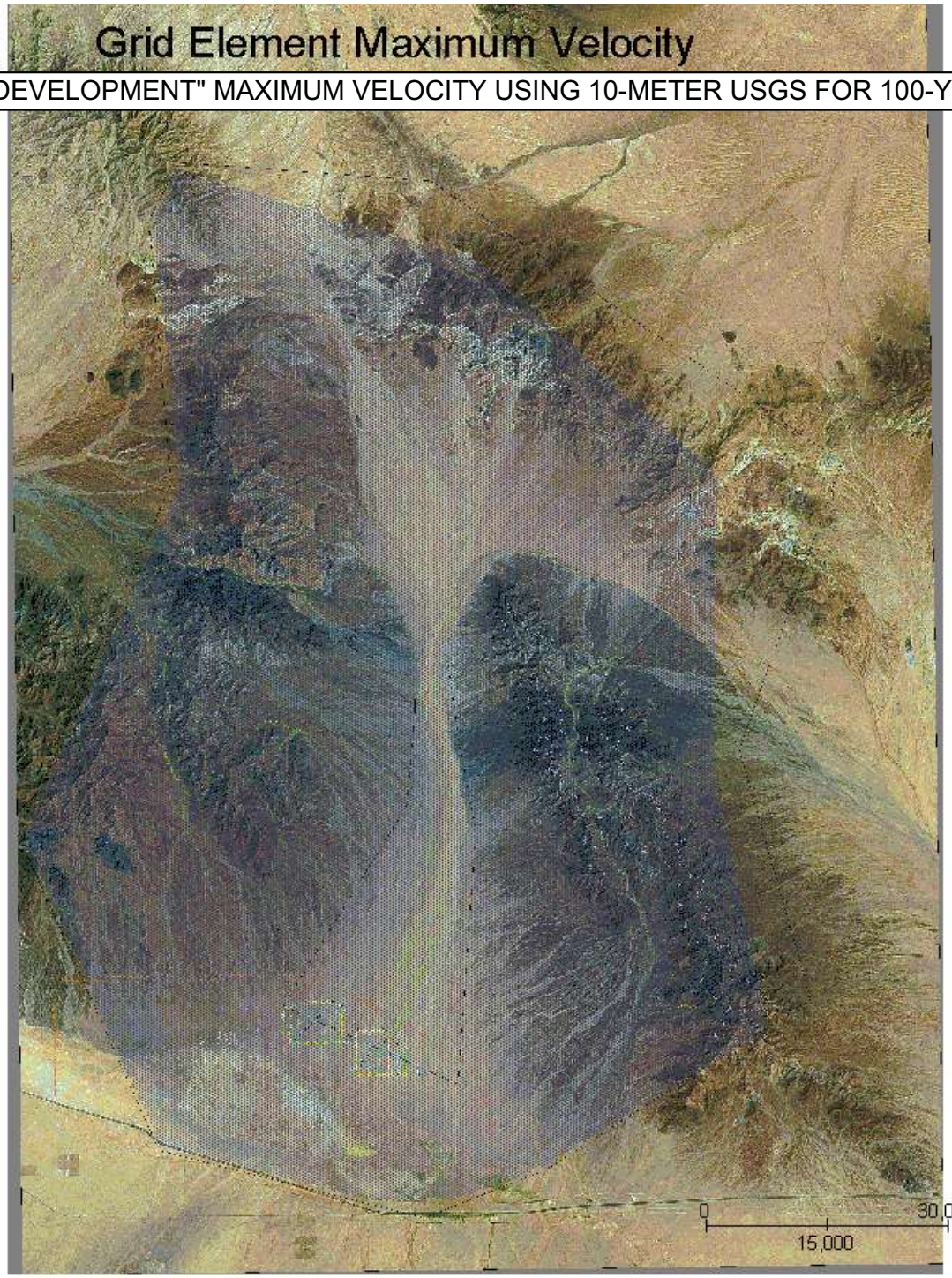
RUN1 "PRE-DEVELOPMENT" FINAL FLOW DEPTHS USING 10-METER USGS FOR 100-YR STORM



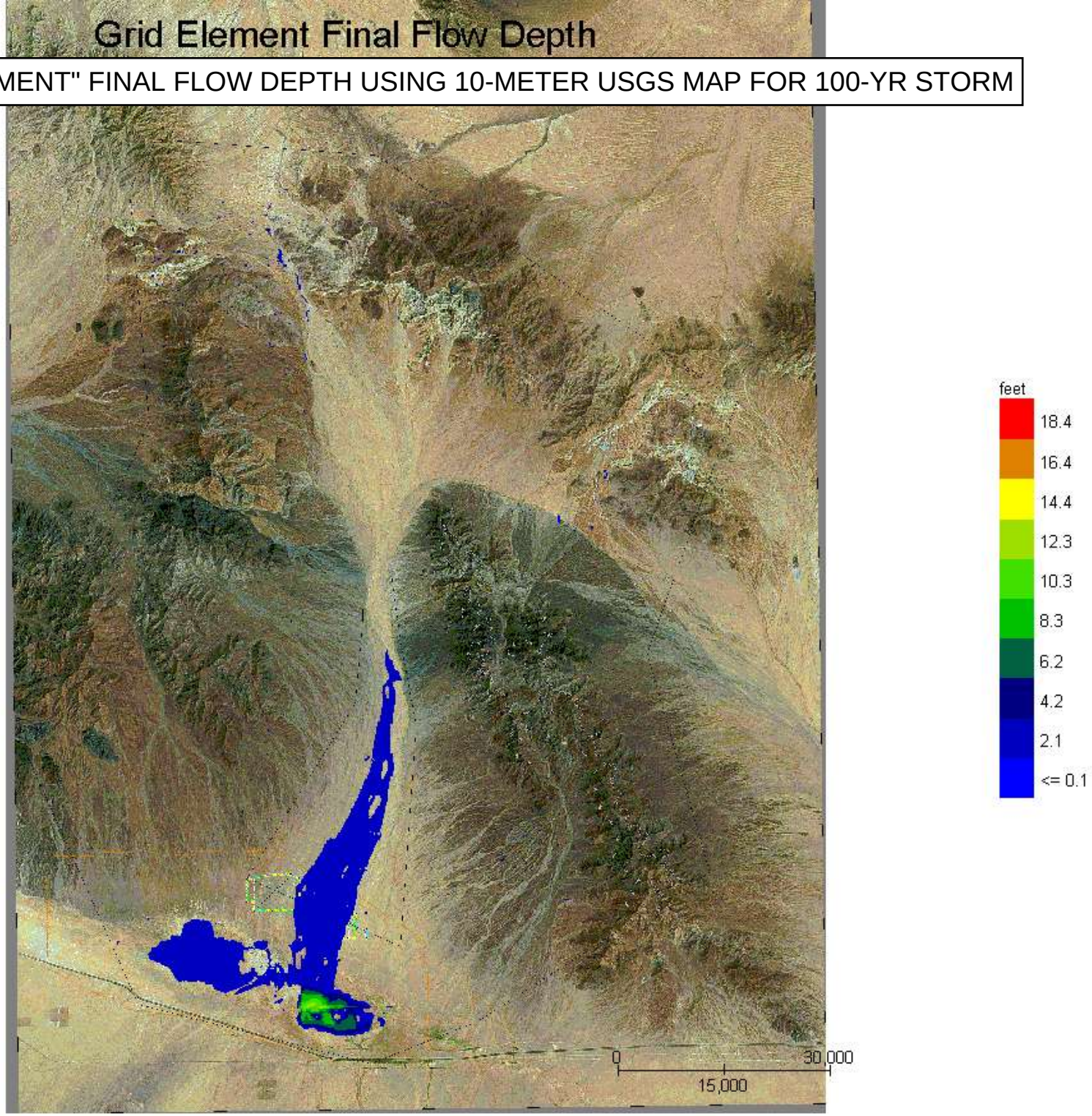

RUN 1 "PRE-DEVELOPMENT" MAXIMUM FLOW DEPTH USING 10-METER USGS FOR 100-YR STORM
DEPTH ~ 0.41 FT
DEPTH ~ 0.84 FT
DEPTH ~ 0.67 FT
DEPTH ~ 0.28 FT
feet
19.2
17.1
15.0
12.8
10.7
8.5
6.4
4.3
2.1
<= 0.0
0
2,500
5,000

Grid Element Maximum Velocity

RUN 1 "PRE-DEVELOPMENT" MAXIMUM VELOCITY USING 10-METER USGS FOR 100-YR STORM

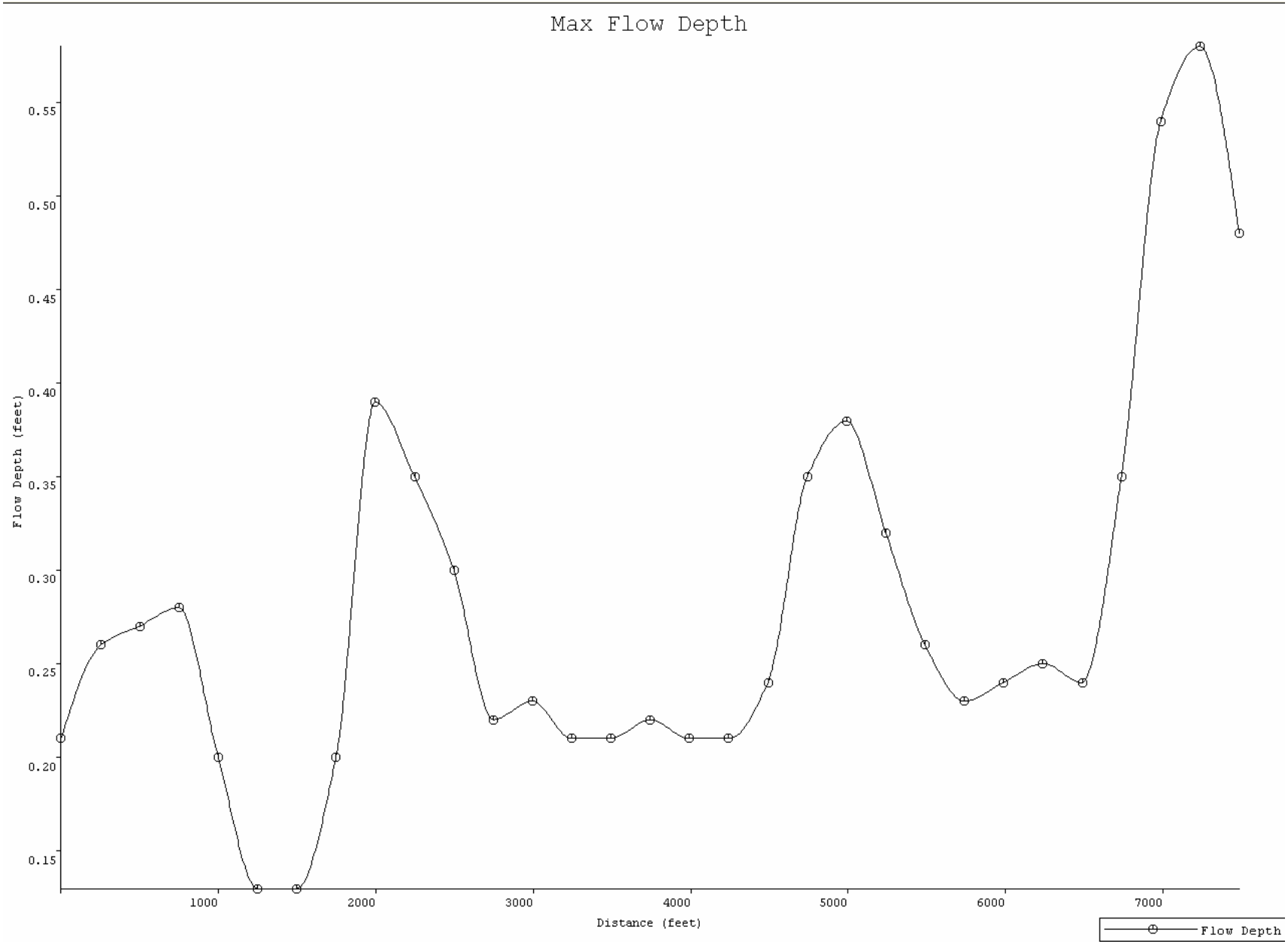


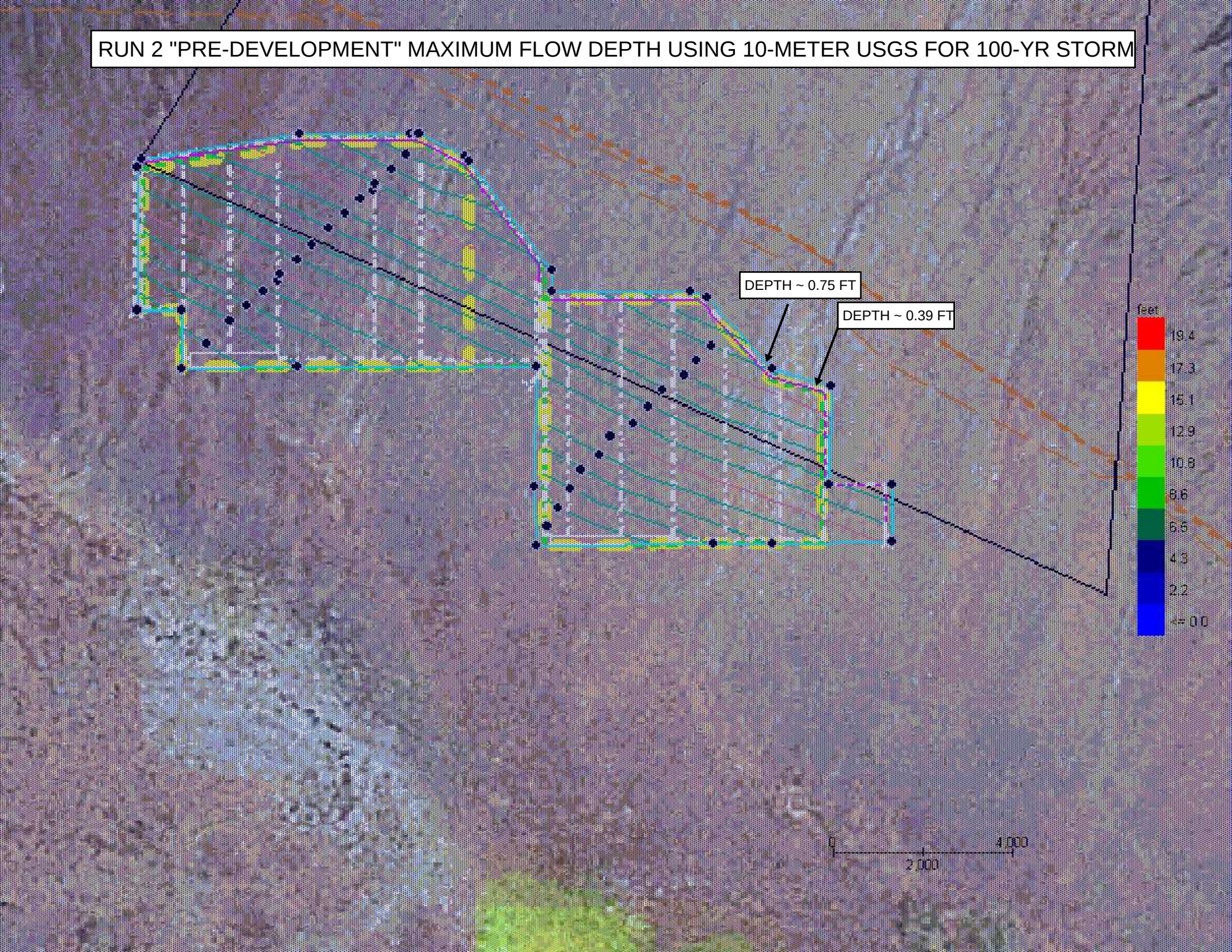
RUN 2 "PRE-DEVELOPMENT" FINAL FLOW DEPTH USING 10-METER USGS MAP FOR 100-YR STORM



RUN 2

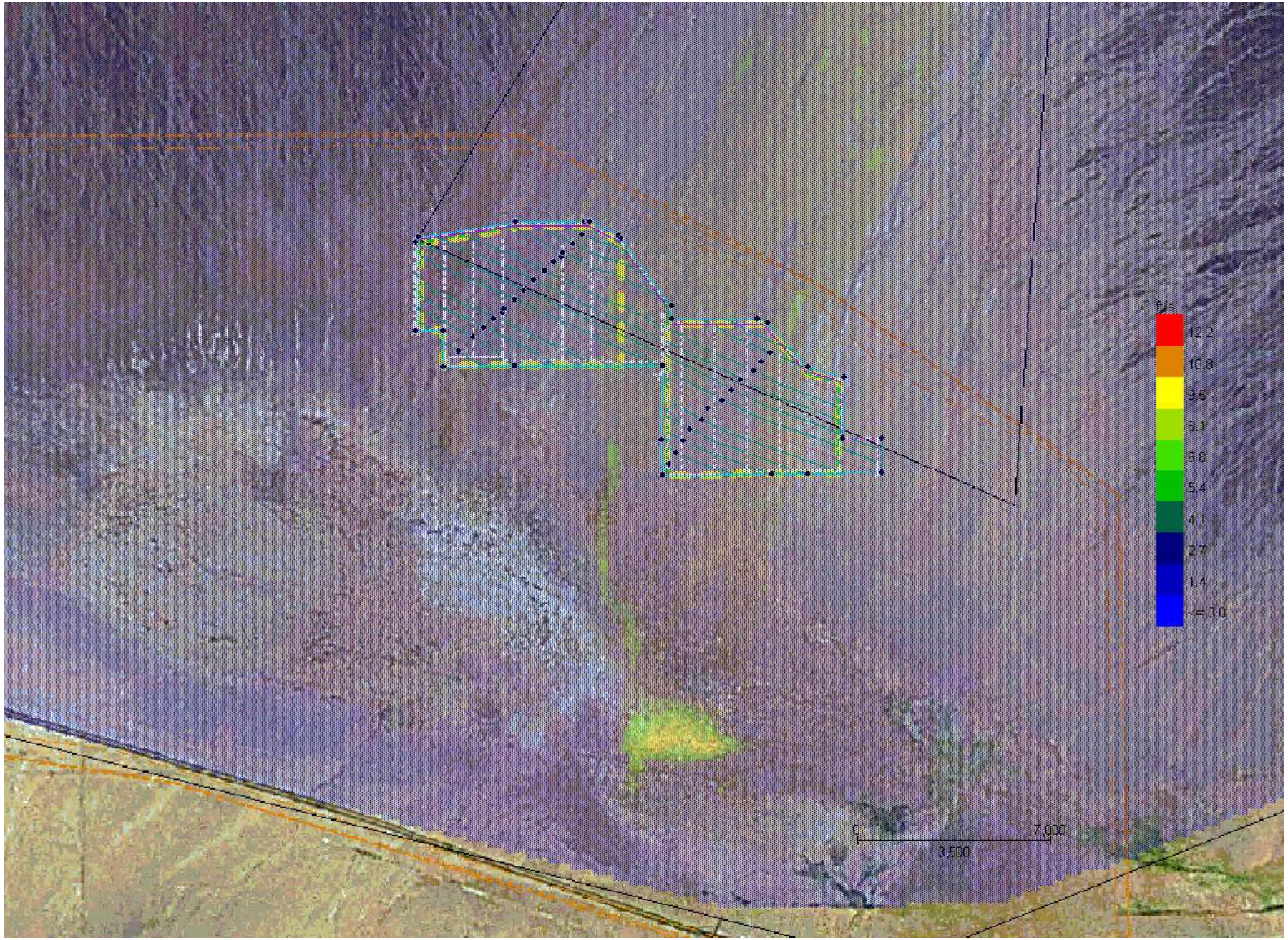
FORD DRY LAKE – PRE-DEVELOPMENT ANALYSIS
MAXIMUM FLOW DEPTH UPSTREAM OF PROPOSED SITE




RUN 2 "PRE-DEVELOPMENT" MAXIMUM FLOW DEPTH USING 10-METER USGS FOR 100-YR STORM
DEPTH ~ 0.75 FT
DEPTH ~ 0.39 FT
feet
19.4
17.3
15.1
12.9
10.8
8.6
6.5
4.3
2.2
<= 0.0
0
2,000
4,000

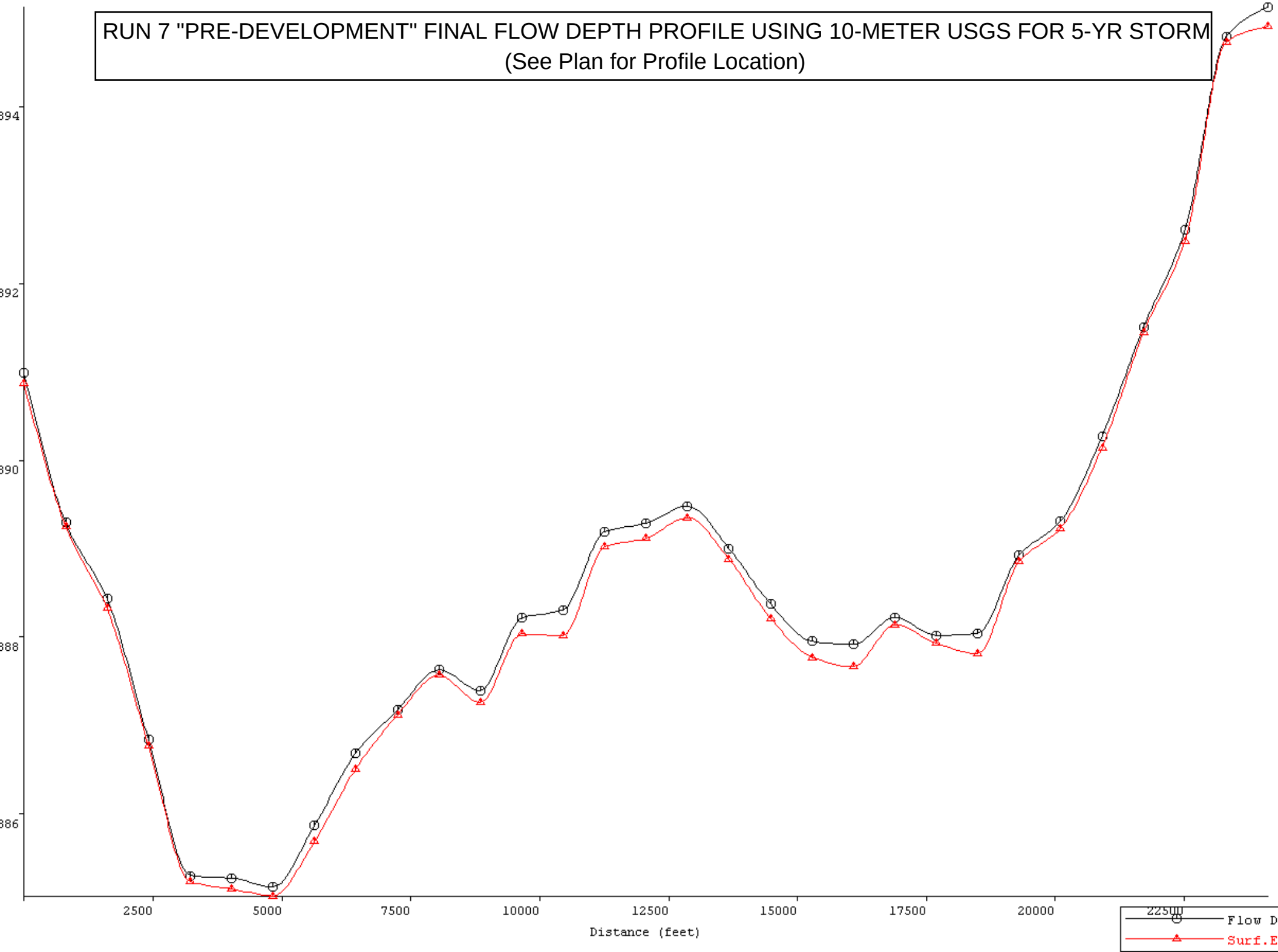
RUN 2

FORD DRY LAKE – PRE-DEVELOPMENT ANALYSIS
MAXIMUM VELOCITY

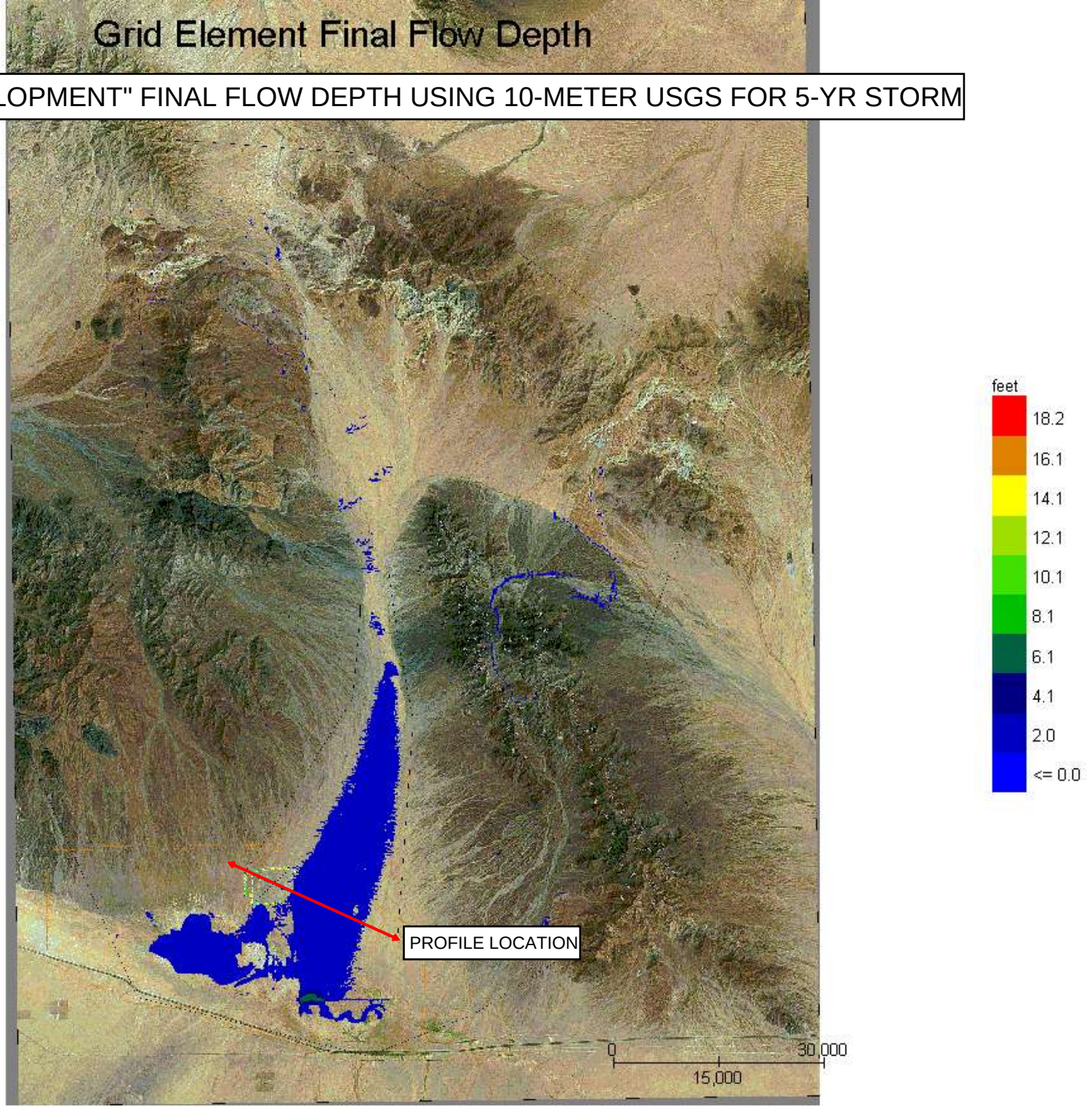


Ground Surface Elevation plus Max Flow Elevation

RUN 7 "PRE-DEVELOPMENT" FINAL FLOW DEPTH PROFILE USING 10-METER USGS FOR 5-YR STORM
(See Plan for Profile Location)



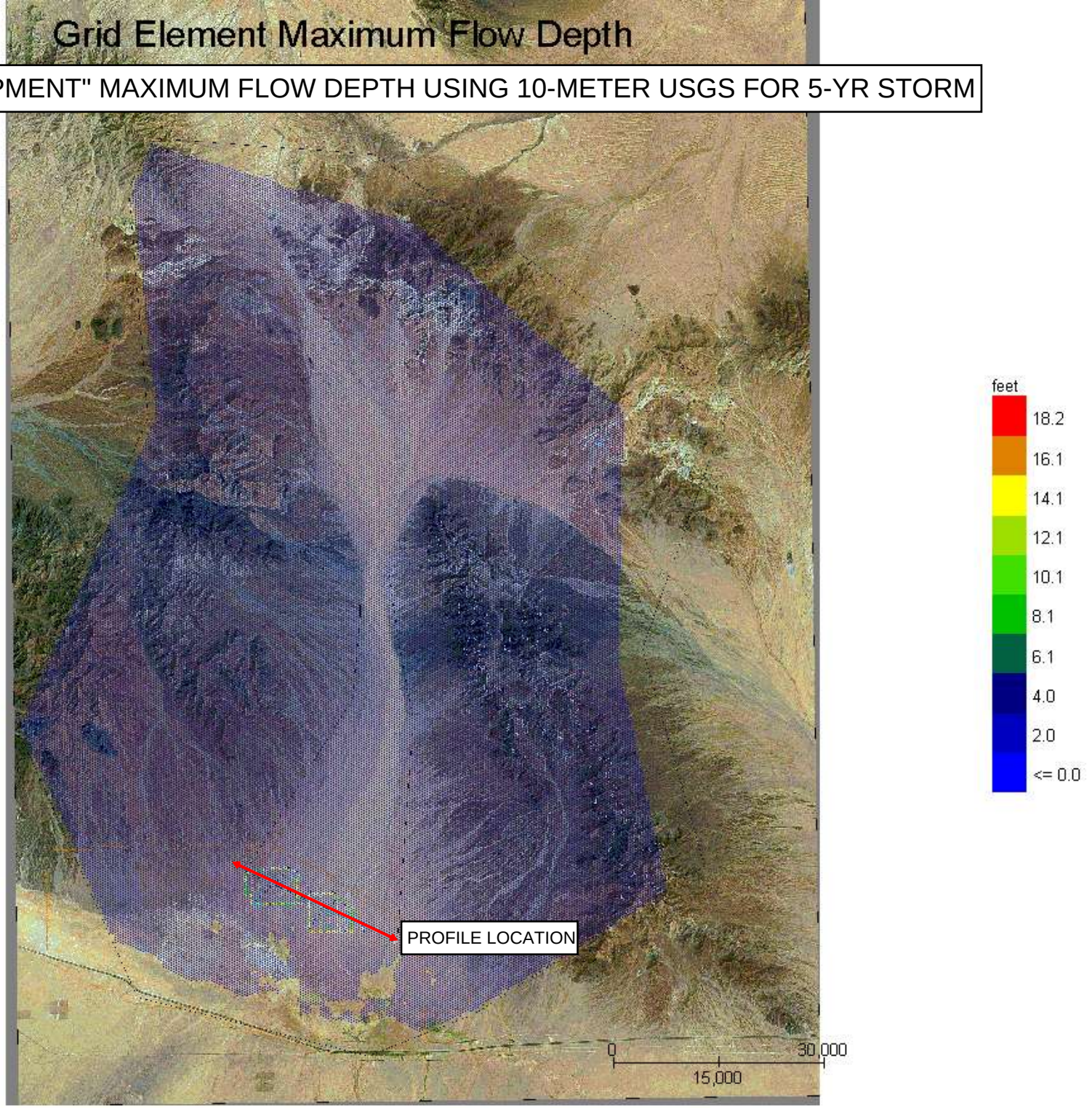
RUN 7 "PRE-DEVELOPMENT" FINAL FLOW DEPTH USING 10-METER USGS FOR 5-YR STORM



Ground Surface Elevation plus Max Flow Elevation

RUN 7 "PRE-DEVELOPMENT" MAXIMUM FLOW DEPTH USING 10-METER USGS FOR 5-YR STORM
(See Plan for Profile Location)

RUN 7 "PRE-DEVELOPMENT" MAXIMUM FLOW DEPTH USING 10-METER USGS FOR 5-YR STORM



ATTACHMENT F

Culvert Calculator Report
Box Culvert - Channel B/C

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	383.80	ft	Headwater Depth/Height	1.17	
Computed Headwater Elev	383.30	ft	Discharge	2,203.00	cfs
Inlet Control HW Elev.	383.30	ft	Tailwater Elevation	382.00	ft
Outlet Control HW Elev.	383.22	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	378.60	ft	Downstream Invert	378.50	ft
Length	25.00	ft	Constructed Slope	0.004000	ft/ft

Hydraulic Profile					
Profile	S1		Depth, Downstream	2.77	ft
Slope Type	Steep		Normal Depth	2.75	ft
Flow Regime	Subcritical		Critical Depth	2.87	ft
Velocity Downstream	9.93	ft/s	Critical Slope	0.003563	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 4 ft		Rise	4.00	ft
Number Sections	10				

Outlet Control Properties					
Outlet Control HW Elev.	383.22	ft	Upstream Velocity Head	1.43	ft
Ke	0.20		Entrance Loss	0.20	ft

Inlet Control Properties					
Inlet Control HW Elev.	383.30	ft	Flow Control	Unsubmerged	
Inlet Type	90° headwall w 3/4 inch chamfers		Area Full	320.0	ft²
K	0.51500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	1	
C	0.03750		Equation Form	2	
Y	0.79000				

Culvert Calculator Report
Box Culvert - Channel D (north)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	385.50	ft	Headwater Depth/Height	1.25	
Computed Headwater Elev	384.73	ft	Discharge	2,283.00	cfs
Inlet Control HW Elev.	384.73	ft	Tailwater Elevation	383.00	ft
Outlet Control HW Elev.	384.53	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	378.50	ft	Downstream Invert	378.40	ft
Length	25.00	ft	Constructed Slope	0.004000	ft/ft

Hydraulic Profile					
Profile	S1		Depth, Downstream	3.67	ft
Slope Type	Steep		Normal Depth	3.66	ft
Flow Regime	Subcritical		Critical Depth	3.72	ft
Velocity Downstream	11.12	ft/s	Critical Slope	0.003820	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 5 ft		Rise	5.00	ft
Number Sections	7				

Outlet Control Properties					
Outlet Control HW Elev.	384.53	ft	Upstream Velocity Head	1.86	ft
Ke	0.20		Entrance Loss	0.25	ft

Inlet Control Properties					
Inlet Control HW Elev.	384.73	ft	Flow Control	Transition	
Inlet Type	90° headwall w 3/4 inch chamfers		Area Full	280.0	ft²
K	0.51500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	1	
C	0.03750		Equation Form	2	
Y	0.79000				

Culvert Calculator Report
Box Culvert - Channel D (south)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	384.00	ft	Headwater Depth/Height	1.25	
Computed Headwater Elev	383.61	ft	Discharge	2,283.00	cfs
Inlet Control HW Elev.	383.61	ft	Tailwater Elevation	382.00	ft
Outlet Control HW Elev.	383.45	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	377.38	ft	Downstream Invert	377.28	ft
Length	25.00	ft	Constructed Slope	0.004000	ft/ft

Hydraulic Profile					
Profile	S1		Depth, Downstream	3.67	ft
Slope Type	Steep		Normal Depth	3.66	ft
Flow Regime	Subcritical		Critical Depth	3.72	ft
Velocity Downstream	11.12	ft/s	Critical Slope	0.003820	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 5 ft		Rise	5.00	ft
Number Sections	7				

Outlet Control Properties					
Outlet Control HW Elev.	383.45	ft	Upstream Velocity Head	1.86	ft
Ke	0.20		Entrance Loss	0.24	ft

Inlet Control Properties					
Inlet Control HW Elev.	383.61	ft	Flow Control	Transition	
Inlet Type	90° headwall w 3/4 inch chamfers		Area Full	280.0	ft²
K	0.51500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	1	
C	0.03750		Equation Form	2	
Y	0.79000				

CHANNEL A		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	170637	398.07	0.022	20	4.87	200	395.97	2.77
T	170224	398.18	0.022	20.43	4.88	282.84	395.96	2.66
T	169810	398.57	0.022	20.85	5.67	282.84	395.93	3.03
T	169396	399.04	0.022	21.28	6.48	241.42	395.69	3.13
T	169395	398.46	0.022	21.7	6.19	200	395.54	3.27
T	169394	397.91	0.022	22.13	5.92	200	395.42	3.43
T	169393	397.56	0.022	22.55	5.85	200	395.35	3.64
T	169392	397.24	0.022	22.98	5.81	200	395.21	3.78
T	169391	396.9	0.022	23.4	5.76	200	394.85	3.71
T	169390	396.48	0.022	23.83	5.62	200	394.59	3.73
T	169389	396.05	0.022	24.25	5.47	200	394.35	3.77
T	169388	395.66	0.022	24.68	5.36	200	394.1	3.8
T	169387	395.28	0.022	25.1	5.27	200	393.84	3.83
T	169386	394.98	0.022	25.53	5.25	200	393.6	3.87
T	169385	394.65	0.022	25.95	5.2	200	393.36	3.91
T	169384	394.28	0.022	26.38	5.11	200	393.12	3.95
T	169383	393.9	0.022	26.8	5.02	200	392.88	4
T	169382	393.54	0.022	27.23	4.94	200	392.64	4.04
T	169381	393.43	0.022	27.65	5.11	200	392.38	4.06
T	169380	393.27	0.022	28.08	5.23	200	392.11	4.07
T	169379	393.11	0.022	28.5	5.36	200	391.83	4.08
T	169378	392.93	0.022	28.93	5.46	200	391.56	4.09
T	169377	392.71	0.022	29.35	5.52	200	391.28	4.09
T	169376	392.52	0.022	29.78	5.61	200	391	4.09
T	169375	392.48	0.022	30.2	5.86	200	390.73	4.11
T	169374	392.37	0.022	30.63	6.03	200	390.46	4.12
T	169373	392.3	0.022	31.05	6.24	200	390.2	4.14
T	169372	392.19	0.022	31.48	6.41	200	389.94	4.16
T	169371	392.1	0.022	31.9	6.61	200	389.68	4.19
T	169370	391.92	0.022	32.33	6.71	200	389.41	4.2
T	169369	391.7	0.022	32.75	6.77	200	389.14	4.21
T	169368	391.54	0.022	33.18	6.89	200	388.86	4.21
T	169367	391.46	0.022	33.6	7.1	200	388.58	4.22
T	169366	391.45	0.022	34.03	7.37	200	388.28	4.2
T	169365	391.71	0.022	34.45	7.91	200	387.97	4.17
T	169364	391.44	0.022	34.88	7.92	200	387.65	4.13
T	169363	391.19	0.022	35.3	7.96	200	387.34	4.11
T	169775	389.94	0.022	35.73	7.1	282.84	386.97	4.13
T	170187	388.79	0.022	36.15	6.35	282.84	386.54	4.1
T	170598	387.65	0.022	36.58	5.61	282.84	386.09	4.05
T	171010	386.52	0.022	37	4.82	241.42	385.62	3.92
T	171422	385.37	0.022	37.43	3.96	200	385.17	3.76
T	171834	384.28	0.022	37.85	3.15	200	384.7	3.57
T	172245	383.16	0.022	38.28	2.31	200	384.07	3.22
T	172656	382.05	0.022	38.7	1.48	200	383.12	2.55
T	173067	381.08	0.022	39.13	0.8	200	382.23	1.95
T	173478	380.09	0.022	40	0.09	200	380.94	0.94

CHANNEL B		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	171051	397.53	0.022	20	4.33	200	393.92	0.72
T	171464	396.7	0.022	27.75	4.51	282.84	393.83	1.64
T	171877	396.51	0.022	38.71	5.1	282.84	393.46	2.05
T	172289	396.12	0.022	49.67	5.49	282.84	392.97	2.34
T	172701	396.4	0.022	60.63	6.56	282.84	392.28	2.44
T	173113	396.63	0.022	71.59	7.57	282.84	391.57	2.51
T	173525	396.09	0.022	82.55	7.81	282.84	390.98	2.7
T	173937	395.44	0.022	82.55	7.95	282.84	390.34	2.85
T	174348	395.07	0.022	104.47	8.25	241.42	389.71	2.89
T	174759	394.42	0.022	113.83	8.15	200	389.17	2.9
T	175169	393.74	0.022	121.58	8.02	200	388.75	3.03
T	175579	393	0.022	129.33	7.84	200	388.5	3.34
T	175988	392.21	0.022	137.08	7.6	200	388.38	3.77
T	176397	391.39	0.022	144.83	7.34	200	388.33	4.28
T	176806	390.64	0.022	145	7.14	200	388.29	4.79

CHANNEL C		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	176824	398.43	0.022	20	6.43	200	392.67	0.67
T	176823	398.17	0.022	21.294	7.11	200	392.15	1.09
T	176822	397.85	0.022	22.588	7.27	200	391.87	1.29
T	176821	397.51	0.022	23.882	7.4	200	391.59	1.48

T	176820	397.17	0.022	25.176	7.53	200	391.31	1.67
T	176819	396.84	0.022	46.471	7.67	200	391.24	2.07
T	176818	396.5	0.022	27.765	7.81	200	391.15	2.46
T	176817	396.12	0.022	29.059	7.9	200	391	2.78
T	176816	395.68	0.022	30.352	7.93	200	390.77	3.02
T	176815	395.48	0.022	31.647	8.2	200	390.47	3.19
T	176814	395.18	0.022	32.941	8.37	200	390.14	3.33
T	176813	394.78	0.022	34.235	8.45	200	389.74	3.41
T	176812	394.23	0.022	35.529	8.37	200	389.46	3.6
T	176811	393.62	0.022	36.823	8.23	200	389.26	3.87
T	176810	393.04	0.022	38.178	8.12	200	388.99	4.07
T	176809	392.48	0.022	39.412	8.04	200	388.72	4.28
T	176808	391.87	0.022	40.706	7.9	200	388.5	4.53
T	176807	391.22	0.022	42	7.72	200	388.29	4.79
CHANNEL B/C		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	177214	389.89	0.022	150	6.39	200	388.2	4.7
T	177621	389.09	0.022	145	6.81	200	387.88	5.6
T	178025	388.29	0.022	150	6.62	200	387.87	6.2
T	178427	387.49	0.022	150	6.42	200	387.86	6.79
T	178827	386.7	0.022	150	6.24	200	387.86	7.4
T	179225	385.92	0.022	150	6.07	200	387.87	8.02
T	179621	385.16	0.022	150	5.92	200	387.89	8.65
CHANNEL D		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	177233	397.81	0.022	20	5.81	200	392.77	0.77
T	177641	397.01	0.022	22.7	6.14	282.84	392.66	1.79
T	178046	396.14	0.022	26.52	5.93	282.84	392.58	2.37
T	178449	395.29	0.022	30.34	5.74	282.84	392.33	2.78
T	178850	394.63	0.022	34.16	5.74	282.84	391.86	2.97
T	179249	394.12	0.022	37.97	5.89	282.84	391.21	2.98
T	179646	393.46	0.022	41.79	5.89	282.84	390.55	2.98
T	180041	392.83	0.022	45.61	5.92	282.84	390.14	3.23
T	180434	392.3	0.022	49.43	5.86	200	389.71	3.27
T	180435	392.56	0.022	52.13	6.59	200	389.34	3.37
T	180436	392.91	0.022	54.83	7.4	200	388.85	3.34
T	180437	393.37	0.022	57.53	8.33	200	388.16	3.12
T	180438	393.9	0.022	60.23	9.33	200	387.27	2.7
T	180439	394.4	0.022	62.93	10.29	200	387.36	3.25
T	180829	393.9	0.022	65.63	10.26	200	387.18	3.54
T	181217	393.43	0.022	68.33	10.26	200	386.39	3.22
T	181602	392.77	0.022	71.03	10.07	200	385.84	3.14
T	181986	391.96	0.022	73.73	9.72	200	385.31	3.07
T	182367	391.07	0.022	76.43	9.3	200	384.8	3.03
T	182746	390.16	0.022	79.13	8.86	200	384.29	2.99
T	183123	389.32	0.022	81.83	8.48	200	383.81	2.97
T	183498	388.47	0.022	84.53	8.1	200	383.36	2.99
T	183872	387.57	0.022	87.23	7.67	200	383.01	3.11
T	184243	386.72	0.022	89.93	7.29	200	382.79	3.36
T	184612	385.93	0.022	92.63	6.96	200	382.64	3.67
T	184979	385.19	0.022	95	6.69	200	382.55	4.05
T	185344	384.48	0.022	95	6.15	200	382.52	4.19
T	185706	383.74	0.022	95	5.59	200	382.18	4.03
T	186067	382.92	0.022	95	4.94	200	381.98	4
T	186426	382.12	0.022	95	4.32	200	381.79	3.99
T	186783	381.33	0.022	95	3.7	200	381.61	3.98
T	187138	380.5	0.022	95	3.05	200	381.44	3.99
T	187490	379.74	0.022	95	2.46	200	381.34	4.06
CHANNEL E		Left & Right Slope is 3H:1V			T = Trapezoidal			
Section Type	Grid Element	Grid Element GS Elevation	N-Value	Bottom Width in FLO-2D	Depth in FLO-2D	FLO-2D Grid Element Length	FLO-2D Chan Water Surface Elevation	FLO-2D Calculated Depth
T	184986	388.13	0.022	20	6.13	200	383.11	1.11
T	184985	387.57	0.022	20	6.57	200	383.07	2.07
T	184984	387.11	0.022	20	6.61	200	383.06	2.56
T	184983	386.75	0.022	20	6.75	200	383.06	3.06
T	184982	386.43	0.022	20	6.93	200	382.86	3.36
T	184981	386.05	0.022	20	7.05	200	382.81	3.81
T	184980	385.62	0.022	20	7.12	200	382.55	4.05

Worksheet for CN=84, Channel A (East, 20', 3' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00149	ft/ft
Normal Depth	3.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	387.42	ft^3/s
Flow Area	87.00	ft^2
Wetted Perimeter	38.97	ft
Top Width	38.00	ft
Critical Depth	2.04	ft
Critical Slope	0.00613	ft/ft
Velocity	4.45	ft/s
Velocity Head	0.31	ft
Specific Energy	3.31	ft
Froude Number	0.52	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.00	ft
Critical Depth	2.04	ft
Channel Slope	0.00149	ft/ft
Critical Slope	0.00613	ft/ft

Worksheet for CN=84, Channel A (West, 45', 4' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00120	ft/ft
Normal Depth	4.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	45.00	ft

Results

Discharge	1168.85	ft^3/s
Flow Area	228.00	ft^2
Wetted Perimeter	70.30	ft
Top Width	69.00	ft
Critical Depth	2.60	ft
Critical Slope	0.00547	ft/ft
Velocity	5.13	ft/s
Velocity Head	0.41	ft
Specific Energy	4.41	ft
Froude Number	0.50	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	2.60	ft
Channel Slope	0.00120	ft/ft
Critical Slope	0.00547	ft/ft

Worksheet for CN=84, Channel B (NW, 20', 3' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00270	ft/ft
Normal Depth	3.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	521.52	ft^3/s
Flow Area	87.00	ft^2
Wetted Perimeter	38.97	ft
Top Width	38.00	ft
Critical Depth	2.43	ft
Critical Slope	0.00585	ft/ft
Velocity	5.99	ft/s
Velocity Head	0.56	ft
Specific Energy	3.56	ft
Froude Number	0.70	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.00	ft
Critical Depth	2.43	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00585	ft/ft

Worksheet for CN=84, Channel B (SE, 150', 4' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00270	ft/ft
Normal Depth	4.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	150.00	ft

Results

Discharge	5437.02	ft^3/s
Flow Area	648.00	ft^2
Wetted Perimeter	175.30	ft
Top Width	174.00	ft
Critical Depth	3.37	ft
Critical Slope	0.00484	ft/ft
Velocity	8.39	ft/s
Velocity Head	1.09	ft
Specific Energy	5.09	ft
Froude Number	0.77	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	3.37	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00484	ft/ft

Worksheet for CN=84, Channel B/C (150', 4' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00355	ft/ft
Normal Depth	4.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	150.00	ft

Results

Discharge	6234.38	ft^3/s
Flow Area	648.00	ft^2
Wetted Perimeter	175.30	ft
Top Width	174.00	ft
Critical Depth	3.68	ft
Critical Slope	0.00471	ft/ft
Velocity	9.62	ft/s
Velocity Head	1.44	ft
Specific Energy	5.44	ft
Froude Number	0.88	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	3.68	ft
Channel Slope	0.00355	ft/ft
Critical Slope	0.00471	ft/ft

Worksheet for CN=84, Channel B/C (75', 5' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00100	ft/ft
Normal Depth	5.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	75.00	ft

Results

Discharge	2510.11	ft^3/s
Flow Area	450.00	ft^2
Wetted Perimeter	106.62	ft
Top Width	105.00	ft
Critical Depth	3.13	ft
Critical Slope	0.00507	ft/ft
Velocity	5.58	ft/s
Velocity Head	0.48	ft
Specific Energy	5.48	ft
Froude Number	0.48	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.00	ft
Critical Depth	3.13	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00507	ft/ft

Worksheet for CN=84, Channel C (East, 20', 3' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00240	ft/ft
Normal Depth	3.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	491.70	ft^3/s
Flow Area	87.00	ft^2
Wetted Perimeter	38.97	ft
Top Width	38.00	ft
Critical Depth	2.35	ft
Critical Slope	0.00590	ft/ft
Velocity	5.65	ft/s
Velocity Head	0.50	ft
Specific Energy	3.50	ft
Froude Number	0.66	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.00	ft
Critical Depth	2.35	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00590	ft/ft

Worksheet for CN=84, Channel C (West, 42', 4' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00240	ft/ft
Normal Depth	4.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	42.00	ft

Results

Discharge	1555.12	ft^3/s
Flow Area	216.00	ft^2
Wetted Perimeter	67.30	ft
Top Width	66.00	ft
Critical Depth	3.22	ft
Critical Slope	0.00517	ft/ft
Velocity	7.20	ft/s
Velocity Head	0.81	ft
Specific Energy	4.81	ft
Froude Number	0.70	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	3.22	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00517	ft/ft

Worksheet for CN=84, Channel D (NW, 20', 3' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00230	ft/ft
Normal Depth	3.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	481.34	ft^3/s
Flow Area	87.00	ft^2
Wetted Perimeter	38.97	ft
Top Width	38.00	ft
Critical Depth	2.32	ft
Critical Slope	0.00592	ft/ft
Velocity	5.53	ft/s
Velocity Head	0.48	ft
Specific Energy	3.48	ft
Froude Number	0.64	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.00	ft
Critical Depth	2.32	ft
Channel Slope	0.00230	ft/ft
Critical Slope	0.00592	ft/ft

Worksheet for CN=84, Channel D (SE, 95', 6' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00230	ft/ft
Normal Depth	6.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	95.00	ft

Results

Discharge	6506.78	ft^3/s
Flow Area	678.00	ft^2
Wetted Perimeter	132.95	ft
Top Width	131.00	ft
Critical Depth	4.98	ft
Critical Slope	0.00438	ft/ft
Velocity	9.60	ft/s
Velocity Head	1.43	ft
Specific Energy	7.43	ft
Froude Number	0.74	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	4.98	ft
Channel Slope	0.00230	ft/ft
Critical Slope	0.00438	ft/ft

Worksheet for CN=84, Channel E (East, 20', 3' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00260	ft/ft
Normal Depth	1.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	72.39	ft^3/s
Flow Area	23.00	ft^2
Wetted Perimeter	26.32	ft
Top Width	26.00	ft
Critical Depth	0.71	ft
Critical Slope	0.00824	ft/ft
Velocity	3.15	ft/s
Velocity Head	0.15	ft
Specific Energy	1.15	ft
Froude Number	0.59	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.00	ft
Critical Depth	0.71	ft
Channel Slope	0.00260	ft/ft
Critical Slope	0.00824	ft/ft

Worksheet for CN=84, Channel E (West, 20', 6' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00260	ft/ft
Normal Depth	6.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	20.00	ft

Results

Discharge	1957.02	ft^3/s
Flow Area	228.00	ft^2
Wetted Perimeter	57.95	ft
Top Width	56.00	ft
Critical Depth	5.14	ft
Critical Slope	0.00481	ft/ft
Velocity	8.58	ft/s
Velocity Head	1.14	ft
Specific Energy	7.14	ft
Froude Number	0.75	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	5.14	ft
Channel Slope	0.00260	ft/ft
Critical Slope	0.00481	ft/ft

Worksheet for CN=84, Channel D/E (95', 6' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00100	ft/ft
Normal Depth	5.50	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	95.00	ft

Results

Discharge	3688.24	ft^3/s
Flow Area	613.25	ft^2
Wetted Perimeter	129.79	ft
Top Width	128.00	ft
Critical Depth	3.47	ft
Critical Slope	0.00487	ft/ft
Velocity	6.01	ft/s
Velocity Head	0.56	ft
Specific Energy	6.06	ft
Froude Number	0.48	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.50	ft
Critical Depth	3.47	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00487	ft/ft

Worksheet for CN=84, Channel D/E (95', 5' depth)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00100	ft/ft
Normal Depth	5.00	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	95.00	ft

Results

Discharge	3127.30	ft^3/s
Flow Area	550.00	ft^2
Wetted Perimeter	126.62	ft
Top Width	125.00	ft
Critical Depth	3.12	ft
Critical Slope	0.00503	ft/ft
Velocity	5.69	ft/s
Velocity Head	0.50	ft
Specific Energy	5.50	ft
Froude Number	0.48	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.00	ft
Critical Depth	3.12	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00503	ft/ft

ATTACHMENT G

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 517.89 CFS AT TIME: 26.38 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 605.14 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 1

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	7200.00	0.11	0.11	88.19
13.00	7200.00	0.12	0.12	97.08
13.50	7000.00	0.11	0.11	88.78
14.00	7200.00	0.13	0.12	109.43
14.50	6800.00	0.13	0.14	119.68
15.00	6800.00	0.13	0.15	133.06
15.50	7200.00	0.14	0.14	149.40
16.00	6600.00	0.14	0.17	155.10
16.50	6600.00	0.15	0.19	183.42
17.00	6600.00	0.16	0.18	195.23
17.50	6600.00	0.17	0.18	200.12
18.00	6600.00	0.17	0.20	222.38
18.50	6200.00	0.18	0.24	269.85
19.00	6600.00	0.17	0.25	282.25
19.50	6400.00	0.17	0.28	295.62
20.00	6400.00	0.18	0.25	288.40
20.50	6600.00	0.16	0.29	305.80
21.00	7000.00	0.17	0.27	317.23
21.50	7400.00	0.18	0.25	335.01
22.00	7400.00	0.19	0.26	366.85
22.50	7200.00	0.19	0.28	384.52
23.00	7400.00	0.20	0.29	421.71
23.50	7200.00	0.20	0.30	439.07
24.00	7400.00	0.21	0.30	473.41
24.50	7400.00	0.21	0.31	488.05
25.00	7400.00	0.22	0.30	493.02
25.50	7400.00	0.22	0.31	500.07
26.00	7400.00	0.22	0.30	491.54
26.50	7400.00	0.22	0.31	515.30
27.00	7400.00	0.22	0.31	510.45
27.50	7400.00	0.22	0.31	496.11

28.00	7400.00	0.21	0.30	462.64
28.50	7400.00	0.21	0.29	439.42
29.00	7400.00	0.20	0.29	425.39
29.50	6400.00	0.18	0.34	389.95
30.00	5200.00	0.15	0.45	363.22
30.50	4600.00	0.21	0.33	327.74
31.00	3800.00	0.24	0.33	308.89
31.50	3800.00	0.24	0.32	284.30
32.00	3800.00	0.23	0.31	263.62
32.50	3600.00	0.23	0.30	246.47
33.00	4200.00	0.19	0.26	213.43
33.50	3600.00	0.19	0.25	171.94
34.00	3600.00	0.18	0.23	152.57
34.50	3400.00	0.18	0.22	134.38
35.00	2800.00	0.18	0.23	111.80
35.50	2400.00	0.18	0.22	95.60
36.00	2200.00	0.18	0.23	90.15
36.50	2000.00	0.16	0.27	87.56
37.00	2000.00	0.18	0.24	83.94
37.50	1800.00	0.18	0.22	72.94
38.00	1600.00	0.19	0.20	59.85
38.50	1800.00	0.16	0.24	69.07
39.00	1800.00	0.16	0.21	58.74
39.50	1800.00	0.17	0.17	51.24
40.00	2000.00	0.16	0.16	50.43
40.50	1600.00	0.17	0.18	48.87
41.00	1800.00	0.15	0.17	46.77
41.50	1800.00	0.15	0.16	42.33
42.00	2000.00	0.14	0.14	38.38
42.50	1600.00	0.14	0.15	32.38
43.00	1200.00	0.14	0.13	20.73
43.50	800.00	0.12	0.07	6.72
44.00	0.00	0.00	0.00	1.83
44.50	0.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	0.00
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 2148.52 CFS AT TIME: 29.30 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 1721.12 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 2

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	3600.00	0.11	0.14	56.05
13.00	3600.00	0.12	0.15	66.69
13.50	3600.00	0.13	0.15	69.69
14.00	3600.00	0.14	0.17	83.62
14.50	3600.00	0.14	0.17	90.15
15.00	3600.00	0.15	0.19	103.91
15.50	3600.00	0.15	0.19	106.09
16.00	3600.00	0.16	0.20	109.17
16.50	3600.00	0.16	0.26	151.93
17.00	3600.00	0.18	0.29	187.33
17.50	3600.00	0.19	0.35	242.34
18.00	3600.00	0.20	0.35	250.38
18.50	3600.00	0.20	0.35	256.31
19.00	3600.00	0.20	0.36	260.27
19.50	3600.00	0.20	0.37	268.69
20.00	3600.00	0.20	0.36	265.22
20.50	3600.00	0.21	0.35	257.51
21.00	3600.00	0.21	0.36	268.03
21.50	3600.00	0.21	0.34	254.60
22.00	3600.00	0.21	0.37	284.25
22.50	3600.00	0.21	0.35	259.20
23.00	3600.00	0.21	0.37	278.49
23.50	3600.00	0.21	0.38	285.51
24.00	3600.00	0.21	0.38	294.44
24.50	3600.00	0.21	0.37	285.01
25.00	3600.00	0.22	0.39	310.32
25.50	3600.00	0.23	0.41	335.40
26.00	3600.00	0.24	0.42	358.34
26.50	3600.00	0.35	0.87	1099.38
27.00	3600.00	0.41	1.23	1797.21
27.50	3600.00	0.36	0.67	870.65
28.00	3600.00	0.37	0.78	1037.26
28.50	3600.00	0.39	0.96	1346.82

29.00	3600.00	0.39	0.81	1137.13
29.50	3600.00	0.40	0.74	1051.87
30.00	3600.00	0.36	0.65	846.60
30.50	3600.00	0.40	0.89	1270.53
31.00	3600.00	0.35	0.64	815.53
31.50	3600.00	0.37	0.83	1109.08
32.00	3600.00	0.37	0.69	907.06
32.50	3600.00	0.37	0.69	908.98
33.00	3600.00	0.36	0.71	928.53
33.50	3600.00	0.36	0.72	930.15
34.00	3600.00	0.35	0.69	871.08
34.50	3600.00	0.35	0.68	864.49
35.00	3600.00	0.35	0.67	839.61
35.50	3600.00	0.35	0.66	822.76
36.00	3600.00	0.34	0.67	826.18
36.50	3600.00	0.34	0.66	805.39
37.00	3600.00	0.34	0.65	791.53
37.50	3600.00	0.33	0.65	779.46
38.00	3600.00	0.33	0.64	752.58
38.50	3600.00	0.33	0.63	734.14
39.00	3600.00	0.32	0.62	715.76
39.50	3600.00	0.32	0.61	693.03
40.00	3600.00	0.31	0.60	673.43
40.50	3600.00	0.31	0.60	656.79
41.00	3600.00	0.30	0.59	636.46
41.50	3600.00	0.29	0.58	609.90
42.00	3600.00	0.29	0.56	580.50
42.50	3600.00	0.28	0.55	546.07
43.00	3600.00	0.27	0.53	506.69
43.50	3400.00	0.24	0.56	466.37
44.00	3200.00	0.24	0.56	430.16
44.50	3000.00	0.26	0.52	398.71
45.00	3000.00	0.25	0.51	375.72
45.50	3200.00	0.23	0.48	354.67
46.00	3000.00	0.23	0.47	327.65
46.50	3000.00	0.21	0.49	308.43
47.00	3000.00	0.22	0.43	283.20
47.50	2800.00	0.22	0.42	262.67
48.00	2800.00	0.22	0.41	245.44
48.50	2800.00	0.21	0.39	230.86
49.00	2800.00	0.21	0.37	214.91
49.50	2800.00	0.20	0.36	201.72
50.00	2800.00	0.19	0.33	180.39
50.50	2800.00	0.19	0.32	171.14
51.00	2800.00	0.19	0.32	165.34
51.50	2800.00	0.19	0.29	151.00
52.00	3000.00	0.18	0.29	155.91
52.50	2600.00	0.19	0.30	145.47
53.00	2800.00	0.18	0.28	138.53
53.50	2800.00	0.18	0.27	134.23
54.00	2600.00	0.18	0.29	138.54
54.50	2800.00	0.17	0.27	131.75
55.00	2600.00	0.18	0.27	125.05
55.50	2600.00	0.18	0.26	121.52
56.00	2800.00	0.17	0.26	123.42
56.50	3000.00	0.16	0.23	113.89
57.00	2600.00	0.17	0.26	115.64
57.50	2600.00	0.17	0.23	102.89
58.00	2600.00	0.17	0.22	96.41
58.50	2400.00	0.17	0.23	95.60
59.00	2600.00	0.17	0.22	95.01
59.50	2400.00	0.17	0.22	88.04
60.00	2400.00	0.17	0.23	91.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 567.55 CFS AT TIME: 30.66 HOURS

THE TOTAL VOLUME OF DISCHARGE IS: 546.03 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 3

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	2800.00	0.11	0.10	30.32
13.00	2800.00	0.12	0.10	34.45
13.50	2800.00	0.12	0.10	35.59
14.00	2800.00	0.13	0.11	40.32
14.50	2800.00	0.13	0.11	41.47
15.00	2800.00	0.14	0.11	42.75
15.50	2800.00	0.14	0.11	43.83
16.00	2800.00	0.14	0.11	44.74
16.50	2800.00	0.14	0.12	45.84
17.00	2800.00	0.14	0.12	46.85
17.50	2800.00	0.14	0.12	47.18
18.00	2800.00	0.14	0.12	48.18
18.50	2800.00	0.14	0.12	47.38
19.00	2800.00	0.15	0.12	48.14
19.50	2800.00	0.15	0.12	50.04
20.00	2800.00	0.15	0.12	49.93
20.50	2800.00	0.15	0.12	47.99
21.00	2800.00	0.14	0.12	49.60
21.50	2800.00	0.14	0.12	48.27
22.00	2800.00	0.14	0.12	48.74
22.50	2800.00	0.14	0.12	47.61
23.00	2800.00	0.14	0.12	46.22
23.50	2800.00	0.14	0.12	46.52
24.00	2800.00	0.14	0.12	46.79
24.50	2800.00	0.14	0.12	46.81
25.00	2800.00	0.14	0.12	48.47
25.50	2800.00	0.14	0.12	48.34
26.00	2800.00	0.16	0.15	67.49
26.50	2800.00	0.19	0.23	121.18
27.00	2800.00	0.23	0.29	188.93
27.50	2800.00	0.31	0.36	313.41
28.00	2800.00	0.33	0.41	370.51
28.50	2800.00	0.33	0.41	373.03
29.00	2800.00	0.34	0.42	390.62
29.50	2800.00	0.34	0.41	389.42

30.00	2800.00	0.30	0.39	321.61
30.50	2800.00	0.31	0.40	348.79
31.00	2800.00	0.31	0.40	348.13
31.50	2800.00	0.31	0.39	336.94
32.00	2800.00	0.31	0.40	346.86
32.50	2800.00	0.30	0.39	331.75
33.00	2800.00	0.30	0.38	317.67
33.50	2800.00	0.29	0.38	310.16
34.00	2800.00	0.29	0.38	301.99
34.50	2800.00	0.28	0.37	296.53
35.00	2800.00	0.28	0.37	291.35
35.50	2800.00	0.28	0.37	287.65
36.00	2800.00	0.27	0.35	269.71
36.50	2800.00	0.27	0.35	261.31
37.00	2800.00	0.26	0.35	258.69
37.50	2800.00	0.26	0.33	241.33
38.00	2800.00	0.26	0.34	242.97
38.50	2800.00	0.26	0.33	234.47
39.00	2800.00	0.25	0.32	224.69
39.50	2800.00	0.25	0.31	218.88
40.00	2800.00	0.25	0.30	209.27
40.50	2800.00	0.24	0.31	214.80
41.00	2800.00	0.24	0.30	200.52
41.50	2800.00	0.24	0.29	190.12
42.00	2800.00	0.23	0.28	185.70
42.50	2800.00	0.23	0.27	176.90
43.00	2800.00	0.22	0.26	163.58
43.50	2800.00	0.22	0.25	156.35
44.00	2800.00	0.22	0.26	156.07
44.50	2800.00	0.21	0.23	138.84
45.00	2800.00	0.21	0.22	125.24
45.50	2800.00	0.20	0.21	119.88
46.00	2800.00	0.19	0.20	107.90
46.50	2800.00	0.19	0.19	99.27
47.00	2800.00	0.19	0.18	95.22
47.50	2800.00	0.18	0.17	85.71
48.00	2800.00	0.18	0.15	76.88
48.50	2800.00	0.18	0.15	76.33
49.00	2800.00	0.18	0.15	74.44
49.50	2800.00	0.17	0.15	72.57
50.00	2800.00	0.17	0.15	68.96
50.50	2800.00	0.17	0.14	65.92
51.00	2800.00	0.16	0.14	63.97
51.50	2800.00	0.16	0.14	65.26
52.00	2800.00	0.16	0.14	61.56
52.50	2800.00	0.16	0.14	60.39
53.00	2800.00	0.16	0.13	59.35
53.50	2800.00	0.16	0.13	57.35
54.00	2800.00	0.16	0.13	56.34
54.50	2800.00	0.15	0.13	55.35
55.00	2800.00	0.15	0.13	54.71
55.50	2800.00	0.15	0.13	53.86
56.00	2800.00	0.15	0.13	52.70
56.50	2800.00	0.15	0.12	50.47
57.00	2800.00	0.15	0.12	51.27
57.50	2800.00	0.15	0.12	48.89
58.00	2800.00	0.15	0.12	49.63
58.50	2800.00	0.14	0.12	48.33
59.00	2800.00	0.14	0.12	47.57
59.50	2800.00	0.14	0.12	47.02
60.00	2800.00	0.14	0.12	45.35

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 1190.69 CFS AT TIME: 27.67 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 690.52 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 4

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	2200.00	0.11	0.12	30.30
13.00	2200.00	0.13	0.13	37.05
13.50	2200.00	0.14	0.14	42.65
14.00	2200.00	0.15	0.19	63.84
14.50	2200.00	0.15	0.17	58.23
15.00	2200.00	0.16	0.18	61.60
15.50	2200.00	0.16	0.18	63.70
16.00	2200.00	0.16	0.17	59.06
16.50	2200.00	0.16	0.16	56.90
17.00	2200.00	0.16	0.16	56.45
17.50	2200.00	0.16	0.16	55.81
18.00	2200.00	0.15	0.16	52.73
18.50	2000.00	0.14	0.18	51.44
19.00	2200.00	0.15	0.15	47.17
19.50	2200.00	0.15	0.15	47.50
20.00	2200.00	0.15	0.15	47.78
20.50	2200.00	0.15	0.17	56.42
21.00	2200.00	0.15	0.16	51.12
21.50	2200.00	0.15	0.16	52.14
22.00	2200.00	0.15	0.16	52.37
22.50	2200.00	0.15	0.16	54.19
23.00	2200.00	0.16	0.21	77.11
23.50	2200.00	0.19	0.27	112.08
24.00	2200.00	0.21	0.33	149.90
24.50	2200.00	0.21	0.31	142.67
25.00	2200.00	0.23	0.35	175.54
25.50	2200.00	0.23	0.37	186.77
26.00	2200.00	0.24	0.37	191.58
26.50	2200.00	0.24	0.38	199.97
27.00	2200.00	0.27	0.43	255.69
27.50	2200.00	0.37	0.55	448.12
28.00	2200.00	0.37	0.59	477.46
28.50	2200.00	0.36	0.58	463.62
29.00	2200.00	0.35	0.56	432.21
29.50	2200.00	0.34	0.54	398.78
30.00	2200.00	0.35	0.55	425.85
30.50	2200.00	0.36	0.56	435.69

31.00	2200.00	0.36	0.56	442.50
31.50	2200.00	0.37	0.57	464.17
32.00	2200.00	0.36	0.56	440.27
32.50	2200.00	0.34	0.54	401.92
33.00	2200.00	0.32	0.52	366.01
33.50	2200.00	0.32	0.51	355.45
34.00	2200.00	0.31	0.51	351.53
34.50	2200.00	0.31	0.51	346.64
35.00	2200.00	0.31	0.50	344.93
35.50	2200.00	0.31	0.50	341.97
36.00	2200.00	0.30	0.50	330.05
36.50	2200.00	0.30	0.49	316.07
37.00	2200.00	0.29	0.48	302.94
37.50	2200.00	0.28	0.47	291.81
38.00	2200.00	0.28	0.46	279.41
38.50	2200.00	0.27	0.46	274.90
39.00	2200.00	0.27	0.44	261.72
39.50	2200.00	0.27	0.44	257.13
40.00	2200.00	0.26	0.43	245.68
40.50	2200.00	0.26	0.43	244.60
41.00	2200.00	0.26	0.42	234.37
41.50	2200.00	0.25	0.41	225.56
42.00	2200.00	0.25	0.40	220.08
42.50	2200.00	0.24	0.38	204.81
43.00	2200.00	0.23	0.36	184.49
43.50	2200.00	0.22	0.31	151.37
44.00	2200.00	0.22	0.31	147.62
44.50	2200.00	0.21	0.32	148.00
45.00	2200.00	0.21	0.31	147.39
45.50	2200.00	0.21	0.29	134.14
46.00	2200.00	0.20	0.30	133.44
46.50	2200.00	0.20	0.28	125.16
47.00	2200.00	0.20	0.27	118.70
47.50	2200.00	0.20	0.26	115.47
48.00	2200.00	0.20	0.25	110.93
48.50	2200.00	0.20	0.25	109.37
49.00	2200.00	0.19	0.24	102.98
49.50	2200.00	0.19	0.24	102.58
50.00	2200.00	0.19	0.23	98.08
50.50	2200.00	0.19	0.23	96.10
51.00	2200.00	0.18	0.22	89.28
51.50	2200.00	0.18	0.21	83.43
52.00	2200.00	0.18	0.22	85.32
52.50	2200.00	0.18	0.20	78.53
53.00	2200.00	0.18	0.21	80.96
53.50	2200.00	0.17	0.19	74.53
54.00	2200.00	0.17	0.20	75.74
54.50	2200.00	0.17	0.20	75.48
55.00	2200.00	0.17	0.19	72.51
55.50	2200.00	0.17	0.20	73.10
56.00	2200.00	0.17	0.19	68.90
56.50	2200.00	0.16	0.19	68.06
57.00	2200.00	0.16	0.19	66.87
57.50	2200.00	0.16	0.18	64.80
58.00	2200.00	0.16	0.17	61.01
58.50	2200.00	0.16	0.18	64.45
59.00	2200.00	0.16	0.17	60.25
59.50	2200.00	0.16	0.17	57.11
60.00	2200.00	0.15	0.16	54.57

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 130.75 CFS AT TIME: 27.81 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 146.13 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 5

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1000.00	0.11	0.07	8.46
13.00	1000.00	0.12	0.08	9.66
13.50	800.00	0.09	0.12	8.60
14.00	1000.00	0.13	0.09	11.38
14.50	1000.00	0.12	0.09	10.61
15.00	600.00	0.08	0.19	8.52
15.50	800.00	0.10	0.13	9.64
16.00	1000.00	0.11	0.08	8.95
16.50	1000.00	0.11	0.08	8.77
17.00	800.00	0.09	0.09	6.51
17.50	400.00	0.05	0.35	7.14
18.00	400.00	0.05	0.42	8.27
18.50	800.00	0.09	0.12	8.82
19.00	1000.00	0.16	0.08	13.29
19.50	1000.00	0.21	0.19	40.17
20.00	1000.00	0.24	0.19	45.95
20.50	1000.00	0.25	0.22	52.86
21.00	1000.00	0.24	0.19	45.70
21.50	1000.00	0.23	0.18	42.09
22.00	1000.00	0.23	0.19	43.37
22.50	1000.00	0.23	0.19	42.62
23.00	1000.00	0.22	0.20	43.72
23.50	1000.00	0.23	0.21	46.53
24.00	1000.00	0.23	0.22	51.31
24.50	1000.00	0.24	0.24	55.76
25.00	1000.00	0.23	0.22	52.01
25.50	1000.00	0.23	0.24	55.27
26.00	1000.00	0.24	0.24	57.79
26.50	1000.00	0.24	0.25	58.99
27.00	1000.00	0.24	0.25	59.19
27.50	1000.00	0.26	0.26	67.51
28.00	1000.00	0.29	0.29	85.34
28.50	1000.00	0.33	0.32	104.93
29.00	1000.00	0.32	0.31	100.85
29.50	1000.00	0.31	0.31	98.25
30.00	1000.00	0.31	0.31	97.71
30.50	1000.00	0.30	0.31	93.17
31.00	1000.00	0.29	0.31	88.57
31.50	1000.00	0.29	0.30	89.02

32.00	1000.00	0.29	0.30	85.86
32.50	1000.00	0.27	0.29	78.46
33.00	1000.00	0.26	0.28	72.62
33.50	1000.00	0.25	0.27	67.12
34.00	1000.00	0.25	0.25	62.00
34.50	1000.00	0.25	0.25	61.80
35.00	1000.00	0.24	0.25	61.09
35.50	1000.00	0.24	0.24	58.51
36.00	1000.00	0.24	0.25	58.63
36.50	1000.00	0.23	0.24	55.97
37.00	1000.00	0.23	0.24	53.27
37.50	1000.00	0.22	0.23	51.06
38.00	1000.00	0.22	0.22	49.00
38.50	1000.00	0.22	0.22	47.71
39.00	1000.00	0.22	0.22	48.32
39.50	1000.00	0.21	0.20	43.21
40.00	1000.00	0.21	0.20	42.65
40.50	1000.00	0.21	0.21	43.20
41.00	1000.00	0.21	0.19	38.61
41.50	1000.00	0.21	0.19	38.51
42.00	1000.00	0.21	0.18	38.66
42.50	1000.00	0.21	0.18	37.70
43.00	1000.00	0.21	0.17	34.98
43.50	1000.00	0.20	0.17	33.81
44.00	1000.00	0.20	0.16	31.74
44.50	1000.00	0.20	0.16	31.11
45.00	1000.00	0.20	0.15	30.40
45.50	1000.00	0.20	0.15	29.50
46.00	1000.00	0.19	0.15	28.58
46.50	1000.00	0.19	0.14	27.24
47.00	1000.00	0.19	0.13	23.93
47.50	1000.00	0.19	0.14	27.11
48.00	1000.00	0.19	0.13	24.00
48.50	1000.00	0.18	0.12	21.85
49.00	1000.00	0.18	0.13	23.98
49.50	1000.00	0.18	0.11	20.23
50.00	1000.00	0.18	0.11	19.78
50.50	1000.00	0.17	0.11	19.39
51.00	1000.00	0.16	0.09	15.26
51.50	1000.00	0.15	0.09	13.62
52.00	1000.00	0.14	0.09	12.10
52.50	1000.00	0.13	0.08	10.51
53.00	1000.00	0.12	0.08	9.97
53.50	1000.00	0.12	0.08	9.28
54.00	1000.00	0.11	0.08	9.24
54.50	1000.00	0.11	0.08	8.82
55.00	1000.00	0.11	0.08	8.82
55.50	1000.00	0.11	0.08	8.59
56.00	1000.00	0.11	0.08	8.66
56.50	1000.00	0.11	0.08	8.17
57.00	1000.00	0.11	0.08	8.45
57.50	1000.00	0.11	0.06	6.72
58.00	1000.00	0.11	0.06	6.77
58.50	1000.00	0.11	0.06	6.96
59.00	1000.00	0.11	0.07	7.95
59.50	800.00	0.09	0.09	6.49
60.00	800.00	0.09	0.10	7.19

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 168.24 CFS AT TIME: 19.73 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 198.12 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 6

TIME	TOPWID	DEPTH	VELOCITY	DISCHARGE

(HRS)	(FT)	(FT)	(FPS)	(CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1000.00	0.04	0.19	8.23
13.00	800.00	0.04	0.29	8.11
13.50	0.00	0.00	0.00	1.06
14.00	800.00	0.03	0.22	6.03
14.50	600.00	0.03	0.18	2.77
15.00	0.00	0.00	0.00	4.59
15.50	200.00	0.01	1.22	2.22
16.00	400.00	0.02	0.54	3.63
16.50	200.00	0.01	1.64	2.74
17.00	200.00	0.01	1.38	2.30
17.50	0.00	0.00	0.00	2.53
18.00	200.00	0.01	1.79	3.58
18.50	600.00	0.03	0.34	5.14
19.00	1000.00	0.06	0.28	15.95
19.50	2200.00	0.15	0.27	88.06
20.00	2400.00	0.18	0.37	160.30
20.50	2400.00	0.18	0.38	165.46
21.00	2400.00	0.18	0.36	156.86
21.50	2400.00	0.18	0.34	143.40
22.00	2400.00	0.17	0.35	144.10
22.50	2400.00	0.17	0.31	129.23
23.00	2400.00	0.17	0.32	129.94
23.50	2200.00	0.15	0.35	117.54
24.00	2200.00	0.15	0.33	110.30
24.50	2400.00	0.16	0.28	106.08
25.00	2200.00	0.15	0.34	110.00
25.50	2400.00	0.16	0.27	101.36
26.00	2200.00	0.15	0.30	98.46
26.50	2200.00	0.15	0.30	100.31
27.00	2400.00	0.16	0.27	103.86
27.50	2400.00	0.16	0.29	108.09
28.00	2400.00	0.16	0.29	113.28
28.50	2200.00	0.16	0.33	114.62
29.00	2200.00	0.16	0.36	122.34
29.50	2200.00	0.15	0.35	119.86
30.00	2200.00	0.15	0.35	117.68
30.50	2000.00	0.14	0.40	113.60
31.00	2200.00	0.15	0.33	107.86
31.50	2400.00	0.15	0.26	95.13
32.00	2200.00	0.14	0.29	90.71
32.50	2400.00	0.15	0.24	86.40

33.00	2000.00	0.13	0.28	71.37
33.50	2200.00	0.13	0.23	66.23
34.00	1800.00	0.11	0.29	56.97
34.50	2400.00	0.13	0.16	50.49
35.00	1800.00	0.10	0.27	51.41
35.50	2000.00	0.11	0.23	50.57
36.00	2000.00	0.11	0.21	46.38
36.50	1800.00	0.10	0.24	42.37
37.00	1600.00	0.09	0.31	43.86
37.50	1600.00	0.09	0.30	40.76
38.00	1800.00	0.09	0.24	40.58
38.50	2000.00	0.10	0.17	34.81
39.00	2000.00	0.10	0.18	36.70
39.50	2000.00	0.10	0.18	36.98
40.00	1400.00	0.07	0.33	34.41
40.50	1800.00	0.09	0.23	37.22
41.00	1800.00	0.09	0.19	30.24
41.50	2200.00	0.11	0.14	32.79
42.00	1800.00	0.09	0.20	32.68
42.50	1800.00	0.09	0.21	33.85
43.00	2000.00	0.10	0.17	32.53
43.50	1800.00	0.09	0.20	31.85
44.00	2000.00	0.10	0.16	31.31
44.50	1800.00	0.09	0.22	34.66
45.00	1600.00	0.08	0.24	30.70
45.50	2000.00	0.10	0.16	31.10
46.00	2000.00	0.10	0.15	29.61
46.50	1800.00	0.09	0.18	29.25
47.00	1600.00	0.08	0.24	30.22
47.50	2000.00	0.10	0.13	23.92
48.00	1600.00	0.08	0.24	29.70
48.50	1800.00	0.09	0.16	25.20
49.00	1800.00	0.09	0.17	26.85
49.50	1800.00	0.09	0.15	23.51
50.00	1800.00	0.08	0.14	21.13
50.50	1600.00	0.08	0.20	24.12
51.00	1800.00	0.08	0.14	20.52
51.50	1400.00	0.07	0.25	22.59
52.00	1600.00	0.07	0.16	18.26
52.50	1000.00	0.04	0.39	17.71
53.00	1000.00	0.04	0.34	14.86
53.50	1200.00	0.05	0.20	12.41
54.00	1000.00	0.04	0.20	8.50
54.50	800.00	0.03	0.48	13.08
55.00	600.00	0.03	0.64	9.82
55.50	600.00	0.03	0.71	10.84
56.00	800.00	0.03	0.32	8.53
56.50	800.00	0.03	0.33	8.81
57.00	600.00	0.03	0.36	5.47
57.50	600.00	0.03	0.71	10.61
58.00	600.00	0.03	0.68	10.29
58.50	600.00	0.03	0.32	4.78
59.00	1000.00	0.04	0.15	6.07
59.50	400.00	0.02	0.83	6.07
60.00	1200.00	0.05	0.05	3.29

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 57.30 CFS AT TIME: 24.02 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 28.10 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 7

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)

0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	800.00	0.11	0.13	11.42
13.00	800.00	0.13	0.14	13.56
13.50	800.00	0.11	0.12	10.71
14.00	800.00	0.12	0.13	12.23
14.50	800.00	0.11	0.12	10.78
15.00	800.00	0.10	0.10	7.89
15.50	600.00	0.08	0.14	6.14
16.00	400.00	0.05	0.16	3.13
16.50	400.00	0.10	0.11	4.49
17.00	600.00	0.10	0.11	6.92
17.50	400.00	0.10	0.08	3.14
18.00	400.00	0.07	0.14	3.82
18.50	200.00	0.10	0.15	3.04
19.00	200.00	0.10	0.21	4.31
19.50	200.00	0.05	0.23	2.31
20.00	400.00	0.10	0.10	4.05
20.50	800.00	0.10	0.12	9.67
21.00	800.00	0.11	0.12	10.65
21.50	800.00	0.11	0.13	11.46
22.00	800.00	0.12	0.13	12.97
22.50	800.00	0.14	0.14	15.07
23.00	800.00	0.20	0.24	38.78
23.50	800.00	0.20	0.25	39.51
24.00	800.00	0.20	0.31	50.77
24.50	800.00	0.21	0.29	47.64
25.00	800.00	0.21	0.25	41.47
25.50	800.00	0.20	0.29	46.31
26.00	800.00	0.20	0.21	33.01
26.50	800.00	0.20	0.21	33.61
27.00	800.00	0.20	0.20	32.33
27.50	800.00	0.20	0.20	31.84
28.00	800.00	0.19	0.20	30.91
28.50	800.00	0.19	0.20	29.68
29.00	800.00	0.18	0.18	25.79
29.50	800.00	0.18	0.17	24.23
30.00	800.00	0.16	0.16	19.92
30.50	600.00	0.12	0.10	6.88
31.00	0.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00	0.00

34.00	0.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	0.00
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 70.92 CFS AT TIME: 24.53 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 47.03 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 8

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00

1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1600.00	0.11	0.11	20.12
13.00	1600.00	0.12	0.12	23.84
13.50	1600.00	0.13	0.12	24.93
14.00	1600.00	0.13	0.13	27.79
14.50	1600.00	0.13	0.13	27.29
15.00	1600.00	0.12	0.12	24.39
15.50	1600.00	0.11	0.11	19.51
16.00	1200.00	0.08	0.17	15.96
16.50	1200.00	0.08	0.15	13.12
17.00	1400.00	0.09	0.09	11.42
17.50	1400.00	0.09	0.08	10.16
18.00	1200.00	0.08	0.13	11.70
18.50	800.00	0.05	0.17	6.99
19.00	800.00	0.05	0.16	6.27
19.50	1000.00	0.07	0.12	8.58
20.00	1000.00	0.06	0.15	9.38
20.50	1600.00	0.10	0.10	15.72
21.00	1600.00	0.10	0.11	19.20
21.50	1600.00	0.11	0.11	19.49
22.00	1600.00	0.11	0.12	21.84
22.50	1600.00	0.12	0.12	23.09
23.00	1600.00	0.13	0.13	26.05
23.50	1600.00	0.16	0.16	40.55
24.00	1600.00	0.20	0.19	61.37
24.50	1600.00	0.20	0.21	66.75
25.00	1600.00	0.20	0.18	55.71
25.50	1600.00	0.20	0.20	64.64
26.00	1600.00	0.19	0.18	55.01
26.50	1600.00	0.20	0.17	54.68
27.00	1600.00	0.20	0.17	52.56
27.50	1600.00	0.19	0.16	49.28
28.00	1600.00	0.19	0.16	50.21
28.50	1600.00	0.19	0.16	49.50
29.00	1600.00	0.18	0.16	48.20
29.50	1600.00	0.18	0.16	44.78
30.00	1600.00	0.17	0.14	38.73
30.50	1600.00	0.15	0.12	27.14
31.00	600.00	0.14	0.13	10.98
31.50	0.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00	0.00

35.00	0.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	0.00
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 219.63 CFS AT TIME: 19.68 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 216.72 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 9

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00

2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	0.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	0.00
13.50	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00
14.50	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00
15.50	0.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	0.00
16.50	0.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	0.00
17.50	0.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	0.00
18.50	0.00	0.00	0.00	0.00
19.00	400.00	0.09	0.29	10.44
19.50	1400.00	0.36	0.40	202.80
20.00	1400.00	0.36	0.42	208.58
20.50	1400.00	0.35	0.41	198.83
21.00	1400.00	0.34	0.40	190.08
21.50	1400.00	0.33	0.40	182.44
22.00	1400.00	0.32	0.39	176.10
22.50	1400.00	0.32	0.38	169.76
23.00	1400.00	0.31	0.38	162.34
23.50	1400.00	0.30	0.37	153.50
24.00	1400.00	0.29	0.36	145.76
24.50	1400.00	0.28	0.35	137.94
25.00	1400.00	0.27	0.34	130.62
25.50	1400.00	0.27	0.34	125.98
26.00	1400.00	0.26	0.34	123.24
26.50	1400.00	0.26	0.34	122.82
27.00	1400.00	0.26	0.34	124.10
27.50	1400.00	0.26	0.34	124.29
28.00	1400.00	0.26	0.33	121.61
28.50	1400.00	0.26	0.34	124.44
29.00	1400.00	0.27	0.34	129.63
29.50	1400.00	0.27	0.34	126.00
30.00	1400.00	0.25	0.32	113.49
30.50	1400.00	0.24	0.31	105.00
31.00	1400.00	0.23	0.30	98.56
31.50	1400.00	0.22	0.29	89.43
32.00	1400.00	0.22	0.27	83.60
32.50	1400.00	0.21	0.27	78.70
33.00	1400.00	0.20	0.25	71.83
33.50	1400.00	0.20	0.24	65.88
34.00	1400.00	0.19	0.22	58.64
34.50	1400.00	0.19	0.21	54.76
35.00	1400.00	0.19	0.19	49.84
35.50	1400.00	0.18	0.19	49.78

36.00	1400.00	0.18	0.13	33.88
36.50	1400.00	0.18	0.20	50.55
37.00	1400.00	0.18	0.14	34.60
37.50	1400.00	0.18	0.18	44.60
38.00	1400.00	0.18	0.18	45.47
38.50	1400.00	0.18	0.17	42.27
39.00	1400.00	0.18	0.17	43.23
39.50	1400.00	0.17	0.13	31.64
40.00	1400.00	0.17	0.16	39.14
40.50	1400.00	0.17	0.13	31.05
41.00	1400.00	0.17	0.17	40.26
41.50	1400.00	0.17	0.15	35.05
42.00	1400.00	0.17	0.14	33.00
42.50	1400.00	0.16	0.14	31.39
43.00	1400.00	0.16	0.14	31.58
43.50	1400.00	0.16	0.13	29.35
44.00	1400.00	0.16	0.12	26.79
44.50	1400.00	0.16	0.12	26.46
45.00	1400.00	0.16	0.12	25.90
45.50	1400.00	0.15	0.11	23.62
46.00	1400.00	0.15	0.12	24.54
46.50	1400.00	0.15	0.12	23.91
47.00	1400.00	0.15	0.11	23.01
47.50	1400.00	0.14	0.11	22.31
48.00	1400.00	0.14	0.11	21.68
48.50	1400.00	0.14	0.11	21.13
49.00	1400.00	0.14	0.11	20.71
49.50	1400.00	0.13	0.11	20.17
50.00	1400.00	0.13	0.11	19.59
50.50	1400.00	0.13	0.11	19.20
51.00	1400.00	0.13	0.10	18.62
51.50	1200.00	0.13	0.12	18.24
52.00	1400.00	0.12	0.10	17.29
52.50	1400.00	0.12	0.09	14.89
53.00	1400.00	0.12	0.09	13.81
53.50	1200.00	0.11	0.11	14.66
54.00	1200.00	0.11	0.11	13.79
54.50	1000.00	0.09	0.13	10.93
55.00	800.00	0.07	0.19	10.39
55.50	1200.00	0.10	0.06	6.85
56.00	600.00	0.05	0.32	9.59
56.50	1400.00	0.10	0.06	8.17
57.00	1000.00	0.08	0.10	8.31
57.50	1200.00	0.10	0.06	6.63
58.00	1200.00	0.10	0.07	8.18
58.50	800.00	0.06	0.21	9.76
59.00	1400.00	0.10	0.04	5.04
59.50	1200.00	0.09	0.07	6.78
60.00	1400.00	0.10	0.03	4.72

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 951.55 CFS AT TIME: 24.06 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 896.80 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 1

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	7400.00	0.10	0.06	43.57
12.50	7400.00	0.12	0.12	104.29
13.00	7200.00	0.13	0.12	114.46
13.50	7000.00	0.13	0.14	128.82
14.00	7200.00	0.14	0.14	147.45
14.50	7000.00	0.14	0.15	154.72
15.00	6800.00	0.15	0.17	169.80
15.50	7000.00	0.16	0.18	200.39
16.00	6800.00	0.17	0.21	241.08
16.50	7400.00	0.18	0.21	265.71
17.00	7200.00	0.18	0.24	312.23
17.50	7400.00	0.19	0.25	356.15
18.00	7200.00	0.19	0.27	373.55
18.50	7400.00	0.20	0.27	401.96
19.00	7400.00	0.21	0.28	427.60
19.50	7400.00	0.21	0.29	463.51
20.00	7400.00	0.22	0.31	507.85
20.50	7400.00	0.23	0.33	564.52
21.00	7400.00	0.24	0.35	627.73
21.50	7400.00	0.26	0.37	700.04
22.00	7400.00	0.27	0.39	764.29
22.50	7400.00	0.27	0.39	793.07
23.00	7400.00	0.28	0.39	803.88
23.50	7400.00	0.27	0.39	795.08
24.00	7400.00	0.28	0.39	812.32
24.50	7400.00	0.27	0.39	781.51
25.00	7400.00	0.27	0.38	761.85
25.50	7200.00	0.26	0.45	842.50
26.00	7400.00	0.26	0.38	738.56
26.50	7400.00	0.26	0.38	729.80
27.00	7200.00	0.25	0.37	659.78
27.50	7400.00	0.24	0.36	646.83

28.00	7400.00	0.23	0.35	597.63
28.50	7400.00	0.22	0.34	565.38
29.00	7400.00	0.22	0.32	510.64
29.50	6000.00	0.19	0.40	448.86
30.00	5800.00	0.17	0.40	406.68
30.50	4400.00	0.14	0.59	371.10
31.00	3800.00	0.25	0.36	347.41
31.50	4000.00	0.24	0.35	333.71
32.00	4000.00	0.23	0.33	306.98
32.50	3600.00	0.24	0.32	278.92
33.00	3800.00	0.22	0.29	237.08
33.50	3600.00	0.21	0.26	194.72
34.00	3800.00	0.19	0.23	166.79
34.50	3600.00	0.19	0.23	160.01
35.00	3800.00	0.18	0.21	143.42
35.50	3400.00	0.18	0.22	134.85
36.00	2800.00	0.18	0.23	112.23
36.50	2200.00	0.18	0.25	99.92
37.00	2200.00	0.18	0.24	93.45
37.50	2000.00	0.18	0.24	86.77
38.00	2200.00	0.14	0.25	79.22
38.50	2400.00	0.13	0.26	80.92
39.00	2200.00	0.15	0.22	73.01
39.50	2000.00	0.17	0.20	66.82
40.00	2000.00	0.15	0.20	59.81
40.50	1800.00	0.17	0.18	55.54
41.00	1800.00	0.17	0.18	53.50
41.50	1800.00	0.17	0.17	51.49
42.00	1800.00	0.16	0.17	49.49
42.50	1800.00	0.12	0.20	45.79
43.00	1600.00	0.15	0.16	38.43
43.50	1400.00	0.14	0.13	26.58
44.00	600.00	0.14	0.15	12.20
44.50	200.00	0.10	0.10	2.14
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	1.76
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 4086.17 CFS AT TIME: 26.58 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 2519.91 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 2

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	3600.00	0.10	0.06	22.37
12.50	3600.00	0.12	0.15	66.57
13.00	3600.00	0.13	0.15	73.75
13.50	3600.00	0.14	0.16	81.45
14.00	3600.00	0.15	0.18	98.47
14.50	3600.00	0.16	0.20	110.65
15.00	3600.00	0.16	0.21	118.23
15.50	3600.00	0.17	0.24	143.33
16.00	3600.00	0.18	0.33	216.23
16.50	3600.00	0.20	0.36	256.40
17.00	3600.00	0.20	0.37	273.28
17.50	3600.00	0.21	0.38	287.98
18.00	3600.00	0.21	0.39	300.78
18.50	3600.00	0.21	0.39	301.91
19.00	3600.00	0.21	0.39	299.31
19.50	3600.00	0.21	0.39	300.91
20.00	3600.00	0.21	0.39	300.51
20.50	3600.00	0.22	0.40	315.34
21.00	3600.00	0.22	0.41	316.53
21.50	3600.00	0.22	0.41	321.28
22.00	3600.00	0.22	0.42	339.53
22.50	3600.00	0.22	0.41	332.22
23.00	3600.00	0.24	0.46	395.81
23.50	3600.00	0.37	1.04	1383.10
24.00	3600.00	0.41	0.99	1459.57
24.50	3600.00	0.38	0.70	960.28
25.00	3600.00	0.44	1.13	1795.82
25.50	3600.00	0.39	0.78	1099.17
26.00	3600.00	0.45	1.11	1798.21
26.50	3600.00	0.47	1.26	2114.05
27.00	3600.00	0.45	1.09	1757.29
27.50	3600.00	0.49	1.36	2400.93
28.00	3600.00	0.39	0.80	1136.23
28.50	3600.00	0.51	1.44	2640.28

29.00	3600.00	0.42	0.78	1164.04
29.50	3600.00	0.41	0.79	1156.12
30.00	3600.00	0.41	0.93	1377.31
30.50	3600.00	0.41	0.93	1381.11
31.00	3600.00	0.42	0.91	1367.42
31.50	3600.00	0.41	0.93	1355.16
32.00	3600.00	0.41	0.96	1399.24
32.50	3600.00	0.39	0.83	1173.68
33.00	3600.00	0.40	0.88	1264.63
33.50	3600.00	0.38	0.79	1075.81
34.00	3600.00	0.38	0.81	1118.70
34.50	3600.00	0.37	0.76	1018.96
35.00	3600.00	0.37	0.74	991.34
35.50	3600.00	0.37	0.72	948.33
36.00	3600.00	0.36	0.72	945.41
36.50	3600.00	0.36	0.69	896.51
37.00	3600.00	0.35	0.71	903.83
37.50	3600.00	0.35	0.69	860.96
38.00	3600.00	0.34	0.67	824.53
38.50	3600.00	0.34	0.65	794.81
39.00	3600.00	0.33	0.66	786.12
39.50	3600.00	0.33	0.65	761.39
40.00	3600.00	0.32	0.63	737.51
40.50	3600.00	0.32	0.62	708.98
41.00	3600.00	0.31	0.61	690.17
41.50	3600.00	0.31	0.60	669.39
42.00	3600.00	0.30	0.59	643.30
42.50	3600.00	0.29	0.58	613.87
43.00	3600.00	0.29	0.56	582.02
43.50	3600.00	0.28	0.55	545.91
44.00	3600.00	0.27	0.53	509.59
44.50	3400.00	0.24	0.57	467.29
45.00	3000.00	0.27	0.54	431.58
45.50	2800.00	0.27	0.54	405.75
46.00	2800.00	0.26	0.53	384.58
46.50	2800.00	0.25	0.51	363.16
47.00	3000.00	0.24	0.48	339.28
47.50	2800.00	0.24	0.48	323.49
48.00	3000.00	0.21	0.48	305.73
48.50	3200.00	0.20	0.46	294.10
49.00	3000.00	0.22	0.43	279.90
49.50	3000.00	0.22	0.42	276.27
50.00	3000.00	0.21	0.41	261.11
50.50	2800.00	0.22	0.41	249.38
51.00	2800.00	0.22	0.40	241.22
51.50	2800.00	0.21	0.38	221.54
52.00	2800.00	0.21	0.38	221.86
52.50	2800.00	0.21	0.38	217.50
53.00	2800.00	0.20	0.36	206.70
53.50	3000.00	0.19	0.35	201.96
54.00	2800.00	0.20	0.36	196.82
54.50	2800.00	0.19	0.35	188.08
55.00	2800.00	0.19	0.32	166.36
55.50	2800.00	0.18	0.32	163.42
56.00	2800.00	0.19	0.31	158.40
56.50	3000.00	0.18	0.28	147.51
57.00	2800.00	0.18	0.28	142.19
57.50	2800.00	0.18	0.29	146.56
58.00	2800.00	0.18	0.27	136.97
58.50	2800.00	0.18	0.27	131.38
59.00	3200.00	0.16	0.25	128.95
59.50	2800.00	0.17	0.27	126.54
60.00	2800.00	0.17	0.26	122.16

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 2006.55 CFS AT TIME: 26.67 HOURS

THE TOTAL VOLUME OF DISCHARGE IS: 782.36 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 3

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	2800.00	0.10	0.06	16.45
12.50	2800.00	0.12	0.10	36.00
13.00	2800.00	0.13	0.11	41.04
13.50	2800.00	0.13	0.11	41.97
14.00	2800.00	0.14	0.12	46.37
14.50	2800.00	0.14	0.12	48.03
15.00	2800.00	0.15	0.12	49.04
15.50	2800.00	0.15	0.12	52.16
16.00	2800.00	0.15	0.12	52.49
16.50	2800.00	0.15	0.13	53.59
17.00	2800.00	0.15	0.13	54.09
17.50	2800.00	0.16	0.13	55.73
18.00	2800.00	0.16	0.13	57.44
18.50	2800.00	0.16	0.13	58.66
19.00	2800.00	0.16	0.13	58.54
19.50	2800.00	0.16	0.13	58.54
20.00	2800.00	0.16	0.13	58.10
20.50	2800.00	0.16	0.13	56.88
21.00	2800.00	0.16	0.13	56.60
21.50	2800.00	0.16	0.12	54.02
22.00	2800.00	0.16	0.13	56.74
22.50	2800.00	0.16	0.13	56.17
23.00	2800.00	0.16	0.13	60.82
23.50	2800.00	0.18	0.20	98.08
24.00	2800.00	0.27	0.32	240.39
24.50	2800.00	0.32	0.41	363.28
25.00	2800.00	0.38	0.45	477.17
25.50	2800.00	0.37	0.46	484.70
26.00	2800.00	0.36	0.45	460.05
26.50	2800.00	0.36	0.45	452.67
27.00	2800.00	0.36	0.44	449.17
27.50	2800.00	0.37	0.46	482.29
28.00	2800.00	0.38	0.58	608.45
28.50	2800.00	0.37	0.44	459.41
29.00	2800.00	0.37	0.45	463.68
29.50	2800.00	0.37	0.45	462.39

30.00	2800.00	0.35	0.43	419.13
30.50	2800.00	0.34	0.42	405.50
31.00	2800.00	0.34	0.42	407.52
31.50	2800.00	0.35	0.43	417.23
32.00	2800.00	0.34	0.42	408.05
32.50	2800.00	0.34	0.42	398.58
33.00	2800.00	0.34	0.42	392.03
33.50	2800.00	0.33	0.41	380.69
34.00	2800.00	0.32	0.41	369.69
34.50	2800.00	0.32	0.40	357.84
35.00	2800.00	0.31	0.40	344.82
35.50	2800.00	0.30	0.39	333.45
36.00	2800.00	0.30	0.39	324.35
36.50	2800.00	0.29	0.38	315.06
37.00	2800.00	0.29	0.38	303.40
37.50	2800.00	0.28	0.37	290.22
38.00	2800.00	0.27	0.36	278.82
38.50	2800.00	0.27	0.36	270.07
39.00	2800.00	0.27	0.34	252.51
39.50	2800.00	0.26	0.34	251.20
40.00	2800.00	0.26	0.34	241.82
40.50	2800.00	0.25	0.33	233.17
41.00	2800.00	0.25	0.32	225.40
41.50	2800.00	0.25	0.31	215.29
42.00	2800.00	0.24	0.30	204.93
42.50	2800.00	0.24	0.29	198.18
43.00	2800.00	0.24	0.28	186.37
43.50	2800.00	0.23	0.28	185.11
44.00	2800.00	0.23	0.27	171.63
44.50	2800.00	0.22	0.26	161.62
45.00	2800.00	0.22	0.26	155.59
45.50	2800.00	0.21	0.24	144.22
46.00	2800.00	0.21	0.23	133.39
46.50	2800.00	0.20	0.22	123.56
47.00	2800.00	0.20	0.21	114.46
47.50	2800.00	0.19	0.21	112.92
48.00	2800.00	0.19	0.20	106.21
48.50	2800.00	0.19	0.20	103.06
49.00	2800.00	0.18	0.18	94.80
49.50	2800.00	0.18	0.18	91.75
50.00	2800.00	0.18	0.17	86.40
50.50	2800.00	0.18	0.16	81.66
51.00	2800.00	0.18	0.17	82.74
51.50	2800.00	0.17	0.16	77.61
52.00	2800.00	0.17	0.16	74.52
52.50	2800.00	0.17	0.15	70.61
53.00	2800.00	0.17	0.14	66.38
53.50	2800.00	0.17	0.15	67.23
54.00	2800.00	0.16	0.14	63.15
54.50	2800.00	0.16	0.14	61.86
55.00	2800.00	0.16	0.14	60.19
55.50	2800.00	0.16	0.13	58.74
56.00	2800.00	0.16	0.13	57.57
56.50	2800.00	0.15	0.13	55.77
57.00	2800.00	0.15	0.13	55.56
57.50	2800.00	0.15	0.13	55.26
58.00	2800.00	0.15	0.13	53.92
58.50	2800.00	0.15	0.13	53.39
59.00	2800.00	0.15	0.13	52.78
59.50	2800.00	0.15	0.13	52.15
60.00	2800.00	0.15	0.12	51.38

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 2069.22 CFS AT TIME: 24.63 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 987.96 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 4

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	2200.00	0.10	0.07	15.60
12.50	2200.00	0.13	0.13	37.29
13.00	2200.00	0.15	0.14	46.25
13.50	2200.00	0.15	0.18	61.37
14.00	2200.00	0.16	0.19	67.95
14.50	2200.00	0.16	0.19	70.08
15.00	2200.00	0.17	0.18	66.53
15.50	2200.00	0.17	0.18	67.42
16.00	2200.00	0.17	0.18	67.08
16.50	2200.00	0.17	0.19	70.35
17.00	2200.00	0.17	0.18	65.33
17.50	2200.00	0.17	0.18	65.30
18.00	2200.00	0.16	0.17	61.67
18.50	2200.00	0.16	0.18	62.56
19.00	2200.00	0.16	0.17	59.70
19.50	2200.00	0.16	0.21	71.62
20.00	2200.00	0.16	0.20	69.92
20.50	2000.00	0.15	0.25	73.05
21.00	2200.00	0.20	0.32	140.66
21.50	2200.00	0.23	0.36	177.13
22.00	2200.00	0.23	0.38	193.13
22.50	2200.00	0.25	0.40	214.73
23.00	2200.00	0.26	0.41	230.56
23.50	2200.00	0.26	0.44	257.49
24.00	2200.00	0.28	0.46	279.01
24.50	2200.00	0.40	0.70	614.07
25.00	2200.00	0.39	0.62	539.46
25.50	2200.00	0.40	0.67	581.93
26.00	2200.00	0.39	0.73	627.28
26.50	2200.00	0.40	0.64	555.97
27.00	2200.00	0.41	0.69	615.89
27.50	2200.00	0.43	0.65	615.50
28.00	2200.00	0.43	0.90	840.04
28.50	2200.00	0.43	0.84	791.75
29.00	2200.00	0.40	0.64	573.58
29.50	2200.00	0.39	0.62	530.16
30.00	2200.00	0.37	0.60	486.39
30.50	2200.00	0.37	0.60	481.75

31.00	2200.00	0.38	0.63	529.88
31.50	2200.00	0.38	0.65	551.98
32.00	2200.00	0.38	0.60	494.67
32.50	2200.00	0.38	0.62	518.10
33.00	2200.00	0.37	0.57	459.77
33.50	2200.00	0.37	0.56	454.13
34.00	2200.00	0.36	0.56	441.09
34.50	2200.00	0.35	0.55	430.12
35.00	2200.00	0.34	0.54	410.42
35.50	2200.00	0.34	0.54	399.25
36.00	2200.00	0.33	0.53	388.05
36.50	2200.00	0.33	0.53	378.78
37.00	2200.00	0.32	0.51	362.29
37.50	2200.00	0.31	0.51	346.99
38.00	2200.00	0.30	0.50	333.08
38.50	2200.00	0.30	0.49	323.68
39.00	2200.00	0.29	0.48	313.74
39.50	2200.00	0.29	0.47	300.81
40.00	2200.00	0.28	0.47	292.83
40.50	2200.00	0.28	0.46	279.33
41.00	2200.00	0.27	0.45	272.37
41.50	2200.00	0.27	0.45	264.36
42.00	2200.00	0.26	0.43	252.57
42.50	2200.00	0.26	0.42	242.27
43.00	2200.00	0.26	0.41	232.75
43.50	2200.00	0.25	0.40	222.82
44.00	2200.00	0.24	0.38	199.73
44.50	2200.00	0.23	0.33	165.33
45.00	2200.00	0.22	0.32	157.24
45.50	2200.00	0.21	0.31	148.85
46.00	2200.00	0.21	0.31	142.91
46.50	2200.00	0.21	0.30	137.97
47.00	2200.00	0.21	0.29	130.57
47.50	2200.00	0.20	0.28	123.53
48.00	2200.00	0.20	0.27	119.61
48.50	2200.00	0.20	0.27	118.56
49.00	2200.00	0.20	0.26	113.80
49.50	2200.00	0.20	0.26	114.43
50.00	2200.00	0.20	0.24	105.16
50.50	2200.00	0.20	0.25	107.41
51.00	2200.00	0.19	0.24	100.23
51.50	2200.00	0.19	0.23	96.79
52.00	2200.00	0.19	0.22	92.68
52.50	2200.00	0.19	0.22	89.06
53.00	2200.00	0.18	0.21	86.98
53.50	2200.00	0.18	0.22	85.93
54.00	2200.00	0.18	0.22	86.25
54.50	2200.00	0.18	0.20	80.27
55.00	2200.00	0.18	0.21	80.90
55.50	2200.00	0.18	0.20	78.85
56.00	2200.00	0.17	0.20	77.32
56.50	2200.00	0.17	0.20	76.40
57.00	2200.00	0.17	0.20	73.55
57.50	2200.00	0.17	0.19	69.43
58.00	2200.00	0.17	0.20	73.49
58.50	2200.00	0.17	0.19	68.42
59.00	2200.00	0.16	0.19	70.19
59.50	2200.00	0.16	0.19	67.21
60.00	2200.00	0.16	0.18	64.43

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 288.26 CFS AT TIME: 26.34 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 221.87 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 5

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	1000.00	0.10	0.04	4.54
12.50	1000.00	0.13	0.08	10.67
13.00	1000.00	0.14	0.09	12.17
13.50	1000.00	0.13	0.09	11.18
14.00	1000.00	0.13	0.09	12.41
14.50	1000.00	0.13	0.09	11.32
15.00	800.00	0.10	0.13	10.05
15.50	1000.00	0.12	0.08	9.58
16.00	1000.00	0.11	0.08	9.00
16.50	800.00	0.09	0.10	7.63
17.00	1000.00	0.11	0.08	8.43
17.50	1000.00	0.12	0.08	9.77
18.00	1000.00	0.18	0.11	19.62
18.50	1000.00	0.23	0.19	44.64
19.00	1000.00	0.27	0.22	58.41
19.50	1000.00	0.28	0.25	70.60
20.00	1000.00	0.28	0.25	72.24
20.50	1000.00	0.29	0.26	73.67
21.00	1000.00	0.29	0.26	76.59
21.50	1000.00	0.31	0.28	84.65
22.00	1000.00	0.31	0.28	86.72
22.50	1000.00	0.31	0.29	88.96
23.00	1000.00	0.32	0.29	91.46
23.50	1000.00	0.32	0.29	94.68
24.00	1000.00	0.33	0.30	100.94
24.50	1000.00	0.38	0.38	147.45
25.00	1000.00	0.39	0.35	136.91
25.50	1000.00	0.40	0.35	141.62
26.00	1000.00	0.42	0.44	186.03
26.50	1000.00	0.42	0.39	163.50
27.00	1000.00	0.42	0.38	159.68
27.50	1000.00	0.44	0.38	165.79
28.00	1000.00	0.44	0.50	219.64
28.50	1000.00	0.41	0.36	149.22
29.00	1000.00	0.40	0.35	141.21
29.50	1000.00	0.40	0.36	142.75
30.00	1000.00	0.39	0.35	135.71
30.50	1000.00	0.37	0.34	127.90
31.00	1000.00	0.36	0.34	122.25
31.50	1000.00	0.34	0.33	112.90

32.00	1000.00	0.32	0.32	102.23
32.50	1000.00	0.30	0.31	93.90
33.00	1000.00	0.29	0.30	89.16
33.50	1000.00	0.28	0.30	83.72
34.00	1000.00	0.27	0.29	80.09
34.50	1000.00	0.27	0.28	75.90
35.00	1000.00	0.26	0.28	73.36
35.50	1000.00	0.26	0.27	70.77
36.00	1000.00	0.25	0.27	67.76
36.50	1000.00	0.25	0.26	65.27
37.00	1000.00	0.24	0.26	62.17
37.50	1000.00	0.24	0.25	57.98
38.00	1000.00	0.23	0.25	56.60
38.50	1000.00	0.23	0.25	56.36
39.00	1000.00	0.23	0.24	53.37
39.50	1000.00	0.22	0.23	52.09
40.00	1000.00	0.22	0.24	52.34
40.50	1000.00	0.22	0.20	45.77
41.00	1000.00	0.22	0.20	45.39
41.50	1000.00	0.22	0.20	43.38
42.00	1000.00	0.22	0.19	41.66
42.50	1000.00	0.21	0.19	41.44
43.00	1000.00	0.21	0.18	38.70
43.50	1000.00	0.21	0.18	37.71
44.00	1000.00	0.21	0.17	35.68
44.50	1000.00	0.20	0.17	33.78
45.00	1000.00	0.20	0.16	31.64
45.50	1000.00	0.20	0.16	30.58
46.00	1000.00	0.19	0.15	29.81
46.50	1000.00	0.19	0.14	26.84
47.00	1000.00	0.19	0.14	25.64
47.50	1000.00	0.19	0.14	26.85
48.00	1000.00	0.19	0.13	24.55
48.50	1000.00	0.19	0.12	23.30
49.00	1000.00	0.19	0.12	21.75
49.50	1000.00	0.18	0.12	20.69
50.00	1000.00	0.18	0.12	21.63
50.50	1000.00	0.17	0.11	19.33
51.00	1000.00	0.17	0.11	17.82
51.50	1000.00	0.16	0.11	17.27
52.00	1000.00	0.15	0.09	14.38
52.50	1000.00	0.14	0.09	12.37
53.00	1000.00	0.13	0.09	11.30
53.50	1000.00	0.12	0.08	9.99
54.00	1000.00	0.12	0.08	9.87
54.50	1000.00	0.12	0.08	9.49
55.00	1000.00	0.11	0.08	9.00
55.50	1000.00	0.11	0.08	9.05
56.00	800.00	0.09	0.12	8.88
56.50	1000.00	0.11	0.08	8.64
57.00	1000.00	0.11	0.08	8.78
57.50	1000.00	0.11	0.08	8.47
58.00	1000.00	0.11	0.08	8.59
58.50	1000.00	0.11	0.08	8.30
59.00	1000.00	0.11	0.06	6.68
59.50	1000.00	0.11	0.07	7.96
60.00	800.00	0.09	0.09	6.39

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 242.95 CFS AT TIME: 27.62 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 301.49 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 6

TIME	TOPWID	DEPTH	VELOCITY	DISCHARGE

(HRS)	(FT)	(FT)	(FPS)	(CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	1200.00	0.05	0.08	4.99
12.50	1200.00	0.05	0.11	7.22
13.00	1000.00	0.04	0.12	5.28
13.50	400.00	0.02	0.44	3.02
14.00	1000.00	0.04	0.07	3.05
14.50	400.00	0.02	0.42	2.78
15.00	200.00	0.01	2.40	4.04
15.50	400.00	0.02	0.29	1.96
16.00	800.00	0.03	0.19	5.19
16.50	400.00	0.02	0.47	3.39
17.00	400.00	0.02	0.69	4.60
17.50	600.00	0.03	0.43	6.56
18.00	1400.00	0.08	0.33	34.98
18.50	2400.00	0.18	0.30	128.14
19.00	2400.00	0.19	0.41	190.63
19.50	2200.00	0.20	0.48	207.66
20.00	2400.00	0.20	0.42	205.68
20.50	2400.00	0.20	0.43	201.49
21.00	2400.00	0.20	0.42	195.30
21.50	2400.00	0.19	0.41	193.02
22.00	2400.00	0.19	0.40	184.75
22.50	2400.00	0.19	0.39	178.84
23.00	2400.00	0.19	0.39	177.26
23.50	2200.00	0.18	0.44	175.20
24.00	2400.00	0.19	0.39	175.97
24.50	2400.00	0.19	0.38	175.20
25.00	2400.00	0.19	0.40	186.04
25.50	2400.00	0.20	0.41	199.33
26.00	2400.00	0.21	0.44	218.20
26.50	2400.00	0.21	0.45	230.27
27.00	2400.00	0.22	0.46	239.95
27.50	2400.00	0.22	0.46	240.09
28.00	2400.00	0.22	0.45	235.13
28.50	2400.00	0.21	0.45	230.80
29.00	2400.00	0.21	0.43	218.77
29.50	2400.00	0.21	0.43	213.14
30.00	2400.00	0.20	0.42	199.23
30.50	2400.00	0.19	0.40	185.45
31.00	2200.00	0.18	0.42	167.60
31.50	2400.00	0.18	0.35	151.13
32.00	2200.00	0.16	0.36	128.68
32.50	2200.00	0.16	0.34	117.77

33.00	2200.00	0.15	0.31	100.91
33.50	2200.00	0.14	0.28	89.11
34.00	2000.00	0.13	0.30	78.54
34.50	2200.00	0.13	0.24	71.65
35.00	2000.00	0.12	0.25	62.34
35.50	1800.00	0.11	0.30	59.74
36.00	1800.00	0.11	0.27	52.26
36.50	2000.00	0.11	0.24	53.03
37.00	2200.00	0.12	0.19	47.71
37.50	2200.00	0.11	0.17	43.59
38.00	1800.00	0.10	0.25	42.05
38.50	1600.00	0.09	0.28	38.91
39.00	1800.00	0.09	0.26	43.40
39.50	1600.00	0.08	0.27	36.12
40.00	2000.00	0.10	0.16	31.34
40.50	2000.00	0.10	0.17	34.29
41.00	1800.00	0.09	0.21	33.58
41.50	2000.00	0.10	0.16	32.02
42.00	1600.00	0.08	0.27	34.62
42.50	1800.00	0.09	0.21	33.18
43.00	2200.00	0.10	0.12	28.77
43.50	1800.00	0.09	0.20	31.53
44.00	1800.00	0.09	0.21	33.47
44.50	1800.00	0.09	0.19	30.42
45.00	1800.00	0.09	0.19	29.51
45.50	1600.00	0.08	0.24	30.77
46.00	2000.00	0.10	0.15	27.65
46.50	2200.00	0.10	0.12	27.72
47.00	1800.00	0.09	0.17	27.12
47.50	1400.00	0.07	0.30	28.90
48.00	1600.00	0.08	0.21	26.32
48.50	1600.00	0.08	0.19	23.97
49.00	2000.00	0.09	0.14	25.71
49.50	1400.00	0.07	0.26	24.40
50.00	1600.00	0.08	0.19	22.87
50.50	1800.00	0.08	0.14	20.71
51.00	1800.00	0.08	0.14	21.10
51.50	1400.00	0.06	0.23	20.51
52.00	1400.00	0.06	0.21	18.75
52.50	1400.00	0.06	0.22	19.34
53.00	1000.00	0.04	0.27	12.02
53.50	800.00	0.04	0.60	16.78
54.00	800.00	0.03	0.32	8.95
54.50	800.00	0.03	0.28	7.70
55.00	800.00	0.03	0.34	9.17
55.50	1200.00	0.05	0.12	7.09
56.00	1400.00	0.06	0.12	9.44
56.50	600.00	0.03	0.36	5.40
57.00	800.00	0.03	0.21	5.68
57.50	1000.00	0.04	0.19	7.83
58.00	800.00	0.03	0.28	7.44
58.50	600.00	0.03	0.27	4.13
59.00	400.00	0.02	1.30	8.70
59.50	600.00	0.03	0.85	12.81
60.00	400.00	0.02	0.96	8.50

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 90.49 CFS AT TIME: 20.41 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 49.27 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 7

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)

0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	800.00	0.10	0.07	5.60
12.50	800.00	0.13	0.13	14.05
13.00	800.00	0.14	0.15	16.84
13.50	800.00	0.13	0.14	15.27
14.00	800.00	0.13	0.15	15.34
14.50	800.00	0.12	0.13	12.07
15.00	600.00	0.08	0.14	6.56
15.50	800.00	0.10	0.11	8.57
16.00	200.00	0.10	0.26	5.29
16.50	800.00	0.10	0.11	8.58
17.00	800.00	0.11	0.12	10.72
17.50	800.00	0.11	0.13	11.74
18.00	800.00	0.12	0.13	13.00
18.50	800.00	0.13	0.14	14.98
19.00	800.00	0.14	0.14	16.25
19.50	800.00	0.14	0.15	16.91
20.00	800.00	0.15	0.15	18.56
20.50	800.00	0.24	0.42	82.77
21.00	800.00	0.22	0.40	71.32
21.50	800.00	0.22	0.39	68.39
22.00	800.00	0.22	0.37	65.69
22.50	800.00	0.22	0.37	64.00
23.00	800.00	0.22	0.38	65.31
23.50	800.00	0.21	0.36	59.77
24.00	800.00	0.21	0.34	55.93
24.50	800.00	0.20	0.36	59.12
25.00	800.00	0.20	0.26	42.67
25.50	800.00	0.20	0.26	43.05
26.00	800.00	0.20	0.25	39.53
26.50	800.00	0.20	0.21	34.15
27.00	800.00	0.21	0.25	41.37
27.50	800.00	0.20	0.23	36.98
28.00	800.00	0.20	0.20	32.33
28.50	800.00	0.20	0.19	30.39
29.00	800.00	0.19	0.20	29.64
29.50	800.00	0.18	0.18	25.68
30.00	800.00	0.17	0.16	22.41
30.50	800.00	0.14	0.14	15.63
31.00	0.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00	0.00

34.00	0.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	0.00
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 114.33 CFS AT TIME: 20.99 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 80.28 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 8

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00

1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	1600.00	0.10	0.06	10.31
12.50	1600.00	0.12	0.12	24.03
13.00	1600.00	0.13	0.13	28.14
13.50	1600.00	0.14	0.13	30.19
14.00	1600.00	0.15	0.14	34.93
14.50	1600.00	0.15	0.14	34.29
15.00	1600.00	0.14	0.13	30.07
15.50	1600.00	0.12	0.12	24.03
16.00	1600.00	0.11	0.10	16.69
16.50	1400.00	0.09	0.14	17.19
17.00	1600.00	0.11	0.11	19.32
17.50	1600.00	0.11	0.12	20.85
18.00	1600.00	0.12	0.12	21.96
18.50	1600.00	0.12	0.12	23.97
19.00	1600.00	0.13	0.13	26.01
19.50	1600.00	0.14	0.14	29.34
20.00	1600.00	0.14	0.13	29.92
20.50	1600.00	0.18	0.23	66.51
21.00	1600.00	0.22	0.32	112.75
21.50	1600.00	0.20	0.31	101.12
22.00	1600.00	0.21	0.32	104.34
22.50	1600.00	0.20	0.32	104.45
23.00	1600.00	0.20	0.31	100.51
23.50	1600.00	0.21	0.30	99.35
24.00	1600.00	0.20	0.27	87.10
24.50	1600.00	0.20	0.26	82.63
25.00	1600.00	0.20	0.23	73.72
25.50	1600.00	0.20	0.22	68.57
26.00	1600.00	0.20	0.21	66.00
26.50	1600.00	0.20	0.18	57.24
27.00	1600.00	0.20	0.21	65.55
27.50	1600.00	0.20	0.19	59.91
28.00	1600.00	0.20	0.16	51.98
28.50	1600.00	0.19	0.17	53.21
29.00	1600.00	0.19	0.16	48.55
29.50	1600.00	0.19	0.16	47.03
30.00	1600.00	0.18	0.15	42.41
30.50	1600.00	0.16	0.13	33.41
31.00	1000.00	0.14	0.11	15.11
31.50	400.00	0.12	0.09	4.27
32.00	0.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00	0.00

35.00	0.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
48.50	0.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00	0.00
49.50	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00
50.50	0.00	0.00	0.00	0.00
51.00	0.00	0.00	0.00	0.00
51.50	0.00	0.00	0.00	0.00
52.00	0.00	0.00	0.00	0.00
52.50	0.00	0.00	0.00	0.00
53.00	0.00	0.00	0.00	0.00
53.50	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
54.50	0.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00	0.00
55.50	0.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00	0.00
56.50	0.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 253.75 CFS AT TIME: 19.36 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 315.25 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 9

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00

2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	0.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	0.00
13.50	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00
14.50	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00
15.50	0.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	0.00
16.50	0.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	0.00
17.50	0.00	0.00	0.00	0.00
18.00	800.00	0.19	0.62	94.55
18.50	1400.00	0.39	0.42	230.28
19.00	1400.00	0.40	0.44	245.72
19.50	1400.00	0.40	0.45	252.48
20.00	1400.00	0.40	0.45	248.24
20.50	1400.00	0.38	0.44	233.97
21.00	1400.00	0.37	0.43	224.25
21.50	1400.00	0.36	0.42	215.58
22.00	1400.00	0.35	0.41	204.37
22.50	1400.00	0.35	0.41	197.00
23.00	1400.00	0.34	0.40	190.03
23.50	1400.00	0.33	0.40	186.78
24.00	1400.00	0.34	0.40	188.54
24.50	1400.00	0.34	0.40	190.19
25.00	1400.00	0.34	0.40	195.25
25.50	1400.00	0.36	0.42	207.84
26.00	1400.00	0.37	0.42	219.45
26.50	1400.00	0.38	0.43	230.42
27.00	1400.00	0.38	0.44	235.63
27.50	1400.00	0.39	0.44	236.11
28.00	1400.00	0.38	0.44	233.86
28.50	1400.00	0.37	0.43	224.97
29.00	1400.00	0.37	0.42	216.89
29.50	1400.00	0.36	0.42	208.79
30.00	1400.00	0.35	0.41	196.42
30.50	1400.00	0.33	0.40	184.17
31.00	1400.00	0.32	0.38	169.45
31.50	1400.00	0.30	0.37	154.79
32.00	1400.00	0.28	0.36	139.78
32.50	1400.00	0.26	0.33	121.43
33.00	1400.00	0.24	0.30	102.82
33.50	1400.00	0.23	0.29	93.06
34.00	1400.00	0.21	0.27	82.69
34.50	1400.00	0.21	0.26	76.97
35.00	1400.00	0.20	0.23	65.72
35.50	1400.00	0.19	0.23	60.77

36.00	1400.00	0.19	0.20	53.49
36.50	1400.00	0.18	0.16	39.77
37.00	1400.00	0.18	0.16	41.29
37.50	1400.00	0.18	0.15	37.31
38.00	1400.00	0.18	0.18	44.43
38.50	1400.00	0.17	0.16	39.05
39.00	1400.00	0.17	0.14	31.87
39.50	1400.00	0.17	0.14	31.87
40.00	1400.00	0.16	0.14	31.95
40.50	1400.00	0.16	0.13	30.50
41.00	1400.00	0.16	0.13	29.34
41.50	1400.00	0.16	0.13	29.01
42.00	1400.00	0.16	0.12	26.69
42.50	1400.00	0.16	0.12	26.12
43.00	1400.00	0.15	0.12	25.45
43.50	1400.00	0.15	0.12	25.03
44.00	1400.00	0.15	0.11	22.92
44.50	1400.00	0.15	0.12	24.06
45.00	1400.00	0.15	0.11	23.45
45.50	1400.00	0.14	0.10	21.22
46.00	1400.00	0.14	0.11	22.17
46.50	1400.00	0.14	0.11	21.82
47.00	1400.00	0.14	0.11	21.26
47.50	1400.00	0.14	0.11	21.06
48.00	1400.00	0.14	0.11	20.71
48.50	1400.00	0.13	0.10	18.63
49.00	1400.00	0.13	0.10	18.22
49.50	1400.00	0.13	0.11	19.39
50.00	1400.00	0.13	0.10	18.90
50.50	1200.00	0.13	0.12	18.58
51.00	1400.00	0.13	0.10	18.08
51.50	1400.00	0.12	0.10	17.38
52.00	1200.00	0.12	0.11	16.79
52.50	1400.00	0.12	0.10	16.14
53.00	1000.00	0.12	0.13	15.56
53.50	1400.00	0.11	0.09	14.93
54.00	1400.00	0.11	0.08	12.56
54.50	1400.00	0.11	0.07	10.00
55.00	1400.00	0.10	0.07	10.44
55.50	1200.00	0.10	0.09	10.34
56.00	600.00	0.10	0.14	8.12
56.50	1000.00	0.07	0.14	9.95
57.00	1200.00	0.10	0.07	8.05
57.50	800.00	0.10	0.12	9.67
58.00	1200.00	0.10	0.10	11.48
58.50	1200.00	0.10	0.07	8.90
59.00	800.00	0.07	0.21	11.21
59.50	600.00	0.06	0.17	6.14
60.00	600.00	0.04	0.26	6.72

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 69.32 CFS AT TIME: 49.10 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 165.90 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 1

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	7400.00	0.03	0.05	10.28
13.00	7400.00	0.03	0.05	12.34
13.50	7200.00	0.03	0.05	12.73
14.00	7400.00	0.04	0.05	14.91
14.50	7400.00	0.04	0.05	15.94
15.00	7400.00	0.04	0.06	16.92
15.50	7400.00	0.04	0.06	17.85
16.00	7400.00	0.04	0.06	18.79
16.50	7400.00	0.05	0.06	19.81
17.00	7200.00	0.05	0.06	21.14
17.50	7200.00	0.05	0.07	22.50
18.00	7200.00	0.05	0.07	23.61
18.50	7200.00	0.05	0.07	24.08
19.00	7200.00	0.05	0.07	24.21
19.50	7400.00	0.05	0.07	24.70
20.00	7200.00	0.05	0.07	24.74
20.50	7200.00	0.05	0.07	25.05
21.00	7400.00	0.05	0.07	25.36
21.50	7400.00	0.05	0.07	25.52
22.00	7000.00	0.05	0.07	26.40
22.50	6800.00	0.05	0.08	27.54
23.00	7000.00	0.06	0.08	29.44
23.50	6800.00	0.06	0.08	30.95
24.00	7200.00	0.06	0.07	31.82
24.50	6600.00	0.06	0.08	32.19
25.00	6600.00	0.07	0.08	32.76
25.50	6400.00	0.07	0.08	33.35
26.00	6400.00	0.07	0.08	34.05
26.50	6400.00	0.07	0.08	34.77
27.00	6200.00	0.07	0.08	35.39
27.50	6400.00	0.07	0.08	35.91

28.00	6200.00	0.07	0.08	36.29
28.50	6400.00	0.07	0.08	37.10
29.00	6400.00	0.07	0.08	37.67
29.50	6400.00	0.07	0.08	38.60
30.00	6400.00	0.07	0.09	38.90
30.50	6800.00	0.06	0.09	39.34
31.00	7200.00	0.06	0.09	39.50
31.50	6800.00	0.06	0.09	40.41
32.00	7200.00	0.07	0.09	41.29
32.50	7200.00	0.07	0.09	41.53
33.00	7000.00	0.06	0.09	41.14
33.50	7200.00	0.07	0.09	40.72
34.00	7000.00	0.06	0.09	40.36
34.50	7200.00	0.06	0.09	40.65
35.00	6800.00	0.06	0.09	40.06
35.50	7200.00	0.06	0.09	39.73
36.00	7200.00	0.06	0.09	39.37
36.50	6800.00	0.06	0.09	39.61
37.00	7000.00	0.06	0.09	39.55
37.50	7400.00	0.06	0.08	39.80
38.00	7200.00	0.06	0.09	39.65
38.50	7400.00	0.07	0.08	40.46
39.00	7400.00	0.07	0.08	41.05
39.50	7200.00	0.07	0.09	41.95
40.00	7400.00	0.07	0.09	42.23
40.50	7400.00	0.07	0.09	43.00
41.00	7400.00	0.07	0.09	43.72
41.50	7200.00	0.07	0.09	45.08
42.00	7200.00	0.07	0.09	45.68
42.50	7400.00	0.07	0.09	46.77
43.00	7200.00	0.07	0.09	48.22
43.50	7400.00	0.07	0.09	50.05
44.00	7400.00	0.08	0.09	52.48
44.50	7400.00	0.08	0.09	55.72
45.00	7400.00	0.08	0.10	58.46
45.50	7400.00	0.09	0.10	60.56
46.00	7400.00	0.09	0.10	62.86
46.50	7400.00	0.09	0.10	65.25
47.00	7400.00	0.09	0.10	66.98
47.50	7400.00	0.09	0.10	68.28
48.00	7400.00	0.09	0.10	68.93
48.50	7400.00	0.09	0.10	68.86
49.00	7400.00	0.09	0.10	68.90
49.50	7400.00	0.09	0.10	68.20
50.00	7400.00	0.09	0.10	67.47
50.50	7400.00	0.09	0.10	66.62
51.00	7400.00	0.09	0.10	66.12
51.50	7400.00	0.09	0.10	65.15
52.00	7400.00	0.09	0.10	63.77
52.50	7400.00	0.08	0.10	62.28
53.00	7400.00	0.08	0.10	60.74
53.50	7200.00	0.08	0.10	59.05
54.00	7000.00	0.08	0.11	56.96
54.50	6800.00	0.07	0.11	55.45
55.00	5800.00	0.07	0.14	58.53
55.50	5800.00	0.07	0.14	52.24
56.00	4800.00	0.07	0.16	53.84
56.50	4400.00	0.10	0.12	52.58
57.00	4400.00	0.10	0.11	49.17
57.50	4600.00	0.09	0.12	51.54
58.00	4000.00	0.10	0.12	50.32
58.50	4000.00	0.10	0.12	49.81
59.00	4000.00	0.10	0.12	49.86
59.50	4400.00	0.09	0.12	49.31
60.00	4000.00	0.09	0.13	47.42

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 115.77 CFS AT TIME: 58.66 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 157.79 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 2

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	3600.00	0.03	0.06	6.34
13.00	3600.00	0.03	0.06	7.80
13.50	3600.00	0.04	0.07	8.59
14.00	3600.00	0.04	0.07	10.20
14.50	3600.00	0.04	0.07	10.92
15.00	3600.00	0.04	0.08	11.86
15.50	3600.00	0.04	0.08	12.54
16.00	3600.00	0.05	0.08	13.24
16.50	3600.00	0.05	0.08	13.95
17.00	3600.00	0.05	0.08	14.70
17.50	3600.00	0.05	0.09	15.44
18.00	3600.00	0.05	0.09	16.15
18.50	3600.00	0.05	0.09	16.84
19.00	3600.00	0.05	0.09	17.51
19.50	3600.00	0.05	0.09	18.11
20.00	3600.00	0.06	0.09	18.75
20.50	3600.00	0.06	0.09	19.32
21.00	3600.00	0.06	0.10	19.93
21.50	3600.00	0.06	0.10	20.47
22.00	3600.00	0.06	0.10	21.04
22.50	3600.00	0.06	0.10	21.64
23.00	3600.00	0.06	0.10	22.27
23.50	3600.00	0.06	0.10	22.86
24.00	3600.00	0.06	0.10	23.54
24.50	3600.00	0.06	0.10	23.95
25.00	3600.00	0.07	0.10	24.41
25.50	3600.00	0.07	0.11	24.97
26.00	3600.00	0.07	0.11	25.63
26.50	3600.00	0.07	0.11	26.40
27.00	3600.00	0.07	0.11	27.32
27.50	3600.00	0.07	0.11	28.42
28.00	3600.00	0.07	0.11	29.74
28.50	3600.00	0.08	0.11	31.10

29.00	3600.00	0.08	0.12	32.39
29.50	3600.00	0.08	0.12	33.71
30.00	3600.00	0.08	0.12	34.37
30.50	3600.00	0.08	0.12	34.31
31.00	3600.00	0.08	0.12	34.20
31.50	3600.00	0.08	0.12	34.34
32.00	3600.00	0.08	0.12	34.63
32.50	3600.00	0.08	0.12	34.95
33.00	3600.00	0.08	0.12	35.37
33.50	3600.00	0.08	0.12	35.54
34.00	3600.00	0.08	0.12	35.61
34.50	3600.00	0.08	0.12	35.70
35.00	3600.00	0.08	0.12	35.79
35.50	3600.00	0.08	0.12	35.97
36.00	3600.00	0.08	0.12	36.12
36.50	3600.00	0.08	0.12	36.16
37.00	3600.00	0.08	0.12	36.45
37.50	3600.00	0.08	0.12	36.62
38.00	3600.00	0.08	0.12	36.57
38.50	3600.00	0.08	0.12	36.67
39.00	3600.00	0.08	0.12	36.91
39.50	3600.00	0.08	0.12	37.09
40.00	3600.00	0.08	0.12	37.14
40.50	3600.00	0.08	0.12	37.11
41.00	3600.00	0.08	0.12	37.08
41.50	3600.00	0.08	0.12	37.21
42.00	3600.00	0.08	0.12	37.02
42.50	3600.00	0.08	0.12	37.02
43.00	3600.00	0.08	0.12	36.90
43.50	3600.00	0.08	0.12	36.68
44.00	3600.00	0.08	0.12	36.45
44.50	3600.00	0.08	0.12	36.30
45.00	3600.00	0.08	0.12	36.16
45.50	3600.00	0.08	0.12	36.03
46.00	3600.00	0.08	0.12	35.88
46.50	3600.00	0.08	0.12	35.71
47.00	3600.00	0.08	0.12	35.58
47.50	3600.00	0.08	0.12	35.51
48.00	3600.00	0.08	0.12	35.50
48.50	3600.00	0.08	0.12	35.52
49.00	3600.00	0.08	0.12	35.88
49.50	3600.00	0.08	0.12	35.72
50.00	3600.00	0.08	0.12	35.57
50.50	3600.00	0.08	0.12	35.51
51.00	3600.00	0.08	0.12	36.17
51.50	3600.00	0.10	0.13	44.95
52.00	3600.00	0.11	0.19	74.43
52.50	3600.00	0.11	0.17	71.94
53.00	3600.00	0.12	0.20	88.06
53.50	3600.00	0.12	0.21	93.96
54.00	3600.00	0.13	0.23	104.98
54.50	3600.00	0.13	0.20	92.10
55.00	3600.00	0.13	0.19	86.09
55.50	3600.00	0.13	0.21	98.80
56.00	3600.00	0.13	0.23	106.93
56.50	3600.00	0.13	0.21	97.48
57.00	3600.00	0.13	0.18	83.87
57.50	3600.00	0.13	0.22	106.64
58.00	3600.00	0.13	0.22	103.79
58.50	3600.00	0.13	0.22	103.53
59.00	3600.00	0.14	0.21	101.23
59.50	3600.00	0.13	0.20	96.72
60.00	3600.00	0.14	0.19	94.83

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 60.24 CFS AT TIME: 59.73 HOURS

THE TOTAL VOLUME OF DISCHARGE IS: 40.40 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 3

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	2800.00	0.03	0.04	3.54
13.00	2800.00	0.03	0.04	4.20
13.50	2800.00	0.03	0.04	4.32
14.00	2800.00	0.04	0.05	5.09
14.50	2800.00	0.04	0.05	5.49
15.00	2800.00	0.04	0.05	5.83
15.50	2800.00	0.04	0.05	6.10
16.00	2800.00	0.04	0.05	6.35
16.50	2800.00	0.04	0.05	6.57
17.00	2800.00	0.05	0.05	6.81
17.50	2800.00	0.05	0.05	7.05
18.00	2800.00	0.05	0.05	7.26
18.50	2800.00	0.05	0.06	7.46
19.00	2800.00	0.05	0.06	7.65
19.50	2800.00	0.05	0.06	7.79
20.00	2800.00	0.05	0.06	7.94
20.50	2800.00	0.05	0.06	8.05
21.00	2800.00	0.05	0.06	8.18
21.50	2800.00	0.05	0.06	8.27
22.00	2800.00	0.05	0.06	8.35
22.50	2800.00	0.05	0.06	8.43
23.00	2800.00	0.05	0.06	8.52
23.50	2800.00	0.05	0.06	8.59
24.00	2800.00	0.05	0.06	8.66
24.50	2800.00	0.05	0.06	8.55
25.00	2800.00	0.05	0.06	8.42
25.50	2800.00	0.05	0.06	8.29
26.00	2800.00	0.05	0.06	8.15
26.50	2800.00	0.05	0.06	8.02
27.00	2800.00	0.05	0.06	7.90
27.50	2800.00	0.05	0.06	7.78
28.00	2800.00	0.05	0.06	7.68
28.50	2800.00	0.05	0.06	7.59
29.00	2800.00	0.05	0.06	7.52
29.50	2800.00	0.05	0.06	7.44

30.00	2800.00	0.05	0.06	7.37
30.50	2800.00	0.05	0.06	7.30
31.00	2800.00	0.05	0.05	7.22
31.50	2800.00	0.05	0.05	7.13
32.00	2800.00	0.05	0.05	7.05
32.50	2800.00	0.05	0.05	6.97
33.00	2800.00	0.05	0.05	6.90
33.50	2800.00	0.05	0.05	6.83
34.00	2800.00	0.05	0.05	6.77
34.50	2800.00	0.04	0.05	6.71
35.00	2800.00	0.04	0.05	6.67
35.50	2800.00	0.04	0.05	6.62
36.00	2800.00	0.04	0.05	6.59
36.50	2800.00	0.04	0.05	6.56
37.00	2800.00	0.04	0.05	6.54
37.50	2800.00	0.04	0.05	6.54
38.00	2800.00	0.04	0.05	6.54
38.50	2800.00	0.04	0.05	6.55
39.00	2800.00	0.04	0.05	6.56
39.50	2800.00	0.04	0.05	6.58
40.00	2800.00	0.04	0.05	6.59
40.50	2800.00	0.04	0.05	6.59
41.00	2800.00	0.04	0.05	6.59
41.50	2800.00	0.04	0.05	6.58
42.00	2800.00	0.04	0.05	6.56
42.50	2800.00	0.04	0.05	6.53
43.00	2800.00	0.04	0.05	6.49
43.50	2800.00	0.04	0.05	6.45
44.00	2800.00	0.04	0.05	6.41
44.50	2800.00	0.04	0.05	6.36
45.00	2800.00	0.04	0.05	6.32
45.50	2800.00	0.04	0.05	6.27
46.00	2800.00	0.04	0.05	6.21
46.50	2800.00	0.04	0.05	6.16
47.00	2800.00	0.04	0.05	6.11
47.50	2800.00	0.04	0.05	6.05
48.00	2800.00	0.04	0.05	5.99
48.50	2800.00	0.04	0.05	5.94
49.00	2800.00	0.04	0.05	5.88
49.50	2800.00	0.04	0.05	5.83
50.00	2800.00	0.04	0.05	5.78
50.50	2800.00	0.04	0.05	5.73
51.00	2800.00	0.04	0.05	5.69
51.50	2800.00	0.04	0.05	5.66
52.00	2800.00	0.04	0.05	5.83
52.50	2800.00	0.04	0.05	6.60
53.00	2800.00	0.05	0.06	8.10
53.50	2800.00	0.06	0.07	10.65
54.00	2800.00	0.07	0.08	14.97
54.50	2800.00	0.08	0.10	22.11
55.00	2800.00	0.08	0.10	22.04
55.50	2800.00	0.09	0.10	23.59
56.00	2800.00	0.09	0.11	26.60
56.50	2800.00	0.10	0.12	33.21
57.00	2800.00	0.10	0.11	29.90
57.50	2800.00	0.11	0.12	37.05
58.00	2800.00	0.11	0.12	38.00
58.50	2800.00	0.12	0.12	41.72
59.00	2800.00	0.12	0.12	41.30
59.50	2800.00	0.14	0.12	44.49
60.00	2800.00	0.15	0.12	49.15

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 73.72 CFS AT TIME: 59.97 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 57.21 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 4

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	2200.00	0.03	0.05	3.51
13.00	2200.00	0.03	0.06	4.29
13.50	2200.00	0.04	0.06	4.61
14.00	2200.00	0.04	0.06	5.59
14.50	2200.00	0.04	0.07	6.30
15.00	2200.00	0.05	0.07	7.05
15.50	2200.00	0.05	0.07	7.84
16.00	2200.00	0.05	0.07	8.65
16.50	2200.00	0.06	0.08	9.41
17.00	2200.00	0.06	0.08	10.07
17.50	2200.00	0.06	0.08	10.58
18.00	2200.00	0.06	0.08	10.95
18.50	2200.00	0.06	0.08	11.24
19.00	2200.00	0.06	0.08	11.46
19.50	2200.00	0.06	0.08	11.58
20.00	2200.00	0.06	0.08	11.66
20.50	2200.00	0.06	0.08	11.61
21.00	2200.00	0.06	0.08	11.72
21.50	2200.00	0.06	0.08	11.69
22.00	2200.00	0.06	0.08	11.64
22.50	2200.00	0.06	0.08	11.57
23.00	2200.00	0.06	0.08	11.41
23.50	2200.00	0.06	0.08	11.29
24.00	2200.00	0.06	0.08	11.21
24.50	2200.00	0.06	0.08	10.82
25.00	2200.00	0.06	0.08	10.42
25.50	2200.00	0.06	0.08	10.03
26.00	2200.00	0.06	0.08	9.62
26.50	2200.00	0.06	0.07	9.23
27.00	2200.00	0.05	0.07	8.84
27.50	2200.00	0.05	0.07	8.45
28.00	2200.00	0.05	0.07	8.06
28.50	2200.00	0.05	0.07	7.68
29.00	2200.00	0.05	0.07	7.25
29.50	2200.00	0.05	0.07	6.94
30.00	2200.00	0.05	0.06	6.53
30.50	2200.00	0.04	0.06	6.20

31.00	2200.00	0.04	0.06	5.94
31.50	2200.00	0.04	0.06	5.59
32.00	2200.00	0.04	0.06	5.39
32.50	2200.00	0.04	0.06	5.12
33.00	2200.00	0.04	0.06	5.00
33.50	2200.00	0.04	0.06	4.90
34.00	2200.00	0.04	0.06	4.84
34.50	2200.00	0.04	0.05	4.65
35.00	2200.00	0.04	0.06	4.80
35.50	2200.00	0.04	0.06	4.92
36.00	2200.00	0.04	0.06	5.11
36.50	2200.00	0.04	0.06	5.17
37.00	2200.00	0.04	0.06	5.46
37.50	2200.00	0.04	0.06	5.72
38.00	2200.00	0.04	0.06	6.02
38.50	2200.00	0.04	0.07	6.33
39.00	2200.00	0.05	0.07	6.80
39.50	2200.00	0.05	0.07	7.37
40.00	2200.00	0.05	0.07	7.86
40.50	2200.00	0.05	0.07	8.52
41.00	2200.00	0.05	0.08	9.14
41.50	2200.00	0.06	0.08	9.76
42.00	2200.00	0.06	0.08	10.37
42.50	2200.00	0.06	0.08	11.06
43.00	2200.00	0.06	0.09	11.78
43.50	2200.00	0.06	0.09	12.43
44.00	2200.00	0.06	0.09	12.89
44.50	2200.00	0.06	0.09	13.11
45.00	2200.00	0.06	0.09	13.16
45.50	2200.00	0.06	0.09	13.16
46.00	2200.00	0.06	0.09	13.13
46.50	2200.00	0.06	0.09	13.10
47.00	2200.00	0.06	0.09	13.07
47.50	2200.00	0.06	0.09	13.03
48.00	2200.00	0.06	0.09	12.99
48.50	2200.00	0.06	0.09	12.96
49.00	2200.00	0.06	0.09	12.95
49.50	2200.00	0.06	0.09	12.97
50.00	2200.00	0.06	0.09	13.02
50.50	2200.00	0.07	0.09	13.11
51.00	2200.00	0.07	0.09	13.27
51.50	2200.00	0.07	0.09	13.56
52.00	2200.00	0.07	0.09	14.09
52.50	2200.00	0.07	0.10	14.99
53.00	2200.00	0.08	0.10	16.24
53.50	2200.00	0.08	0.10	17.69
54.00	2200.00	0.08	0.10	18.99
54.50	2200.00	0.09	0.11	19.99
55.00	2200.00	0.09	0.11	21.12
55.50	2200.00	0.10	0.12	25.39
56.00	2200.00	0.12	0.16	43.04
56.50	2200.00	0.13	0.18	54.16
57.00	2200.00	0.14	0.16	49.40
57.50	2200.00	0.14	0.18	57.57
58.00	2200.00	0.15	0.17	58.75
58.50	2200.00	0.16	0.19	65.40
59.00	2200.00	0.16	0.19	68.50
59.50	2200.00	0.16	0.19	69.39
60.00	2200.00	0.16	0.20	73.55

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 8.97 CFS AT TIME: 43.75 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 19.22 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 5

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1000.00	0.03	0.03	0.96
13.00	1000.00	0.04	0.03	1.24
13.50	1000.00	0.04	0.03	1.29
14.00	1000.00	0.04	0.04	1.59
14.50	1000.00	0.04	0.04	1.73
15.00	1000.00	0.05	0.04	1.82
15.50	1000.00	0.05	0.04	1.92
16.00	1000.00	0.05	0.04	1.98
16.50	1000.00	0.05	0.04	2.03
17.00	1000.00	0.05	0.04	2.05
17.50	1000.00	0.05	0.05	2.07
18.00	1000.00	0.05	0.05	2.07
18.50	1000.00	0.04	0.05	2.03
19.00	1000.00	0.04	0.05	2.00
19.50	1000.00	0.04	0.05	1.96
20.00	1000.00	0.04	0.05	1.92
20.50	1000.00	0.04	0.05	1.87
21.00	1000.00	0.04	0.04	1.80
21.50	1000.00	0.04	0.04	1.75
22.00	1000.00	0.04	0.04	1.70
22.50	1000.00	0.04	0.04	1.63
23.00	1000.00	0.04	0.04	1.59
23.50	1000.00	0.04	0.04	1.54
24.00	1000.00	0.04	0.04	1.49
24.50	800.00	0.03	0.05	1.08
25.00	1000.00	0.03	0.03	0.90
25.50	400.00	0.02	0.14	0.94
26.00	1000.00	0.03	0.03	0.79
26.50	600.00	0.02	0.06	0.68
27.00	600.00	0.02	0.06	0.66
27.50	600.00	0.02	0.05	0.61
28.00	400.00	0.01	0.11	0.60
28.50	400.00	0.01	0.11	0.61
29.00	600.00	0.02	0.03	0.36
29.50	600.00	0.02	0.04	0.47
30.00	800.00	0.02	0.04	0.63
30.50	800.00	0.02	0.04	0.79
31.00	1000.00	0.03	0.03	0.81
31.50	1000.00	0.03	0.03	0.86

32.00	1000.00	0.03	0.03	0.87
32.50	1000.00	0.03	0.03	0.90
33.00	1000.00	0.03	0.03	0.98
33.50	1000.00	0.04	0.03	1.17
34.00	1000.00	0.06	0.03	1.93
34.50	1000.00	0.08	0.04	3.63
35.00	1000.00	0.10	0.06	5.58
35.50	1000.00	0.10	0.07	7.05
36.00	1000.00	0.11	0.07	7.01
36.50	1000.00	0.11	0.07	7.16
37.00	1000.00	0.11	0.07	7.50
37.50	1000.00	0.11	0.07	7.79
38.00	1000.00	0.12	0.07	8.06
38.50	1000.00	0.12	0.07	8.16
39.00	1000.00	0.12	0.07	8.29
39.50	1000.00	0.12	0.07	8.39
40.00	1000.00	0.12	0.07	8.42
40.50	1000.00	0.12	0.07	8.46
41.00	1000.00	0.12	0.07	8.59
41.50	1000.00	0.12	0.07	8.49
42.00	1000.00	0.12	0.07	8.74
42.50	1000.00	0.12	0.07	8.63
43.00	1000.00	0.12	0.07	8.76
43.50	1000.00	0.12	0.07	8.81
44.00	1000.00	0.12	0.07	8.86
44.50	1000.00	0.12	0.07	8.82
45.00	1000.00	0.12	0.07	8.69
45.50	1000.00	0.12	0.07	8.60
46.00	1000.00	0.12	0.07	8.40
46.50	1000.00	0.12	0.07	8.32
47.00	1000.00	0.11	0.07	8.13
47.50	1000.00	0.11	0.07	7.97
48.00	1000.00	0.11	0.07	7.93
48.50	1000.00	0.11	0.07	7.76
49.00	1000.00	0.11	0.07	7.64
49.50	1000.00	0.11	0.07	7.47
50.00	1000.00	0.11	0.07	7.42
50.50	1000.00	0.11	0.07	7.34
51.00	1000.00	0.11	0.07	7.25
51.50	1000.00	0.11	0.07	7.10
52.00	1000.00	0.11	0.07	7.07
52.50	1000.00	0.11	0.07	7.10
53.00	1000.00	0.11	0.07	7.05
53.50	1000.00	0.11	0.07	7.16
54.00	1000.00	0.11	0.07	7.18
54.50	1000.00	0.11	0.07	7.20
55.00	1000.00	0.11	0.07	7.25
55.50	1000.00	0.11	0.07	7.34
56.00	1000.00	0.11	0.07	8.31
56.50	1000.00	0.11	0.08	8.66
57.00	1000.00	0.11	0.08	8.61
57.50	1000.00	0.11	0.08	8.72
58.00	1000.00	0.11	0.08	8.73
58.50	1000.00	0.11	0.08	8.67
59.00	1000.00	0.11	0.08	8.40
59.50	1000.00	0.11	0.08	8.42
60.00	1000.00	0.11	0.08	8.46

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 23.02 CFS AT TIME: 38.64 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 35.11 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 6

TIME	TOPWID	DEPTH	VELOCITY	DISCHARGE

(HRS)	(FT)	(FT)	(FPS)	(CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1200.00	0.01	0.10	1.64
13.00	1200.00	0.01	0.09	1.58
13.50	800.00	0.01	0.11	0.86
14.00	1200.00	0.01	0.08	1.44
14.50	800.00	0.01	0.15	1.25
15.00	800.00	0.01	0.16	1.34
15.50	1000.00	0.01	0.08	1.00
16.00	800.00	0.01	0.12	0.96
16.50	800.00	0.01	0.14	1.08
17.00	400.00	0.01	0.40	0.85
17.50	800.00	0.01	0.08	0.63
18.00	600.00	0.01	0.12	0.50
18.50	600.00	0.01	0.16	0.66
19.00	800.00	0.01	0.09	0.61
19.50	800.00	0.01	0.11	0.79
20.00	800.00	0.01	0.10	0.67
20.50	400.00	0.00	0.47	0.85
21.00	600.00	0.01	0.14	0.56
21.50	600.00	0.01	0.09	0.34
22.00	400.00	0.00	0.39	0.67
22.50	400.00	0.00	0.31	0.53
23.00	800.00	0.01	0.09	0.61
23.50	600.00	0.01	0.10	0.38
24.00	600.00	0.01	0.16	0.61
24.50	0.00	0.00	0.00	0.00
25.00	200.00	0.00	0.06	0.03
25.50	0.00	0.00	0.00	0.00
26.00	200.00	0.00	0.06	0.03
26.50	0.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	0.03
28.50	0.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00	0.00
30.00	200.00	0.00	0.09	0.04
30.50	200.00	0.00	0.55	0.25
31.00	200.00	0.00	0.89	0.38
31.50	200.00	0.00	0.85	0.36
32.00	400.00	0.00	0.34	0.59
32.50	800.00	0.01	0.08	0.53

33.00	800.00	0.01	0.14	1.08
33.50	800.00	0.01	0.14	1.41
34.00	1200.00	0.02	0.12	3.31
34.50	1200.00	0.03	0.17	5.72
35.00	1800.00	0.04	0.13	8.56
35.50	2400.00	0.05	0.10	11.38
36.00	2400.00	0.06	0.11	15.16
36.50	2400.00	0.07	0.12	19.62
37.00	2400.00	0.07	0.13	21.97
37.50	2400.00	0.07	0.13	22.55
38.00	2200.00	0.07	0.14	22.64
38.50	2400.00	0.07	0.13	23.02
39.00	2400.00	0.07	0.13	23.01
39.50	2400.00	0.07	0.13	22.73
40.00	2400.00	0.07	0.13	22.46
40.50	2400.00	0.07	0.13	22.02
41.00	2400.00	0.07	0.13	21.87
41.50	2400.00	0.07	0.13	21.71
42.00	2400.00	0.07	0.13	21.56
42.50	2400.00	0.07	0.13	21.26
43.00	2400.00	0.07	0.12	21.00
43.50	2400.00	0.07	0.12	20.53
44.00	2400.00	0.07	0.12	20.00
44.50	2400.00	0.07	0.12	19.38
45.00	2400.00	0.07	0.12	18.69
45.50	2400.00	0.06	0.12	18.14
46.00	2400.00	0.06	0.11	17.51
46.50	2400.00	0.06	0.12	17.36
47.00	2400.00	0.06	0.11	16.56
47.50	2200.00	0.06	0.13	16.33
48.00	2400.00	0.06	0.11	15.89
48.50	2400.00	0.06	0.11	15.67
49.00	2400.00	0.06	0.11	15.24
49.50	2400.00	0.06	0.10	14.50
50.00	2400.00	0.06	0.11	14.49
50.50	2000.00	0.05	0.13	14.16
51.00	2400.00	0.06	0.10	13.98
51.50	2200.00	0.05	0.12	13.70
52.00	2400.00	0.06	0.10	13.35
52.50	2400.00	0.05	0.10	13.27
53.00	2200.00	0.05	0.11	13.01
53.50	2400.00	0.05	0.10	12.72
54.00	2200.00	0.05	0.11	12.36
54.50	2400.00	0.05	0.10	12.23
55.00	2200.00	0.05	0.11	11.75
55.50	2400.00	0.05	0.10	11.93
56.00	2400.00	0.05	0.09	11.60
56.50	2200.00	0.05	0.11	11.38
57.00	2000.00	0.05	0.12	10.86
57.50	2200.00	0.05	0.10	10.91
58.00	2400.00	0.05	0.09	10.59
58.50	2000.00	0.04	0.12	10.40
59.00	2000.00	0.04	0.12	10.30
59.50	2200.00	0.05	0.10	9.86
60.00	2200.00	0.04	0.10	9.85

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 9.77 CFS AT TIME: 44.22 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 10.66 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 7

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)

0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	800.00	0.03	0.05	1.29
13.00	800.00	0.04	0.06	1.61
13.50	800.00	0.04	0.06	1.74
14.00	800.00	0.04	0.06	2.11
14.50	800.00	0.05	0.07	2.38
15.00	800.00	0.05	0.07	2.65
15.50	800.00	0.05	0.07	2.95
16.00	800.00	0.05	0.07	3.20
16.50	800.00	0.06	0.08	3.36
17.00	800.00	0.05	0.08	3.39
17.50	800.00	0.05	0.08	3.26
18.00	800.00	0.05	0.08	3.00
18.50	800.00	0.05	0.07	2.71
19.00	800.00	0.04	0.07	2.44
19.50	800.00	0.04	0.07	2.19
20.00	800.00	0.04	0.06	1.97
20.50	800.00	0.04	0.06	1.78
21.00	800.00	0.03	0.06	1.62
21.50	800.00	0.03	0.06	1.48
22.00	800.00	0.03	0.06	1.36
22.50	800.00	0.03	0.05	1.26
23.00	800.00	0.03	0.05	1.16
23.50	800.00	0.03	0.05	1.00
24.00	800.00	0.03	0.05	0.96
24.50	0.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00	0.00
30.00	400.00	0.03	0.01	0.11
30.50	800.00	0.03	0.04	0.88
31.00	800.00	0.03	0.04	0.85
31.50	800.00	0.03	0.05	0.98
32.00	800.00	0.03	0.05	0.96
32.50	800.00	0.03	0.05	1.00
33.00	800.00	0.03	0.05	0.99
33.50	800.00	0.03	0.05	1.01

34.00	800.00	0.03	0.05	1.04
34.50	800.00	0.03	0.05	1.03
35.00	800.00	0.03	0.05	1.08
35.50	800.00	0.03	0.05	1.07
36.00	800.00	0.03	0.05	1.13
36.50	800.00	0.03	0.05	1.17
37.00	800.00	0.03	0.05	1.19
37.50	800.00	0.03	0.05	1.25
38.00	800.00	0.03	0.05	1.28
38.50	800.00	0.03	0.05	1.35
39.00	800.00	0.03	0.05	1.38
39.50	800.00	0.03	0.05	1.45
40.00	800.00	0.03	0.05	1.51
40.50	800.00	0.04	0.05	1.54
41.00	800.00	0.04	0.05	1.61
41.50	800.00	0.04	0.06	1.71
42.00	800.00	0.04	0.06	1.91
42.50	800.00	0.05	0.06	2.52
43.00	800.00	0.07	0.07	4.27
43.50	800.00	0.10	0.09	7.33
44.00	800.00	0.11	0.11	9.48
44.50	800.00	0.11	0.11	9.59
45.00	800.00	0.10	0.11	9.10
45.50	800.00	0.10	0.11	8.79
46.00	800.00	0.10	0.11	8.60
46.50	800.00	0.10	0.11	8.44
47.00	800.00	0.09	0.11	8.23
47.50	800.00	0.09	0.11	7.98
48.00	800.00	0.09	0.11	7.73
48.50	800.00	0.09	0.11	7.47
49.00	800.00	0.09	0.10	7.22
49.50	800.00	0.09	0.10	6.98
50.00	800.00	0.08	0.10	6.73
50.50	800.00	0.08	0.10	6.47
51.00	800.00	0.08	0.10	6.23
51.50	800.00	0.08	0.10	5.98
52.00	800.00	0.08	0.09	5.72
52.50	800.00	0.07	0.09	5.46
53.00	800.00	0.07	0.09	5.19
53.50	800.00	0.07	0.09	4.90
54.00	800.00	0.07	0.09	4.52
54.50	800.00	0.06	0.08	4.02
55.00	800.00	0.05	0.08	3.38
55.50	800.00	0.05	0.07	2.64
56.00	600.00	0.04	0.07	1.75
56.50	600.00	0.03	0.04	0.76
57.00	0.00	0.00	0.00	0.00
57.50	0.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00	0.00
58.50	0.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00	0.00
59.50	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 13.41 CFS AT TIME: 47.68 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 17.97 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 8

TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00

1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	1600.00	0.03	0.05	2.29
13.00	1600.00	0.03	0.05	2.80
13.50	1600.00	0.04	0.05	2.95
14.00	1600.00	0.04	0.06	3.52
14.50	1600.00	0.04	0.06	3.84
15.00	1600.00	0.04	0.06	4.16
15.50	1600.00	0.05	0.06	4.46
16.00	1600.00	0.05	0.06	4.81
16.50	1600.00	0.05	0.07	5.22
17.00	1600.00	0.05	0.07	5.67
17.50	1600.00	0.05	0.07	6.01
18.00	1600.00	0.05	0.07	6.20
18.50	1600.00	0.06	0.07	6.28
19.00	1600.00	0.06	0.07	6.24
19.50	1600.00	0.05	0.07	6.06
20.00	1600.00	0.05	0.07	5.81
20.50	1600.00	0.05	0.07	5.46
21.00	1600.00	0.05	0.07	5.09
21.50	1600.00	0.05	0.06	4.73
22.00	1600.00	0.04	0.06	4.37
22.50	1600.00	0.04	0.06	4.03
23.00	1600.00	0.04	0.06	3.70
23.50	1600.00	0.04	0.06	3.41
24.00	1600.00	0.04	0.05	3.16
24.50	1200.00	0.04	0.05	2.17
25.00	800.00	0.04	0.05	1.30
25.50	400.00	0.04	0.04	0.57
26.00	200.00	0.03	0.04	0.21
26.50	0.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00	0.00
30.00	600.00	0.01	0.09	0.49
30.50	1000.00	0.02	0.08	1.19
31.00	1400.00	0.02	0.06	1.76
31.50	1600.00	0.03	0.04	1.74
32.00	1600.00	0.03	0.04	1.72
32.50	1600.00	0.03	0.04	1.68
33.00	1600.00	0.03	0.04	1.78
33.50	1600.00	0.03	0.04	1.80
34.00	1600.00	0.03	0.04	1.82
34.50	1600.00	0.03	0.04	1.78

35.00	1600.00	0.03	0.04	1.80
35.50	1600.00	0.03	0.04	1.85
36.00	1600.00	0.03	0.04	1.84
36.50	1600.00	0.03	0.04	1.89
37.00	1600.00	0.03	0.04	1.90
37.50	1600.00	0.03	0.04	1.93
38.00	1600.00	0.03	0.05	2.00
38.50	1600.00	0.03	0.05	2.04
39.00	1600.00	0.03	0.05	2.07
39.50	1600.00	0.03	0.05	2.16
40.00	1600.00	0.03	0.05	2.21
40.50	1600.00	0.03	0.05	2.30
41.00	1600.00	0.03	0.05	2.37
41.50	1600.00	0.03	0.05	2.46
42.00	1600.00	0.03	0.05	2.56
42.50	1600.00	0.03	0.05	2.68
43.00	1600.00	0.04	0.05	2.87
43.50	1600.00	0.04	0.05	3.29
44.00	1600.00	0.05	0.06	4.29
44.50	1600.00	0.06	0.07	6.18
45.00	1600.00	0.06	0.08	7.92
45.50	1600.00	0.07	0.08	9.32
46.00	1600.00	0.08	0.08	10.54
46.50	1600.00	0.09	0.08	11.75
47.00	1600.00	0.09	0.09	12.87
47.50	1600.00	0.09	0.09	13.39
48.00	1600.00	0.09	0.09	13.08
48.50	1600.00	0.09	0.09	12.67
49.00	1600.00	0.08	0.09	12.37
49.50	1600.00	0.08	0.09	12.09
50.00	1600.00	0.08	0.09	11.80
50.50	1600.00	0.08	0.09	11.48
51.00	1600.00	0.08	0.09	11.15
51.50	1600.00	0.08	0.09	10.79
52.00	1600.00	0.08	0.09	10.45
52.50	1600.00	0.07	0.08	10.09
53.00	1600.00	0.07	0.08	9.72
53.50	1600.00	0.07	0.08	9.34
54.00	1600.00	0.07	0.08	8.91
54.50	1600.00	0.07	0.08	8.39
55.00	1600.00	0.06	0.08	7.75
55.50	1600.00	0.06	0.07	6.96
56.00	1600.00	0.06	0.07	6.07
56.50	1600.00	0.05	0.06	5.00
57.00	1400.00	0.05	0.06	3.73
57.50	1000.00	0.05	0.05	2.51
58.00	800.00	0.04	0.05	1.61
58.50	600.00	0.04	0.04	0.98
59.00	400.00	0.03	0.04	0.55
59.50	200.00	0.03	0.03	0.19
60.00	0.00	0.00	0.00	0.00

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 47.40 CFS AT TIME: 37.37 HOURS
THE TOTAL VOLUME OF DISCHARGE IS: 51.73 AF

HYDROGRAPH AND AVERAGE FLOODPLAIN HYDRAULICS FOR CROSS SECTION NO: 9

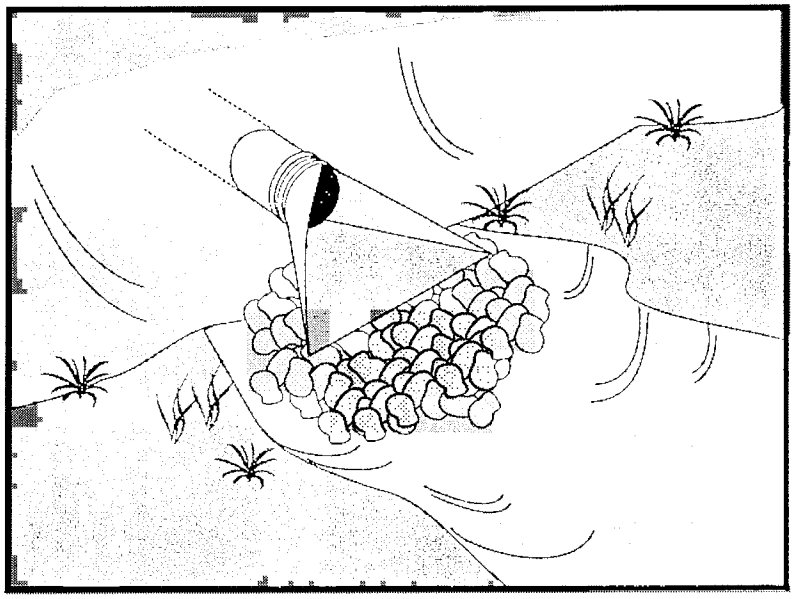
TIME (HRS)	TOPWID (FT)	DEPTH (FT)	VELOCITY (FPS)	DISCHARGE (CFS)
0.50	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00

2.50	0.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00
12.50	0.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	0.00
13.50	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00
14.50	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00
15.50	0.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	0.00
16.50	0.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	0.00
17.50	0.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	0.00
18.50	0.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	0.00
19.50	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	0.00
20.50	0.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	0.00
21.50	0.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00	0.00
22.50	0.00	0.00	0.00	0.00
23.00	0.00	0.00	0.00	0.00
23.50	0.00	0.00	0.00	0.00
24.00	0.00	0.00	0.00	0.00
24.50	0.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	0.00
29.50	200.00	0.00	0.00	0.00
30.00	400.00	0.02	0.10	0.97
30.50	600.00	0.06	0.14	4.91
31.00	600.00	0.07	0.23	9.00
31.50	800.00	0.07	0.17	9.30
32.00	800.00	0.07	0.17	9.42
32.50	800.00	0.08	0.17	10.63
33.00	1000.00	0.10	0.22	22.82
33.50	1000.00	0.11	0.21	23.14
34.00	1000.00	0.12	0.18	22.04
34.50	1200.00	0.14	0.20	32.20
35.00	1200.00	0.15	0.22	38.72
35.50	1400.00	0.17	0.17	41.31

36.00	1400.00	0.17	0.12	28.76
36.50	1400.00	0.18	0.16	39.62
37.00	1400.00	0.17	0.13	30.47
37.50	1400.00	0.17	0.13	30.42
38.00	1400.00	0.17	0.17	42.17
38.50	1400.00	0.17	0.16	38.95
39.00	1400.00	0.17	0.13	30.29
39.50	1400.00	0.18	0.14	35.11
40.00	1400.00	0.17	0.15	35.13
40.50	1400.00	0.17	0.12	28.95
41.00	1400.00	0.17	0.12	29.14
41.50	1400.00	0.17	0.13	31.62
42.00	1400.00	0.17	0.12	28.68
42.50	1400.00	0.16	0.12	28.13
43.00	1400.00	0.16	0.12	27.48
43.50	1400.00	0.16	0.12	26.70
44.00	1400.00	0.16	0.12	25.83
44.50	1400.00	0.15	0.12	24.94
45.00	1400.00	0.15	0.12	24.07
45.50	1400.00	0.15	0.11	23.19
46.00	1400.00	0.14	0.11	22.38
46.50	1400.00	0.14	0.11	21.62
47.00	1400.00	0.14	0.11	20.89
47.50	1400.00	0.13	0.11	20.18
48.00	1400.00	0.13	0.11	19.44
48.50	1400.00	0.13	0.10	18.71
49.00	1400.00	0.13	0.10	18.02
49.50	1400.00	0.12	0.10	17.40
50.00	1400.00	0.12	0.10	16.86
50.50	1400.00	0.12	0.10	16.40
51.00	1400.00	0.12	0.10	15.98
51.50	1400.00	0.11	0.10	15.54
52.00	1400.00	0.11	0.10	15.09
52.50	1400.00	0.11	0.09	14.61
53.00	1400.00	0.11	0.09	14.16
53.50	1400.00	0.11	0.09	13.75
54.00	1400.00	0.10	0.09	13.37
54.50	1400.00	0.10	0.09	12.98
55.00	1400.00	0.10	0.09	12.60
55.50	1400.00	0.10	0.09	12.23
56.00	1400.00	0.10	0.09	11.86
56.50	1400.00	0.10	0.09	11.52
57.00	1400.00	0.09	0.09	11.18
57.50	1400.00	0.09	0.08	10.86
58.00	1400.00	0.09	0.08	10.55
58.50	1400.00	0.09	0.08	10.25
59.00	1400.00	0.09	0.08	9.95
59.50	1400.00	0.09	0.08	9.66
60.00	1400.00	0.08	0.08	9.37

ATTACHMENT H

Velocity Dissipation Devices EC-10



Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel to prevent scour of the soil caused by concentrated, high velocity flows.

Suitable Applications

Whenever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This includes temporary diversion structures to divert runon during construction.

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits, or channels.
  - Outlets located at the bottom of mild to steep slopes.
  - Discharge outlets that carry continuous flows of water.
  - Outlets subject to short, intense flows of water, such as flash floods.
  - Points where lined conveyances discharge to unlined conveyances

Limitations

- Large storms or high flows can wash away the rock outlet protection and leave the area susceptible to erosion.

- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.
- Outlet protection may negatively impact the channel habitat.
- Grouted riprap may break up in areas of freeze and thaw.
- If there is not adequate drainage, and water builds up behind grouted riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.

Implementation

General

Outlet protection is needed where discharge velocities and energies at the outlets of culverts, conduits or channels are sufficient to erode the immediate downstream reach. This practice protects the outlet from developing small eroded pools (plange pools), and protects against gully erosion resulting from scouring at a culvert mouth.

Design and Layout

As with most channel design projects, depth of flow, roughness, gradient, side slopes, discharge rate, and velocity should be considered in the outlet design. Compliance to local and state regulations should also be considered while working in environmentally sensitive streambeds. General recommendations for rock size and length of outlet protection mat are shown in the rock outlet protection figure in this BMP and should be considered minimums. The apron length and rock size gradation are determined using a combination of the discharge pipe diameter and estimate discharge rate: Select the longest apron length and largest rock size suggested by the pipe size and discharge rate. Where flows are conveyed in open channels such as ditches and swales, use the estimated discharge rate for selecting the apron length and rock size. Flows should be same as the culvert or channel design flow but never the less than the peak 5 year flow for temporary structures planned for one rainy season, or the 10 year peak flow for temporary structures planned for two or three rainy seasons.

- There are many types of energy dissipaters, with rock being the one that is represented in the attached figure.
- Best results are obtained when sound, durable, and angular rock is used.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction. Grouted or wired tied rock riprap can minimize maintenance requirements.
- Rock outlet protection is usually less expensive and easier to install than concrete aprons or energy dissipaters. It also serves to trap sediment and reduce flow velocities.
- Carefully place riprap to avoid damaging the filter fabric.
  - Stone 4 in. to 6 in. may be carefully dumped onto filter fabric from a height not to exceed 12 in.
  - Stone 8 in. to 12 in. must be hand placed onto filter fabric, or the filter fabric may be covered with 4 in. of gravel and the 8 in. to 12 in. rock may be dumped from a height not to exceed 16 in.

- Stone greater than 12 in. shall only be dumped onto filter fabric protected with a layer of gravel with a thickness equal to one half the D_{50} rock size, and the dump height limited to twice the depth of the gravel protection layer thickness.

- For proper operation of apron: Align apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.

- Outlets on slopes steeper than 10 percent should have additional protection.

Costs

Costs are low if material is readily available. If material is imported, costs will be higher. Average installed cost is $150 per device.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Inspect BMPs subjected to non-stormwater discharges daily while non-stormwater discharges occur.

- Inspect apron for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. If riprap continues to wash away, consider using larger material.

- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.

- Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.

References

County of Sacramento Improvement Standards, Sacramento County, May 1989.

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursztynsky, P.E., McGraw Hill Book Company, 1986.

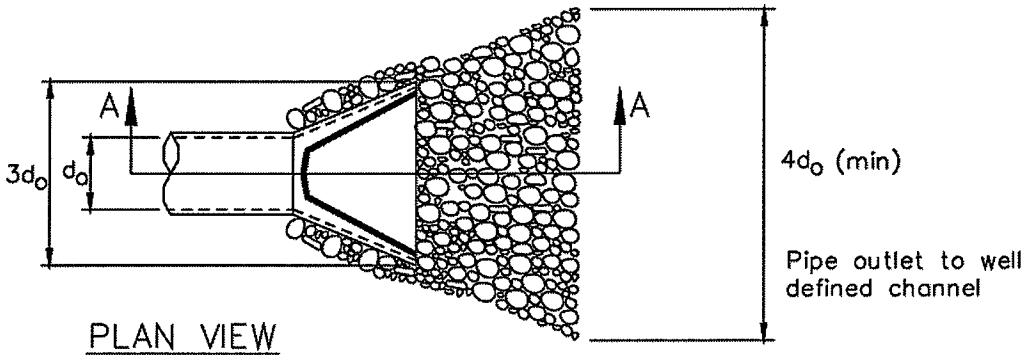
Handbook of Steel Drainage & Highway Construction, American Iron and Steel Institute, 1983.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

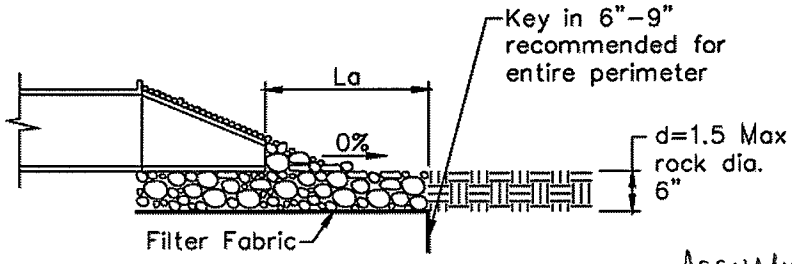
Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, state of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



PLAN VIEW



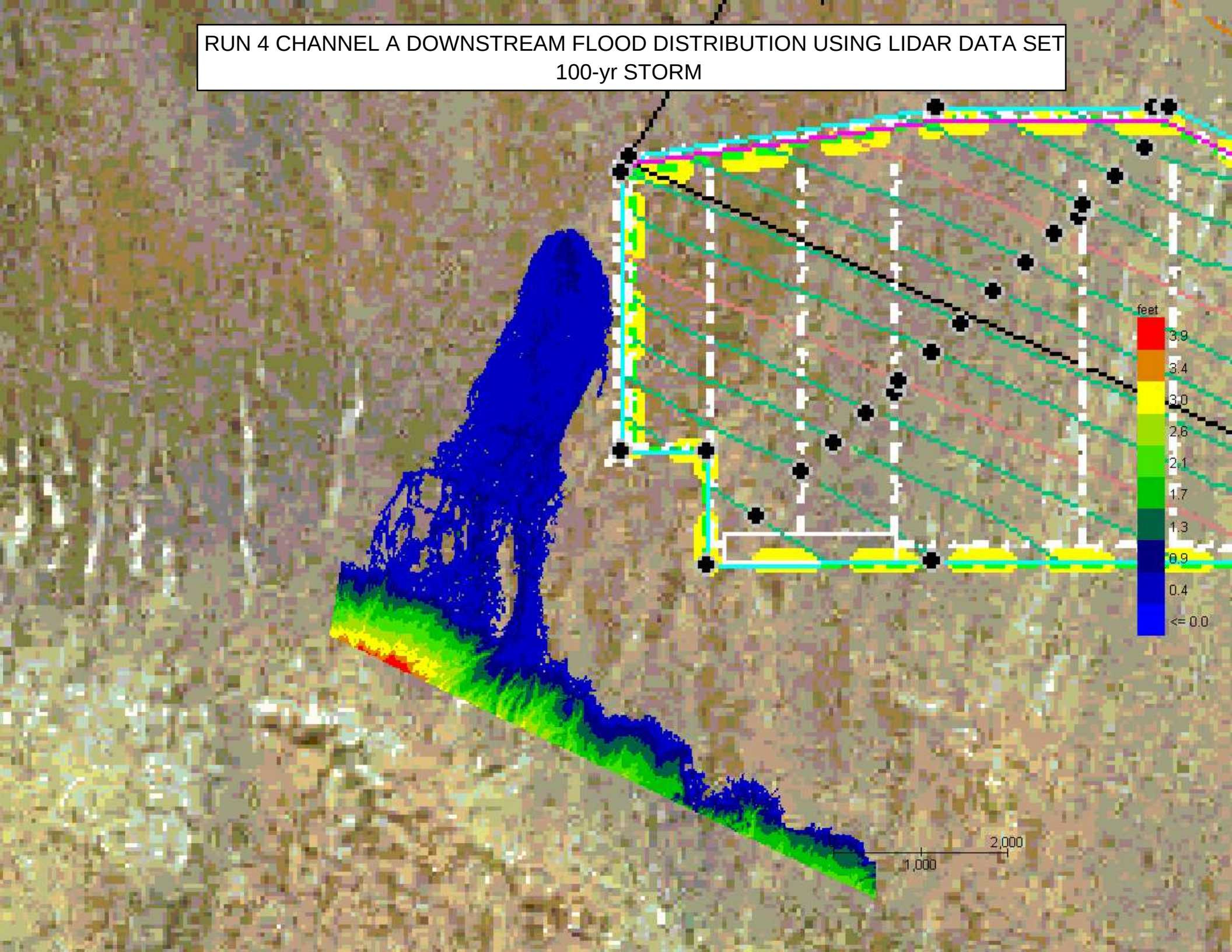
SECTION A–A

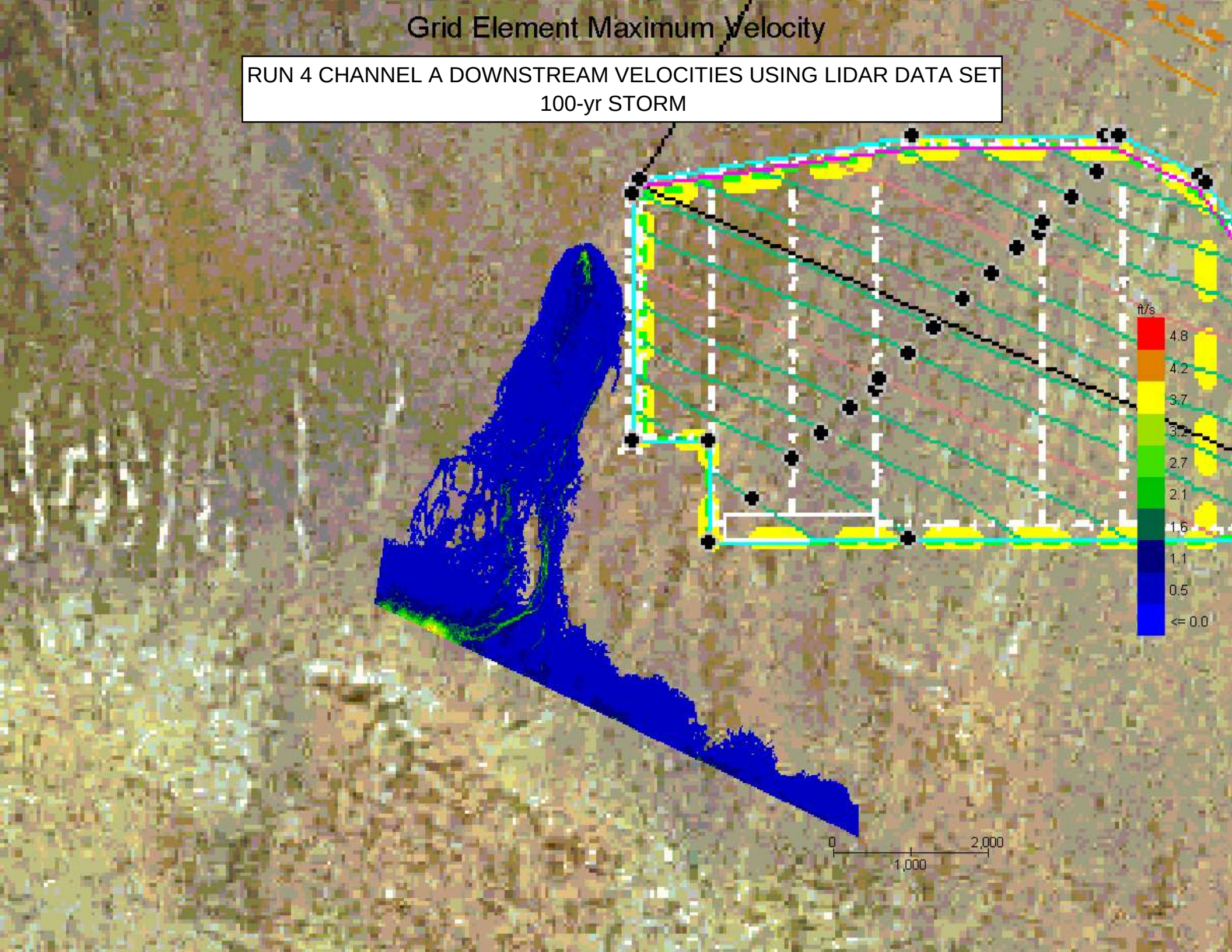
ASSUMING PIPE IS DISCHARGING FULL ⇒ Velocity = 6.7 fps
VELOCITY AT CHAN A OUTLET = 5 fps
CONSERVATIVELY, USE 15 FT APRON, WITH D_{50} = 6 IN

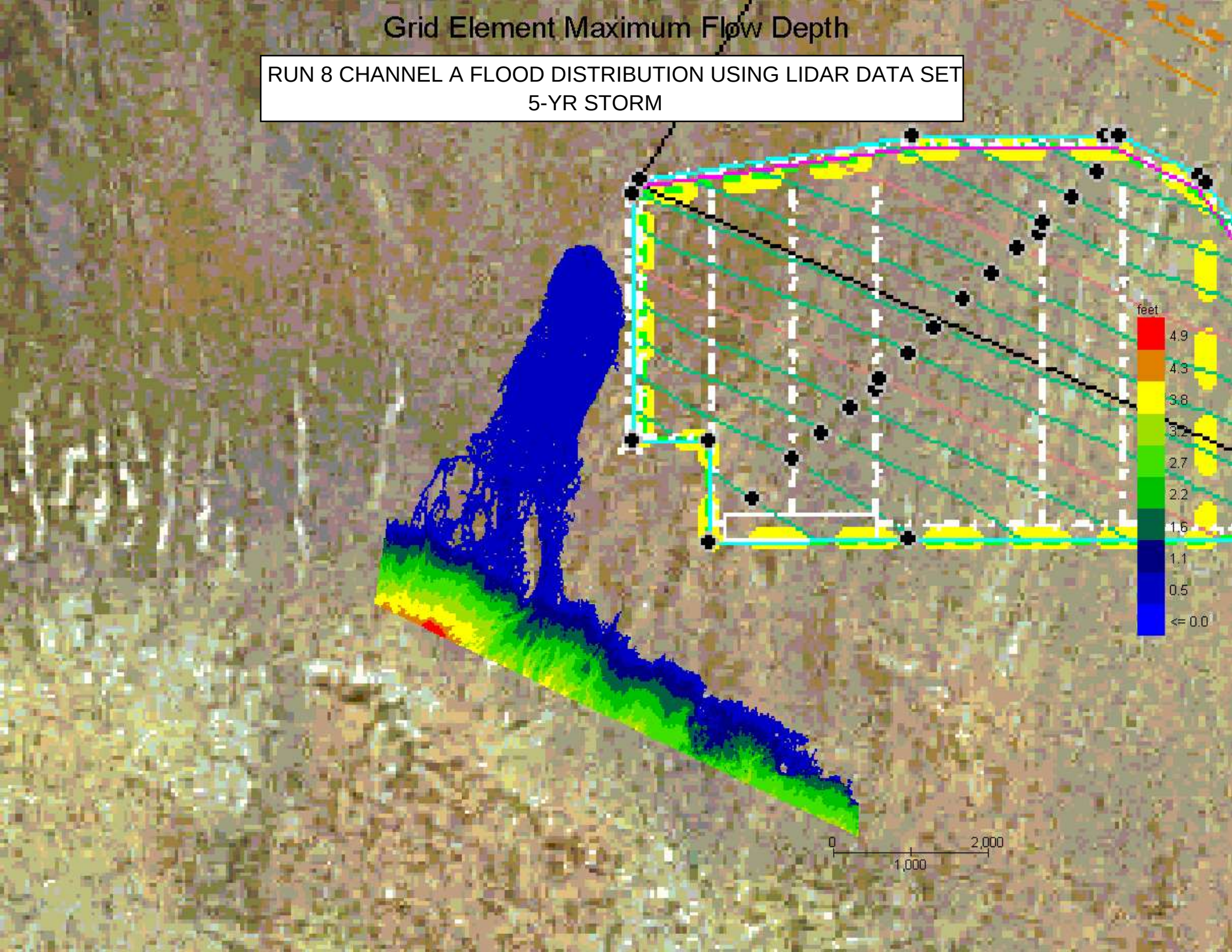
Pipe Diameter inches	Discharge ft^3/s	Apron Length, La ft	Rip Rap D_{50} Diameter Min inches
12	5	10	4
	10	13	6
18	10	10	6
	20	16	8
	30	23	12
	40	26	16
24	30	16	8
	40	26	8
	50	26	12
	60	30	16

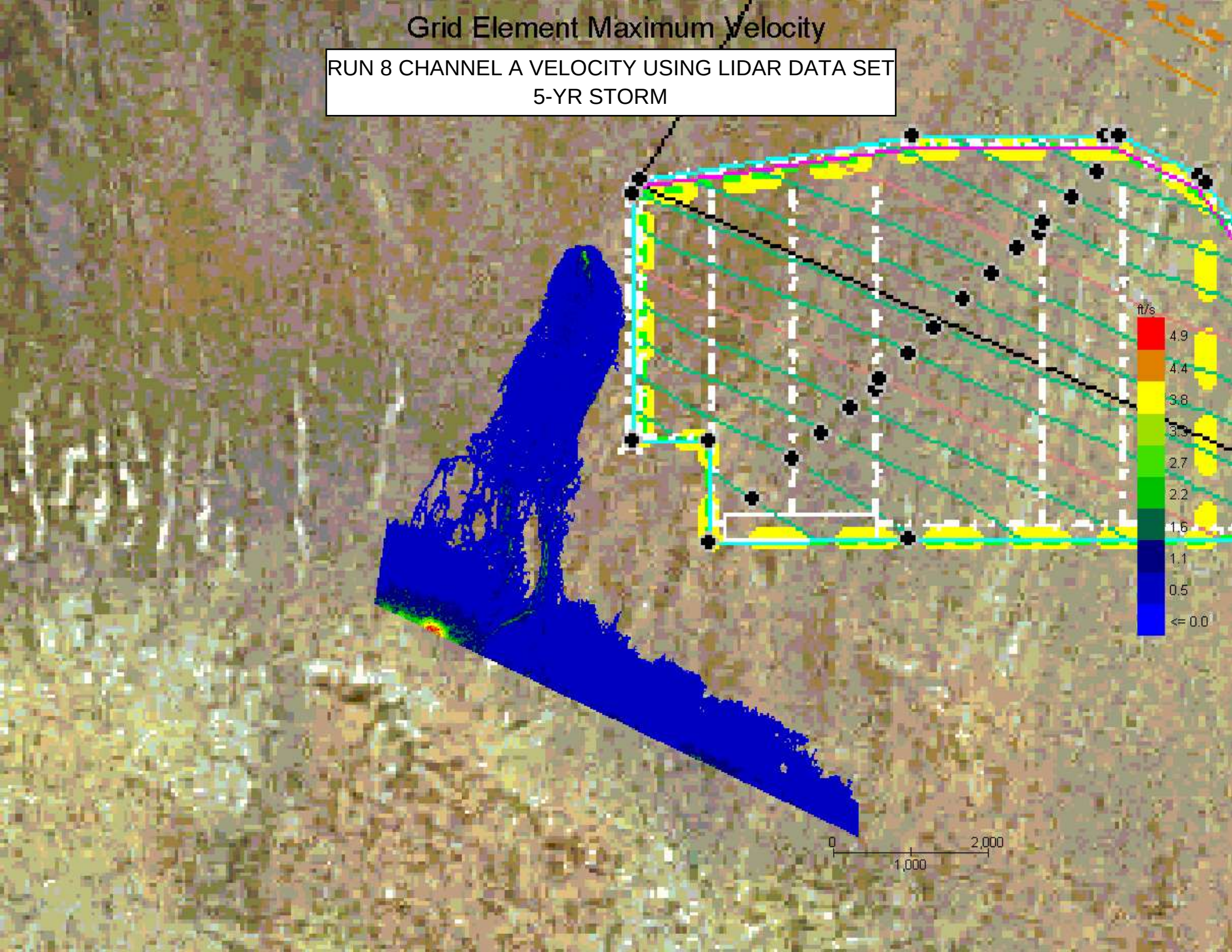
For larger or higher flows consult a Registered Civil Engineer
Source: USDA - SCS

RUN 4 CHANNEL A DOWNSTREAM FLOOD DISTRIBUTION USING LIDAR DATA SET
100-yr STORM




Grid Element Maximum Velocity
RUN 4 CHANNEL A DOWNSTREAM VELOCITIES USING LIDAR DATA SET
100-yr STORM
ft/s
4.8
4.2
3.7
3.2
2.7
2.1
1.6
1.1
0.5
<= 0.0
0
1,000
2,000


Grid Element Maximum Flow Depth
RUN 8 CHANNEL A FLOOD DISTRIBUTION USING LIDAR DATA SET
5-YR STORM
feet
4.9
4.3
3.8
3.2
2.7
2.2
1.6
1.1
0.5
<= 0.0
0
1,000
2,000


Grid Element Maximum Velocity
RUN 8 CHANNEL A VELOCITY USING LIDAR DATA SET
5-YR STORM
ft/s
4.9
4.4
3.8
3.3
2.7
2.2
1.6
1.1
0.5
<= 0.0
0
1,000
2,000

ATTACHMENT I

Worksheet for Channel B/C (5-yr 250' width)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	250.00	ft
Discharge	88.00	ft^3/s

Results

Normal Depth	0.34	ft
Flow Area	85.05	ft^2
Wetted Perimeter	252.14	ft
Top Width	252.03	ft
Critical Depth	0.16	ft
Critical Slope	0.01310	ft/ft
Velocity	1.03	ft/s
Velocity Head	0.02	ft
Specific Energy	0.36	ft
Froude Number	0.31	
Flow Type	Subcritical	

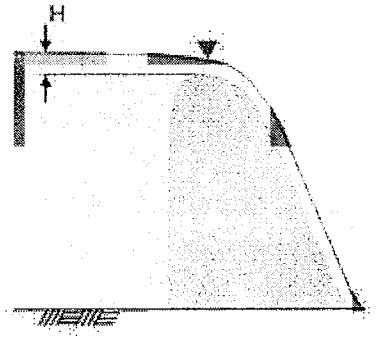
GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.34	ft
Critical Depth	0.16	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.01310	ft/ft

onlinechannel14.php: Discharge over a broad-crested weir



The broad-crested weir

Formulas:

$$C = (2/3)^{3/2}(g)^{1/2}$$

$$Q = CLH^{3/2}$$

INPUT DATA:

Select:
SI units (metric)
U.S. Customary units

Hydraulic head H: 0.5 ft

Weir length L: 1500 ft

INTERMEDIATE CALCS:

Units selected: U.S. Customary

Grav. acceleration [g]: 32.17 ft s^{-2}

Discharge coefficient C: 3.087 $ft^{1/2}$ s^{-1}

OUTPUT:

Discharge Q: 1637. cfs

Press button to Calculate **or recalculate**

Your request was processed at 03:22:13 pm on January 5th, 0000 [100105 15:22:13].

Thank you for running onlinechannel14.php. Please call again. [060203]

online calc					
normal depth	critical depth	discharge in culvert	critical slope	normal and critical depth	tractive force
M1 wsprofile	M2 wsprofile	M3 wsprofile	S1 wsprofile	S2 wsprofile	S3 wsprofile

C1 wsprofile	H2 wsprofile	A2 wsprofile	C3 wsprofile	H3 wsprofile	A3 wsprofile
sequent depth HJ	energy loss HJ	discharge sluice	discharge weir	discharge channel	initial sequent HJ
critical constriction	efficiency HJ	ogee spillway	Hazen-Williams	parallel pipes	three reservoirs
Creager	rational	slope-area	linear reservoir	storage indication 1	storage indication 2
Muskingum	Muskingum-Cunge	time-area	Clark UH	cascade of linear reservoirs	
Blaney-Criddle	Penman	Penman-Monteith reference crop	Thornthwaite	Priestley-Taylor	Penman-Monteith ecosystems
Gumbel	Gumbel 2	Log Pearson	Log Pearson 2	TR-55 graphical	curve number
convolution		S-hydrograph		time of concentration	
UH cascade	dimensionless UH cascade		general UH cascade	series UH cascade	all series UH cascade
hyperbolic regression		one-predictor linear	one-predictor nonlinear	two-predictor linear	two-predictor nonlinear
fall velocity	Lane & Koelzer	USLE	USLE2	Dendy-Bolton	Shields
Duboys	Meyer-Peter	Modified Einstein	Colby 1957	Colby	reservoir design life
DO sag	DO sag analysis		Oxygenation	Salinity (EC to TDS)	

Culvert Calculator Report
Outlet Pipes - Channel B/C - (West) 5-yr 12"

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	380.68	ft	Headwater Depth/Height	6.58	
Computed Headwater Elev	380.68	ft	Discharge	94.04	cfs
Inlet Control HW Elev.	379.23	ft	Tailwater Elevation	374.00	ft
Outlet Control HW Elev.	380.68	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	374.10	ft	Downstream Invert	373.80	ft
Length	30.00	ft	Constructed Slope	0.010000	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	0.99	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.99	ft
Velocity Downstream	13.31	ft/s	Critical Slope	0.080996	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	9				

Outlet Control Properties					
Outlet Control HW Elev.	380.68	ft	Upstream Velocity Head	2.75	ft
Ke	0.20		Entrance Loss	0.55	ft

Inlet Control Properties					
Inlet Control HW Elev.	379.23	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	7.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
Outlet Pipes - Channel B/C - (West)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	380.68	ft	Headwater Depth/Height	2.93	
Computed Headwater Elev	379.96	ft	Discharge	400.00	cfs
Inlet Control HW Elev.	379.69	ft	Tailwater Elevation	376.00	ft
Outlet Control HW Elev.	379.96	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	374.10	ft	Downstream Invert	373.80	ft
Length	30.00	ft	Constructed Slope	0.010000	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	2.20	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	1.95	ft
Velocity Downstream	12.73	ft/s	Critical Slope	0.027786	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	10				

Outlet Control Properties					
Outlet Control HW Elev.	379.96	ft	Upstream Velocity Head	2.52	ft
Ke	0.20		Entrance Loss	0.50	ft

Inlet Control Properties					
Inlet Control HW Elev.	379.69	ft	Flow Control	Submerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	31.4	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Worksheet for Chan BC Spillway Channel (10:1 slope)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.10000	ft/ft
Bottom Width	1500.00	ft
Discharge	1600.00	ft^3/s

Results

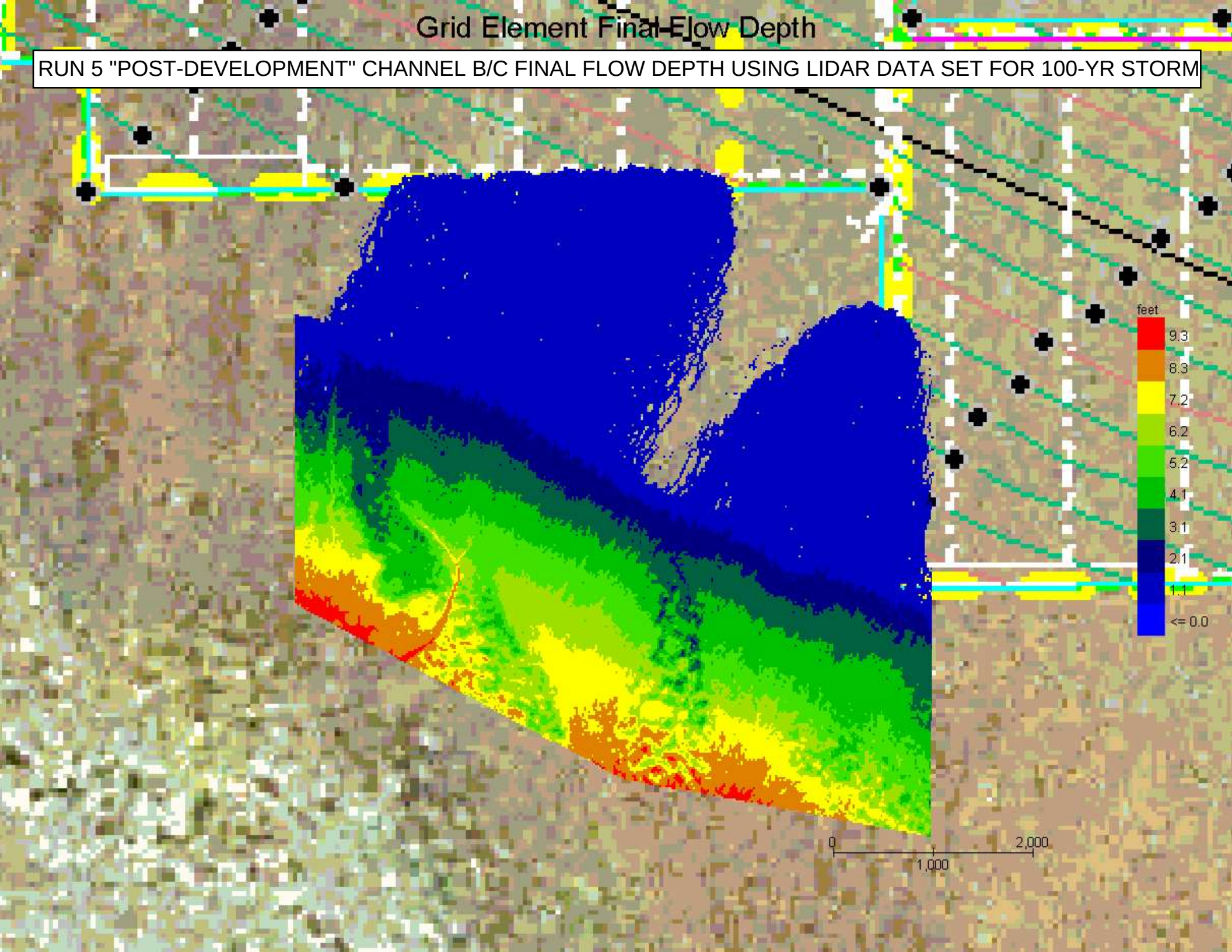
Normal Depth	0.17	ft
Flow Area	248.44	ft^2
Wetted Perimeter	1500.33	ft
Top Width	1500.00	ft
Critical Depth	0.33	ft
Critical Slope	0.01023	ft/ft
Velocity	6.44	ft/s
Velocity Head	0.64	ft
Specific Energy	0.81	ft
Froude Number	2.79	
Flow Type	Supercritical	

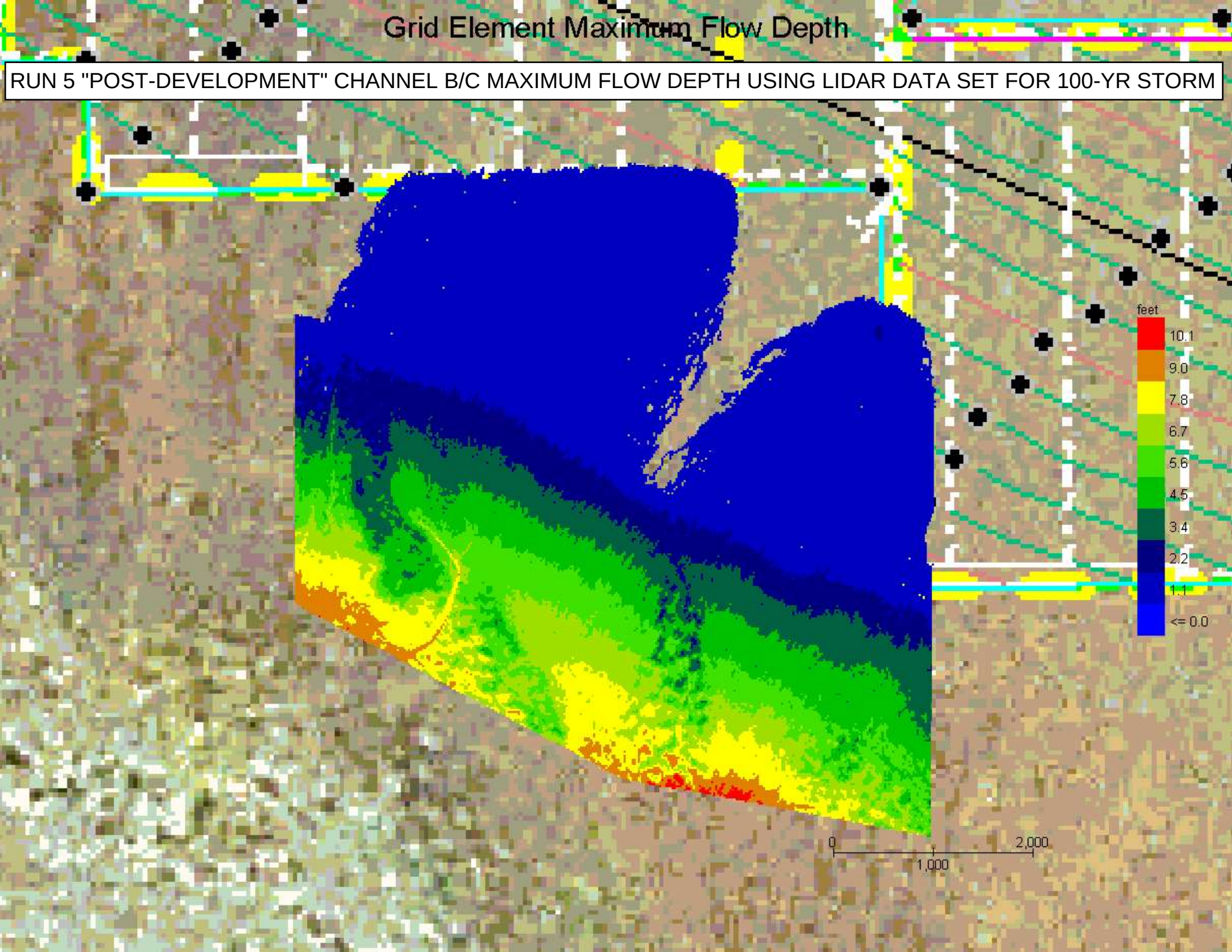
GVF Input Data

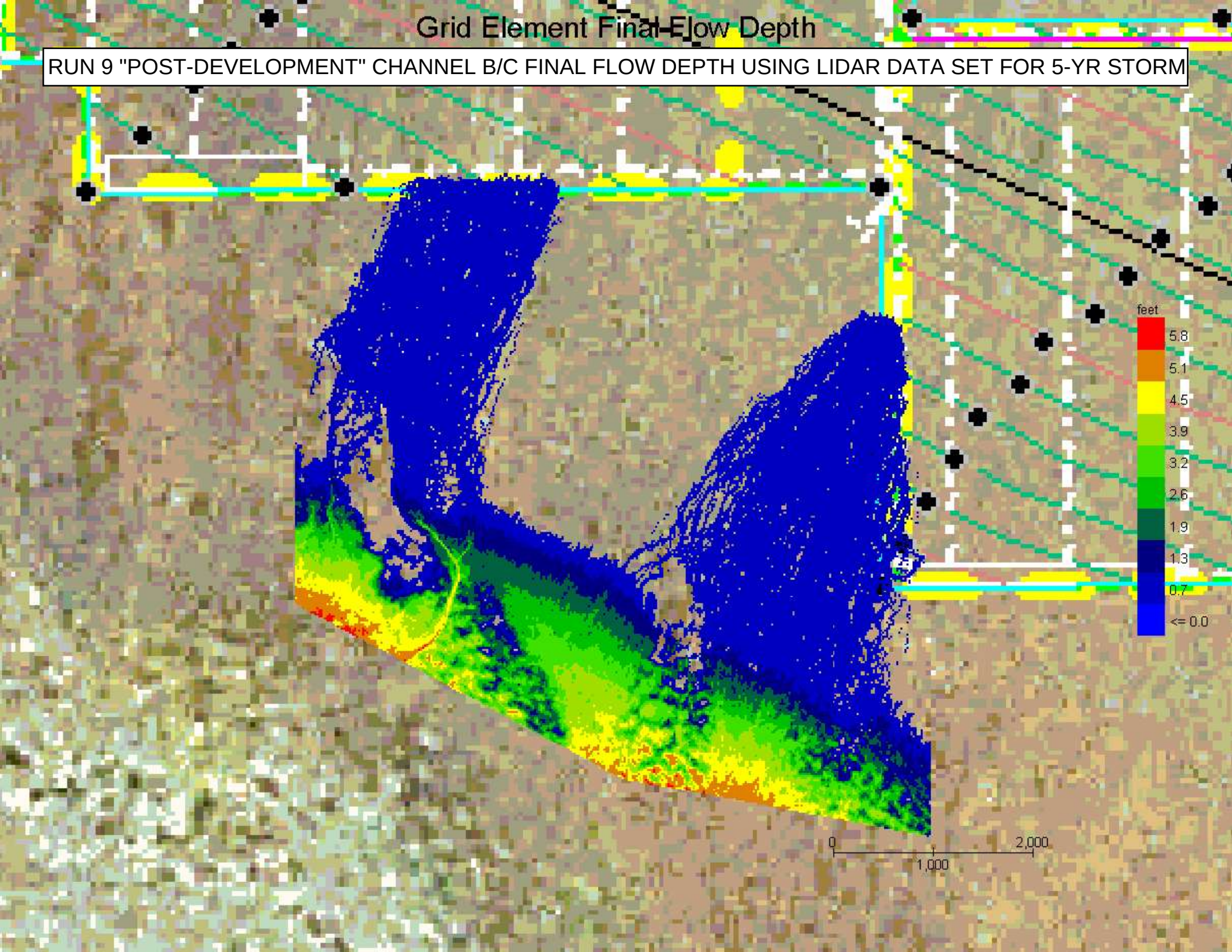
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

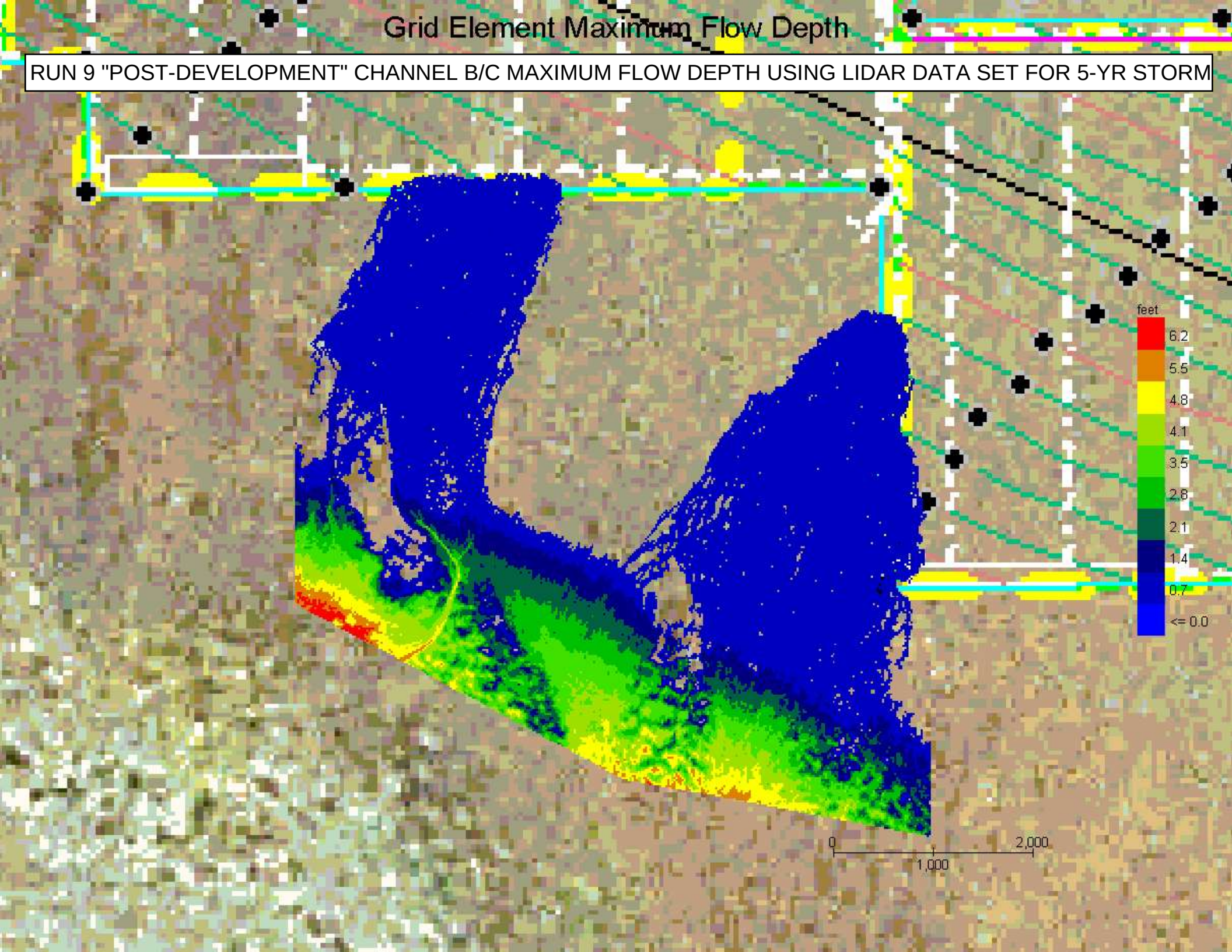
GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.17	ft
Critical Depth	0.33	ft
Channel Slope	0.10000	ft/ft
Critical Slope	0.01023	ft/ft


Grid Element Final Flow Depth
RUN 5 "POST-DEVELOPMENT" CHANNEL B/C FINAL FLOW DEPTH USING LIDAR DATA SET FOR 100-YR STORM
feet
9.3
8.3
7.2
6.2
5.2
4.1
3.1
2.1
1.1
<= 0.0
0
1,000
2,000

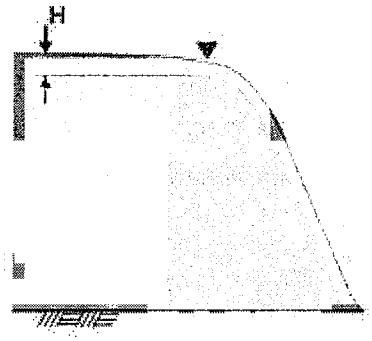

Grid Element Maximum Flow Depth
RUN 5 "POST-DEVELOPMENT" CHANNEL B/C MAXIMUM FLOW DEPTH USING LIDAR DATA SET FOR 100-YR STORM
feet
10.1
9.0
7.8
6.7
5.6
4.5
3.4
2.2
1.1
<= 0.0
0
1,000
2,000


Grid Element Final Flow Depth
RUN 9 "POST-DEVELOPMENT" CHANNEL B/C FINAL FLOW DEPTH USING LIDAR DATA SET FOR 5-YR STORM
feet
5.8
5.1
4.5
3.9
3.2
2.6
1.9
1.3
0.7
<= 0.0
0
1,000
2,000


Grid Element Maximum Flow Depth
RUN 9 "POST-DEVELOPMENT" CHANNEL B/C MAXIMUM FLOW DEPTH USING LIDAR DATA SET FOR 5-YR STORM
feet
6.2
5.5
4.8
4.1
3.5
2.8
2.1
1.4
0.7
<= 0.0
0
1,000
2,000

ATTACHMENT J

onlinechannel14.php: Discharge over a broad-crested weir



The broad-crested weir

Formulas:

$$C = (2/3)^{3/2}(g)^{1/2}$$

$$Q = CLH^{3/2}$$

INPUT DATA:

Select:
SI units (metric)
U.S. Customary units

Hydraulic head H: 0.6 ft

Weir length L: 1500 ft

INTERMEDIATE CALCS:

Units selected: U.S. Customary

Grav. acceleration [g]: 32.17 ft s^{-2}

Discharge coefficient C: 3.087 $ft^{1/2}$ s^{-1}

OUTPUT:

Discharge Q: 2152. cfs

Press button to Calculate **or recalculate**

Your request was processed at 12:13:18 pm on January 7th, 0000 [100107 12:13:18].

Thank you for running onlinechannel14.php. Please call again. [060203]

online calc					
normal depth	critical depth	discharge in culvert	critical slope	normal and critical depth	tractive force
M1 wsprofile	M2 wsprofile	M3 wsprofile	S1 wsprofile	S2 wsprofile	S3 wsprofile

C1 wsprofile	H2 wsprofile	A2 wsprofile	C3 wsprofile	H3 wsprofile	A3 wsprofile
sequent depth HJ	energy loss HJ	discharge sluice	discharge weir	discharge channel	initial sequent HJ
critical constriction	efficiency HJ	ogee spillway	Hazen-Williams	parallel pipes	three reservoirs
Creager	rational	slope-area	linear reservoir	storage indication 1	storage indication 2
Muskingum	Muskingum-Cunge	time-area	Clark UH	cascade of linear reservoirs	
Blaney-Criddle	Penman	Penman-Monteith reference crop	Thornthwaite	Priestley-Taylor	Penman-Monteith ecosystems
Gumbel	Gumbel 2	Log Pearson	Log Pearson 2	TR-55 graphical	curve number
convolution		S-hydrograph		time of concentration	
UH cascade	dimensionless UH cascade		general UH cascade	series UH cascade	all series UH cascade
hyperbolic regression		one-predictor linear	one-predictor nonlinear	two-predictor linear	two-predictor nonlinear
fall velocity	Lane & Koelzer	USLE	USLE2	Dendy-Bolton	Shields
Duboys	Meyer-Peter	Modified Einstein	Colby 1957	Colby	reservoir design life
DO sag	DO sag analysis		Oxygenation	Salinity (EC to TDS)	

Culvert Calculator Report
Outlet Pipes - Channel D/E - (West) 5-yr 12"

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	379.79	ft	Headwater Depth/Height	5.79	
Computed Headwater Elev	379.79	ft	Discharge	155.56	cfs
Inlet Control HW Elev.	379.54	ft	Tailwater Elevation	374.00	ft
Outlet Control HW Elev.	379.79	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	374.00	ft	Downstream Invert	373.70	ft
Length	30.00	ft	Constructed Slope	0.010000	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	0.99	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.99	ft
Velocity Downstream	12.39	ft/s	Critical Slope	0.069502	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	16				

Outlet Control Properties					
Outlet Control HW Elev.	379.79	ft	Upstream Velocity Head	2.38	ft
Ke	0.20		Entrance Loss	0.48	ft

Inlet Control Properties					
Inlet Control HW Elev.	379.54	ft	Flow Control	Submerged	
Inlet Type	Groove end projecting		Area Full	12.6	ft²
K	0.00450		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	3	
C	0.03170		Equation Form	1	
Y	0.69000				

Worksheet for Chan DE Spillway Channel (10:1 slope)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.022	
Channel Slope	0.10000	ft/ft
Bottom Width	1500.00	ft
Discharge	2150.00	ft^3/s

Results

Normal Depth	0.20	ft
Flow Area	296.32	ft^2
Wetted Perimeter	1500.40	ft
Top Width	1500.00	ft
Critical Depth	0.40	ft
Critical Slope	0.00958	ft/ft
Velocity	7.26	ft/s
Velocity Head	0.82	ft
Specific Energy	1.02	ft
Froude Number	2.88	
Flow Type	Supercritical	

GVF Input Data

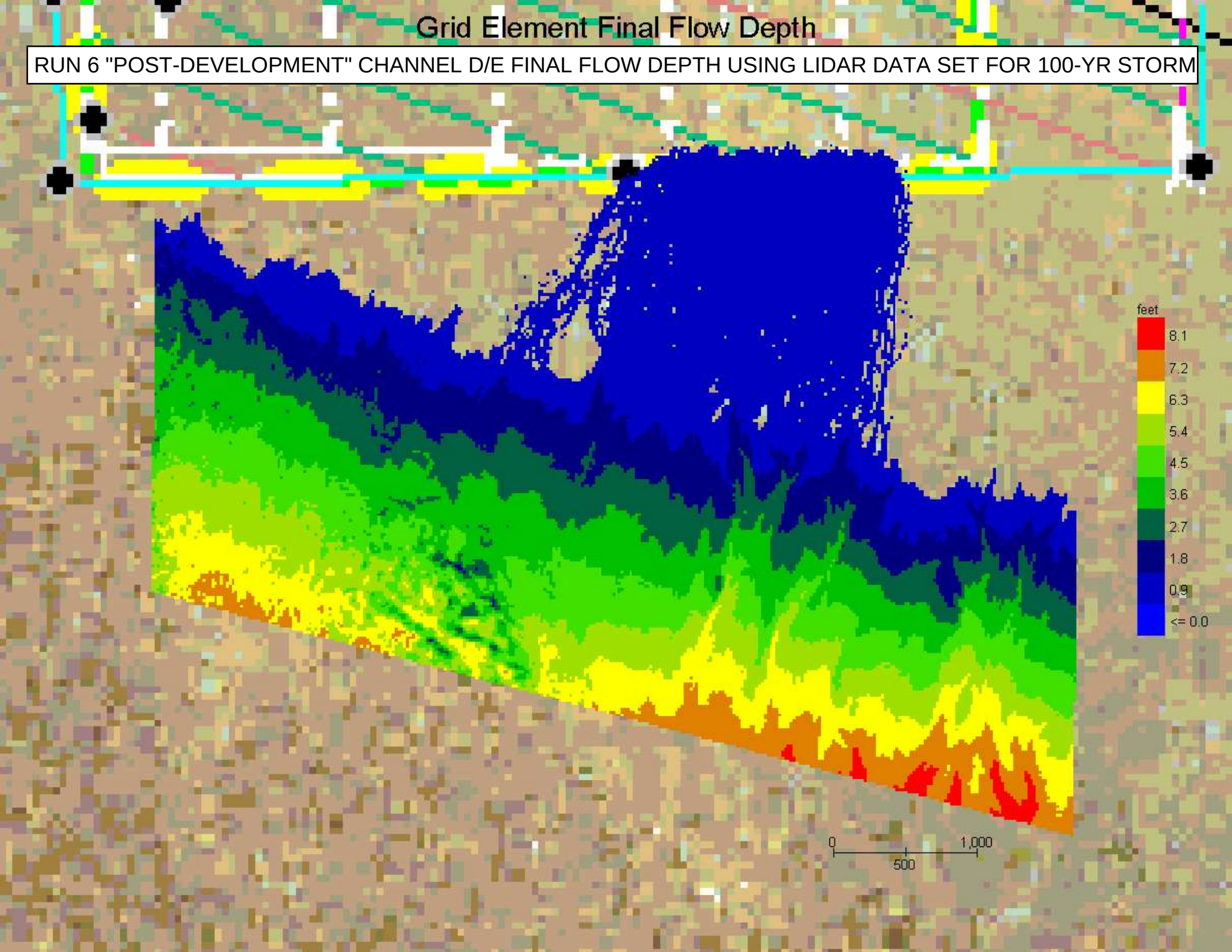
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

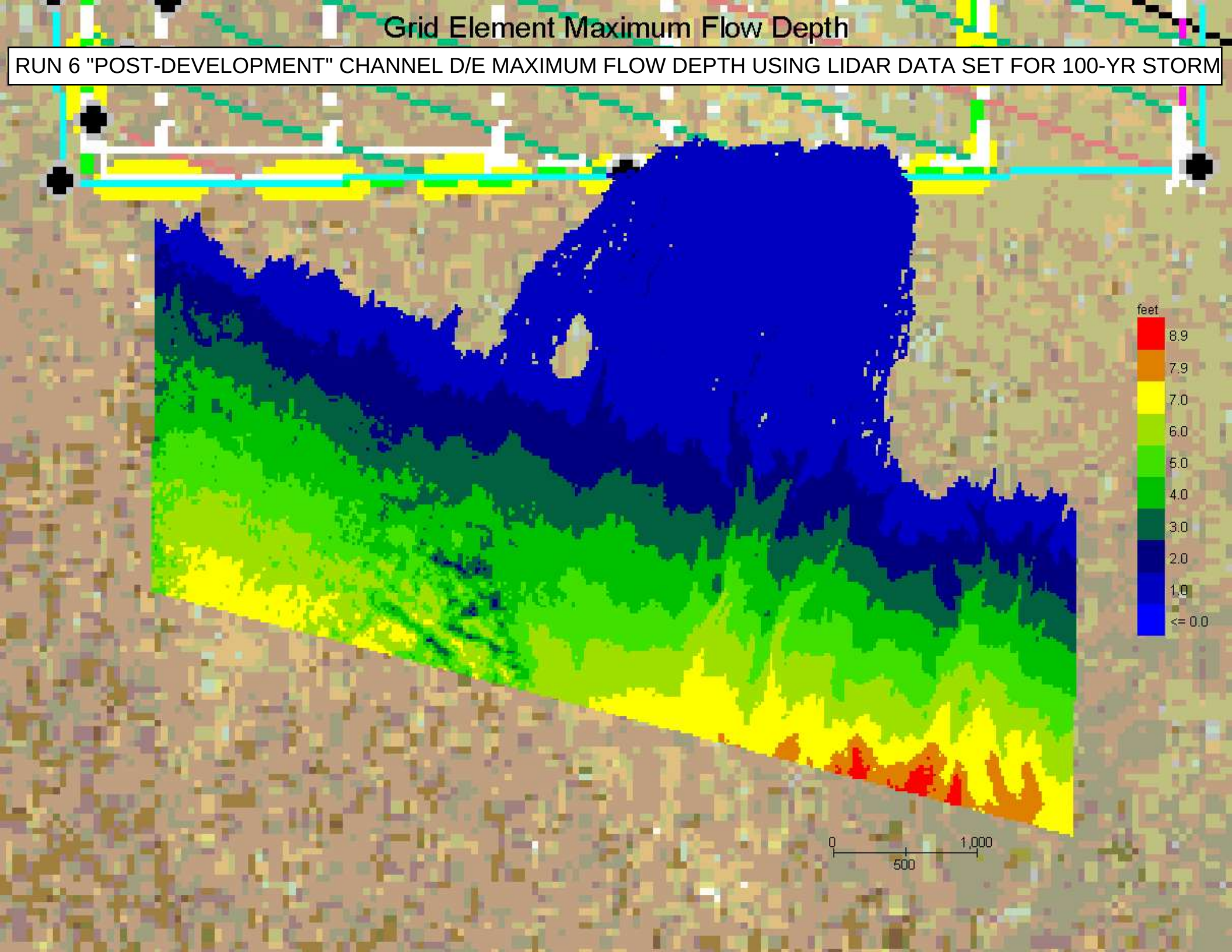
GVF Output Data

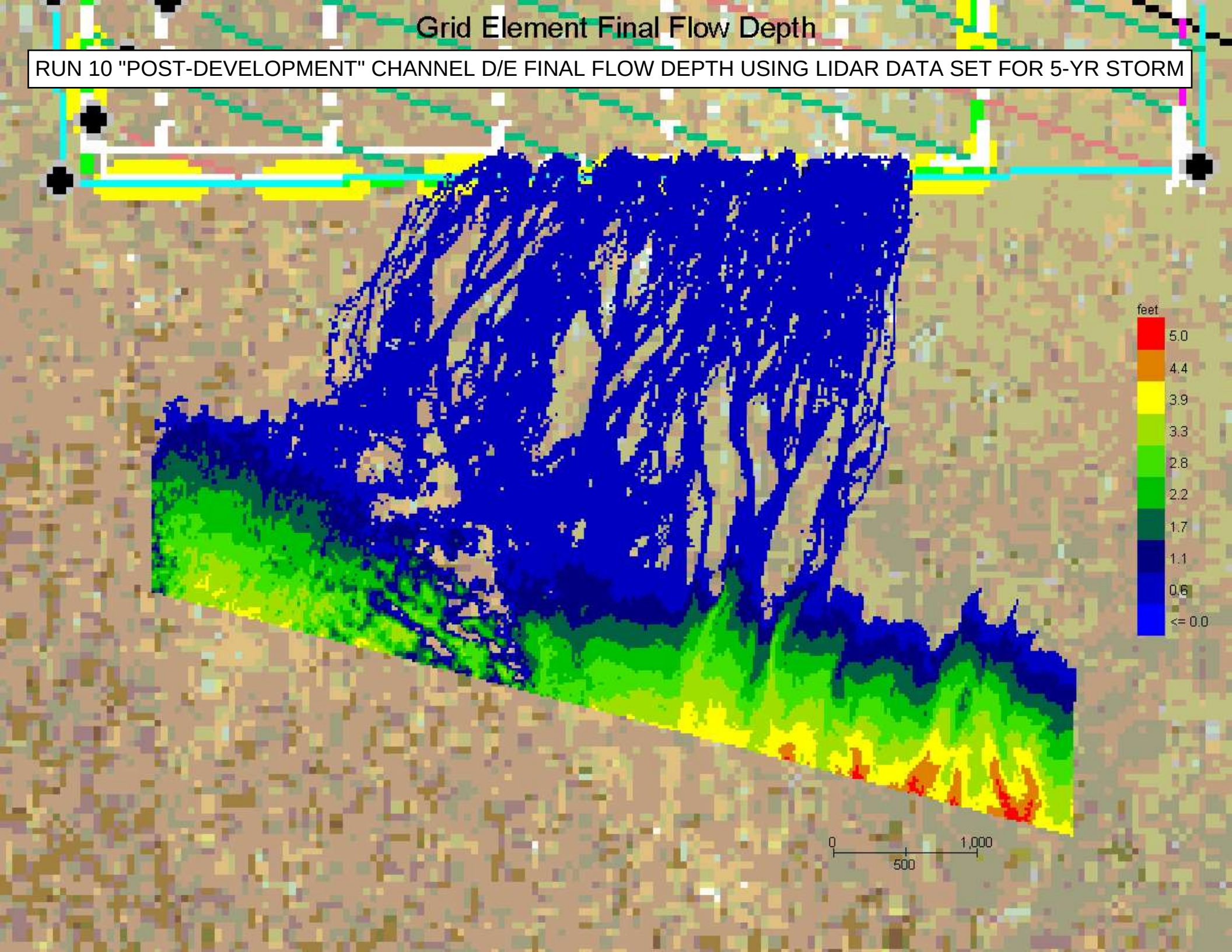
Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.20	ft
Critical Depth	0.40	ft
Channel Slope	0.10000	ft/ft
Critical Slope	0.00958	ft/ft

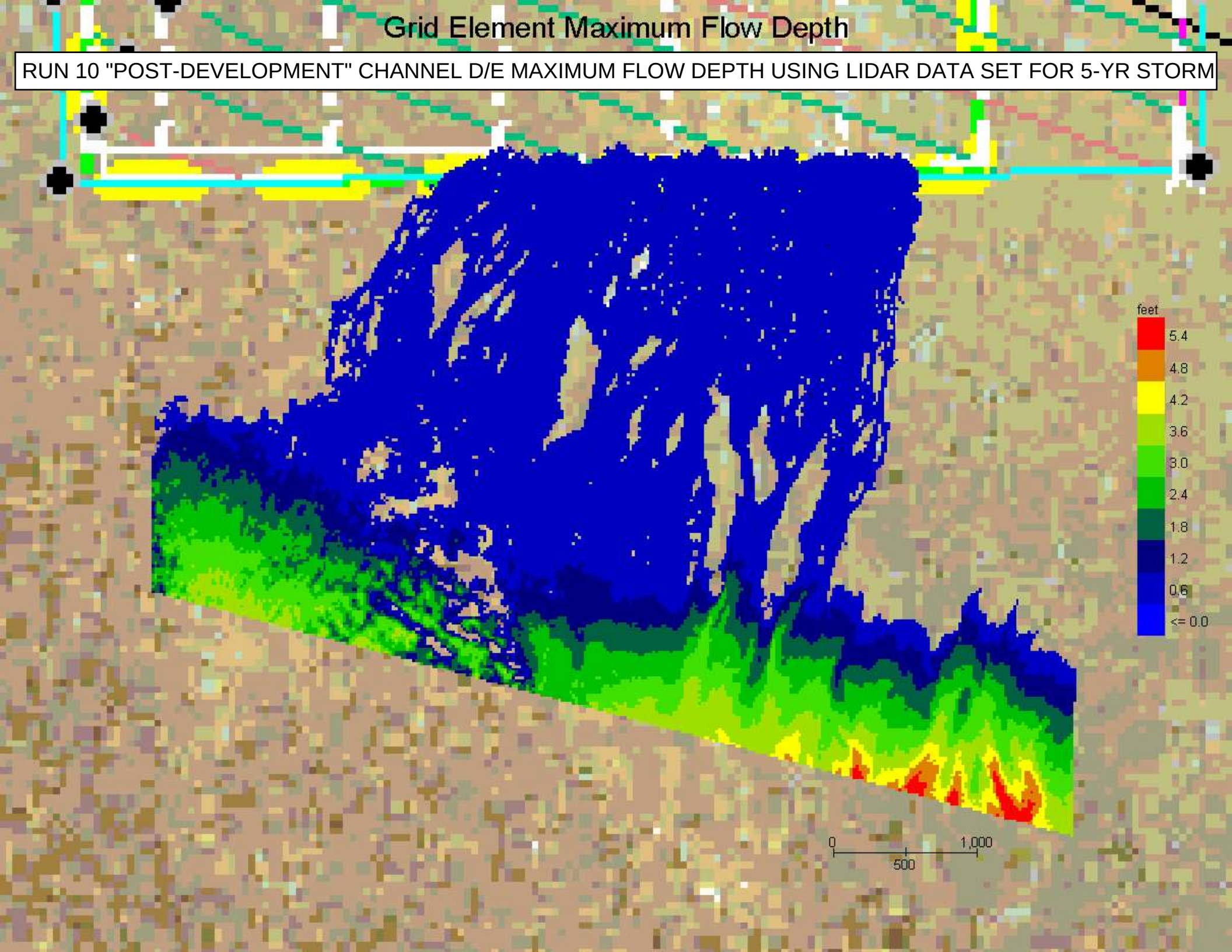
Grid Element Final Flow Depth

RUN 6 "POST-DEVELOPMENT" CHANNEL D/E FINAL FLOW DEPTH USING LIDAR DATA SET FOR 100-YR STORM




Grid Element Maximum Flow Depth
RUN 6 "POST-DEVELOPMENT" CHANNEL D/E MAXIMUM FLOW DEPTH USING LIDAR DATA SET FOR 100-YR STORM
feet
8.9
7.9
7.0
6.0
5.0
4.0
3.0
2.0
1.0
<= 0.0
0
500
1,000


Grid Element Final Flow Depth
RUN 10 "POST-DEVELOPMENT" CHANNEL D/E FINAL FLOW DEPTH USING LIDAR DATA SET FOR 5-YR STORM
feet
5.0
4.4
3.9
3.3
2.8
2.2
1.7
1.1
0.6
<= 0.0
0
500
1,000


Grid Element Maximum Flow Depth
RUN 10 "POST-DEVELOPMENT" CHANNEL D/E MAXIMUM FLOW DEPTH USING LIDAR DATA SET FOR 5-YR STORM
feet
5.4
4.8
4.2
3.6
3.0
2.4
1.8
1.2
0.6
<= 0.0
0
500
1,000

ATTACHMENT K

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 125.51 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 4.35 CFS AT TIME 12.16 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.39 AF

THE MAXIMUM DISCHARGE FROM NODE 169362 IS: 3.91 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.24 AF

THE MAXIMUM DISCHARGE FROM NODE 169363 IS: 3.75 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.19 AF

THE MAXIMUM DISCHARGE FROM NODE 169364 IS: 3.59 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.17 AF

THE MAXIMUM DISCHARGE FROM NODE 169365 IS: 2.67 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 0.16 AF

THE MAXIMUM DISCHARGE FROM NODE 169366 IS: 3.45 CFS AT TIME 12.50 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.49 AF

THE MAXIMUM DISCHARGE FROM NODE 169367 IS: 3.71 CFS AT TIME 13.34 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.69 AF

THE MAXIMUM DISCHARGE FROM NODE 169368 IS: 3.78 CFS AT TIME 13.77 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.68 AF

THE MAXIMUM DISCHARGE FROM NODE 169369 IS: 3.29 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.54 AF

THE MAXIMUM DISCHARGE FROM NODE 169370 IS: 3.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.40 AF

THE MAXIMUM DISCHARGE FROM NODE 169371 IS: 3.28 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.33 AF

THE MAXIMUM DISCHARGE FROM NODE 169372 IS: 3.32 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169373 IS: 3.30 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169374 IS: 3.38 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169375 IS: 3.37 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169376 IS: 3.60 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 169377 IS: 3.61 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.25 AF

THE MAXIMUM DISCHARGE FROM NODE 169378 IS: 3.54 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.24 AF

THE MAXIMUM DISCHARGE FROM NODE 169379 IS: 3.44 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 169380 IS: 3.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.34 AF

THE MAXIMUM DISCHARGE FROM NODE 169381 IS: 3.26 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.41 AF

THE MAXIMUM DISCHARGE FROM NODE 169382 IS: 3.57 CFS AT TIME 12.49 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.46 AF

THE MAXIMUM DISCHARGE FROM NODE 169383 IS: 3.19 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.35 AF

THE MAXIMUM DISCHARGE FROM NODE 169384 IS: 3.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 169385 IS: 3.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169386 IS: 3.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 169387 IS: 3.32 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.31 AF

THE MAXIMUM DISCHARGE FROM NODE 169388 IS: 3.29 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 169389 IS: 3.37 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 169390 IS: 3.38 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169391 IS: 3.41 CFS AT TIME 12.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169392 IS: 3.52 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169393 IS: 3.39 CFS AT TIME 12.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 169394 IS: 3.50 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 169395 IS: 3.43 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169396 IS: 3.36 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 3.29 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.38 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 82.30 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 4.73 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.51 AF

THE MAXIMUM DISCHARGE FROM NODE 169811 IS: 4.85 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.47 AF

THE MAXIMUM DISCHARGE FROM NODE 170225 IS: 4.43 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 170638 IS: 4.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.32 AF

THE MAXIMUM DISCHARGE FROM NODE 171052 IS: 4.82 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.51 AF

THE MAXIMUM DISCHARGE FROM NODE 171465 IS: 5.01 CFS AT TIME 12.00 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.52 AF

THE MAXIMUM DISCHARGE FROM NODE 171878 IS: 5.30 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.51 AF

THE MAXIMUM DISCHARGE FROM NODE 172290 IS: 5.43 CFS AT TIME 12.06 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.51 AF

THE MAXIMUM DISCHARGE FROM NODE 172702 IS: 3.65 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.25 AF

THE MAXIMUM DISCHARGE FROM NODE 173114 IS: 3.83 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.31 AF

THE MAXIMUM DISCHARGE FROM NODE 173526 IS: 4.48 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.42 AF

THE MAXIMUM DISCHARGE FROM NODE 173938 IS: 5.20 CFS AT TIME 12.23 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.54 AF

THE MAXIMUM DISCHARGE FROM NODE 174349 IS: 6.13 CFS AT TIME 12.23 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.61 AF

THE MAXIMUM DISCHARGE FROM NODE 174761 IS: 4.16 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 175172 IS: 4.12 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 0.25 AF

THE MAXIMUM DISCHARGE FROM NODE 175583 IS: 4.89 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.44 AF

THE MAXIMUM DISCHARGE FROM NODE 175993 IS: 4.66 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.35 AF

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 4.69 CFS AT TIME 11.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.33 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 43.04 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 3.05 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.22 AF

THE MAXIMUM DISCHARGE FROM NODE 176404 IS: 2.84 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.23 AF

THE MAXIMUM DISCHARGE FROM NODE 176405 IS: 2.91 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 176406 IS: 2.85 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.31 AF

THE MAXIMUM DISCHARGE FROM NODE 176407 IS: 3.09 CFS AT TIME 12.49 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.18 FEET AND A MAXIMUM VOLUME OF: 0.34 AF

THE MAXIMUM DISCHARGE FROM NODE 176408 IS: 2.84 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176409 IS: 2.96 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 176410 IS: 3.14 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176411 IS: 3.19 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176412 IS: 3.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176413 IS: 3.33 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176414 IS: 3.27 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 176415 IS: 3.35 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 3.41 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 44.20 CFS AT TIME: 12.02 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 4.25 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.36 AF

THE MAXIMUM DISCHARGE FROM NODE 176826 IS: 3.99 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.36 AF

THE MAXIMUM DISCHARGE FROM NODE 177235 IS: 3.87 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.38 AF

THE MAXIMUM DISCHARGE FROM NODE 177643 IS: 3.67 CFS AT TIME 12.24 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.38 AF

THE MAXIMUM DISCHARGE FROM NODE 178048 IS: 4.59 CFS AT TIME 12.50 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.21 FEET AND A MAXIMUM VOLUME OF: 0.49 AF

THE MAXIMUM DISCHARGE FROM NODE 178451 IS: 4.34 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.41 AF

THE MAXIMUM DISCHARGE FROM NODE 178852 IS: 4.08 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 179251 IS: 3.99 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 179648 IS: 4.04 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.48 AF

THE MAXIMUM DISCHARGE FROM NODE 180043 IS: 6.33 CFS AT TIME 13.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.20 FEET AND A MAXIMUM VOLUME OF: 0.87 AF

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 4.43 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.59 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 12.75 CFS AT TIME: 12.03 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 2.93 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.46 AF

THE MAXIMUM DISCHARGE FROM NODE 180437 IS: 2.74 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM NODE 180438 IS: 2.42 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.22 AF

THE MAXIMUM DISCHARGE FROM NODE 180439 IS: 2.76 CFS AT TIME 12.10 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.16 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 2.08 CFS AT TIME 12.13 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 0.23 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 50.14 CFS AT TIME: 12.00 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 4.48 CFS AT TIME 12.15 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.17 FEET AND A MAXIMUM VOLUME OF: 0.47 AF

THE MAXIMUM DISCHARGE FROM NODE 180830 IS: 3.63 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 0.16 AF

THE MAXIMUM DISCHARGE FROM NODE 181218 IS: 3.57 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.10 FEET AND A MAXIMUM VOLUME OF: 0.10 AF

THE MAXIMUM DISCHARGE FROM NODE 181603 IS: 4.06 CFS AT TIME 12.00 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.11 FEET AND A MAXIMUM VOLUME OF: 0.11 AF

THE MAXIMUM DISCHARGE FROM NODE 181987 IS: 4.36 CFS AT TIME 11.99 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.12 FEET AND A MAXIMUM VOLUME OF: 0.14 AF

THE MAXIMUM DISCHARGE FROM NODE 182368 IS: 4.67 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.17 AF

THE MAXIMUM DISCHARGE FROM NODE 182747 IS: 4.61 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.21 AF

THE MAXIMUM DISCHARGE FROM NODE 183124 IS: 4.56 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.25 AF

THE MAXIMUM DISCHARGE FROM NODE 183499 IS: 4.60 CFS AT TIME 12.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.27 AF

THE MAXIMUM DISCHARGE FROM NODE 183873 IS: 4.66 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 184244 IS: 4.67 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.33 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 4.59 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.36 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 16.17 CFS AT TIME: 12.02 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 4.07 CFS AT TIME 12.19 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.38 AF

THE MAXIMUM DISCHARGE FROM NODE 169773 IS: 3.96 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.15 FEET AND A MAXIMUM VOLUME OF: 0.49 AF

THE MAXIMUM DISCHARGE FROM NODE 170185 IS: 4.12 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.45 AF

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 4.38 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.48 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 28.83 CFS AT TIME: 12.09 HOURS

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 4.38 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.48 AF

THE MAXIMUM DISCHARGE FROM NODE 171009 IS: 4.29 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.45 AF

THE MAXIMUM DISCHARGE FROM NODE 171421 IS: 4.00 CFS AT TIME 12.01 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.40 AF

THE MAXIMUM DISCHARGE FROM NODE 171833 IS: 3.72 CFS AT TIME 11.99 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.34 AF

THE MAXIMUM DISCHARGE FROM NODE 172244 IS: 3.41 CFS AT TIME 12.14 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.32 AF

THE MAXIMUM DISCHARGE FROM NODE 172655 IS: 3.15 CFS AT TIME 12.42 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.30 AF

THE MAXIMUM DISCHARGE FROM NODE 173066 IS: 3.36 CFS AT TIME 12.09 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.29 AF

THE MAXIMUM DISCHARGE FROM NODE 173477 IS: 3.18 CFS AT TIME 12.09 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.28 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 20.95 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 184619 IS: 2.74 CFS AT TIME 12.01 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.36 AF

THE MAXIMUM DISCHARGE FROM NODE 184618 IS: 3.08 CFS AT TIME 12.03 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.47 AF

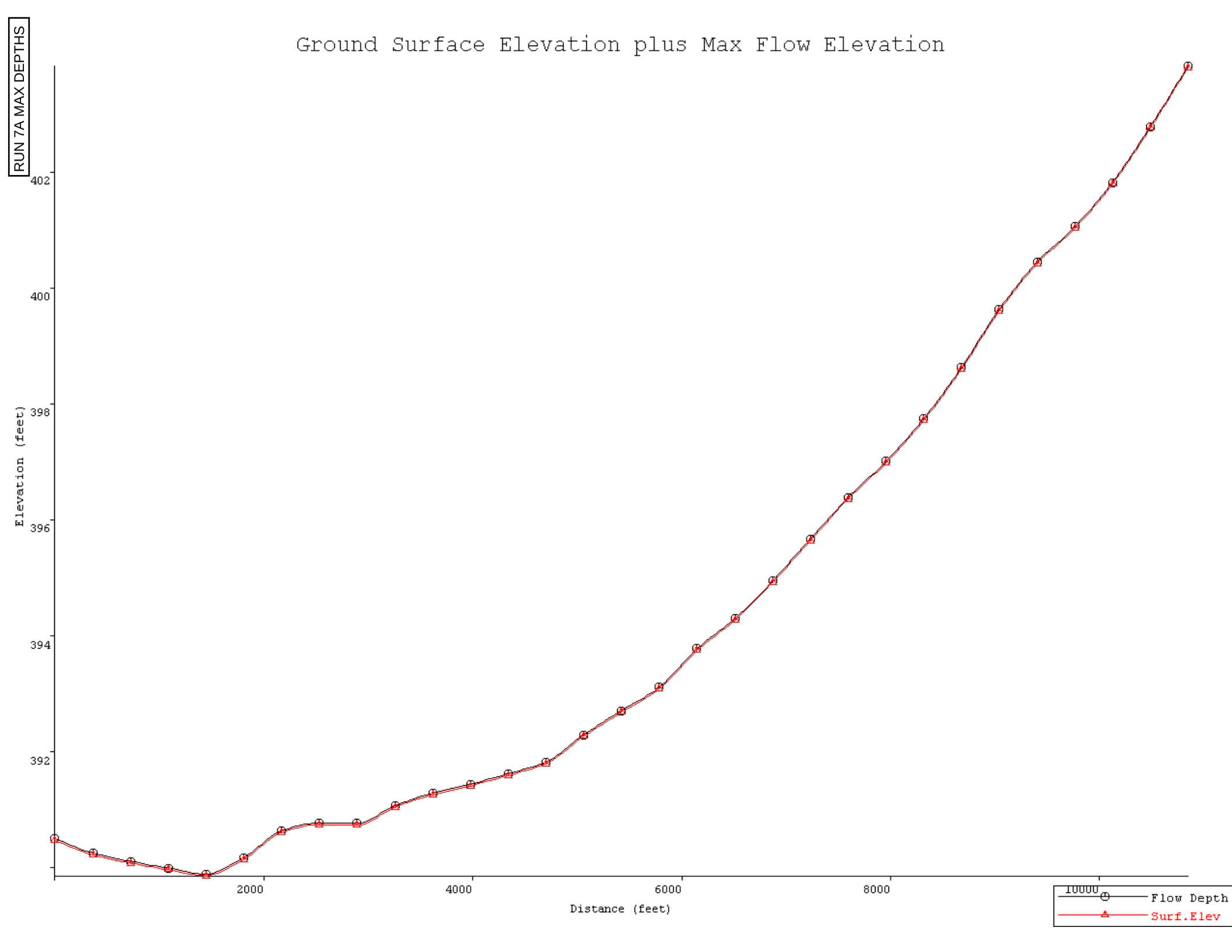
THE MAXIMUM DISCHARGE FROM NODE 184617 IS: 2.99 CFS AT TIME 12.01 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.48 AF

THE MAXIMUM DISCHARGE FROM NODE 184616 IS: 2.99 CFS AT TIME 12.01 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.41 AF

THE MAXIMUM DISCHARGE FROM NODE 184615 IS: 3.07 CFS AT TIME 12.02 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.32 AF

THE MAXIMUM DISCHARGE FROM NODE 184614 IS: 3.01 CFS AT TIME 12.04 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.13 FEET AND A MAXIMUM VOLUME OF: 0.26 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 3.07 CFS AT TIME 12.01 HOURS WITH A
MAXIMUM FLOODPLAIN DEPTH OF: 0.14 FEET AND A MAXIMUM VOLUME OF: 0.25 AF


RUN 7A MAX DEPTHS
Ground Surface Elevation plus Max Flow Elevation
Elevation (feet)
402
400
398
396
394
392
2000
4000
6000
8000
10000
Distance (feet)
Flow Depth
Surf.Elev

THE MAXIMUM DISCHARGE FROM CROSS SECTION 1 IS: 9.88 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169362 IS: 0.29 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169363 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169364 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169365 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 169366 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169367 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169368 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169369 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169370 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169371 IS: 0.28 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169372 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169373 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169374 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169375 IS: 0.28 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169376 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169377 IS: 0.28 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169378 IS: 0.28 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169379 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169380 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169381 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169382 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169383 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169384 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169385 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169386 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169387 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169388 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169389 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169390 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169391 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169392 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169393 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169394 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169395 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169396 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 2 IS: 6.19 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169397 IS: 0.33 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169811 IS: 0.33 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 170225 IS: 0.39 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 170638 IS: 0.32 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171052 IS: 0.35 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171465 IS: 0.35 CFS AT TIME 12.03 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171878 IS: 0.36 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 172290 IS: 0.34 CFS AT TIME 11.97 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 172702 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 173114 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 173526 IS: 0.34 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 173938 IS: 0.37 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 174349 IS: 0.36 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 174761 IS: 0.36 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 175172 IS: 0.37 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 175583 IS: 0.34 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 175993 IS: 0.37 CFS AT TIME 11.98 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 0.39 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 3 IS: 3.41 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176403 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176404 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176405 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176406 IS: 0.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176407 IS: 0.18 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176408 IS: 0.22 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176409 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 176410 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176411 IS: 0.25 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176412 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176413 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176414 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176415 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 4 IS: 3.35 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 176416 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 176826 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 177235 IS: 0.31 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 177643 IS: 0.26 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 178048 IS: 0.23 CFS AT TIME 12.10 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 178451 IS: 0.33 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 178852 IS: 0.34 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 179251 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 179648 IS: 0.31 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 180043 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 0.31 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 5 IS: 0.90 CFS AT TIME: 12.02 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180436 IS: 0.22 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 180437 IS: 0.22 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 180438 IS: 0.19 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 180439 IS: 0.17 CFS AT TIME 12.07 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 0.14 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 6 IS: 4.03 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 180440 IS: 0.32 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 180830 IS: 0.34 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 181218 IS: 0.39 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 181603 IS: 0.37 CFS AT TIME 11.97 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 181987 IS: 0.36 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 182368 IS: 0.35 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 182747 IS: 0.36 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 183124 IS: 0.35 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 183499 IS: 0.33 CFS AT TIME 12.02 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 183873 IS: 0.33 CFS AT TIME 11.97 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 184244 IS: 0.33 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 0.33 CFS AT TIME 12.03 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 7 IS: 1.22 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 169361 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 169773 IS: 0.30 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 170185 IS: 0.33 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 8 IS: 2.20 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 170596 IS: 0.32 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171009 IS: 0.33 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171421 IS: 0.31 CFS AT TIME 12.01 HOURS WITH A

MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 171833 IS: 0.29 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 172244 IS: 0.27 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 172655 IS: 0.25 CFS AT TIME 11.93 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 173066 IS: 0.27 CFS AT TIME 12.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 173477 IS: 0.25 CFS AT TIME 12.04 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM CROSS SECTION 9 IS: 1.62 CFS AT TIME: 12.01 HOURS

THE MAXIMUM DISCHARGE FROM NODE 184619 IS: 0.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 184618 IS: 0.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 184617 IS: 0.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

THE MAXIMUM DISCHARGE FROM NODE 184616 IS: 0.23 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.00 AF

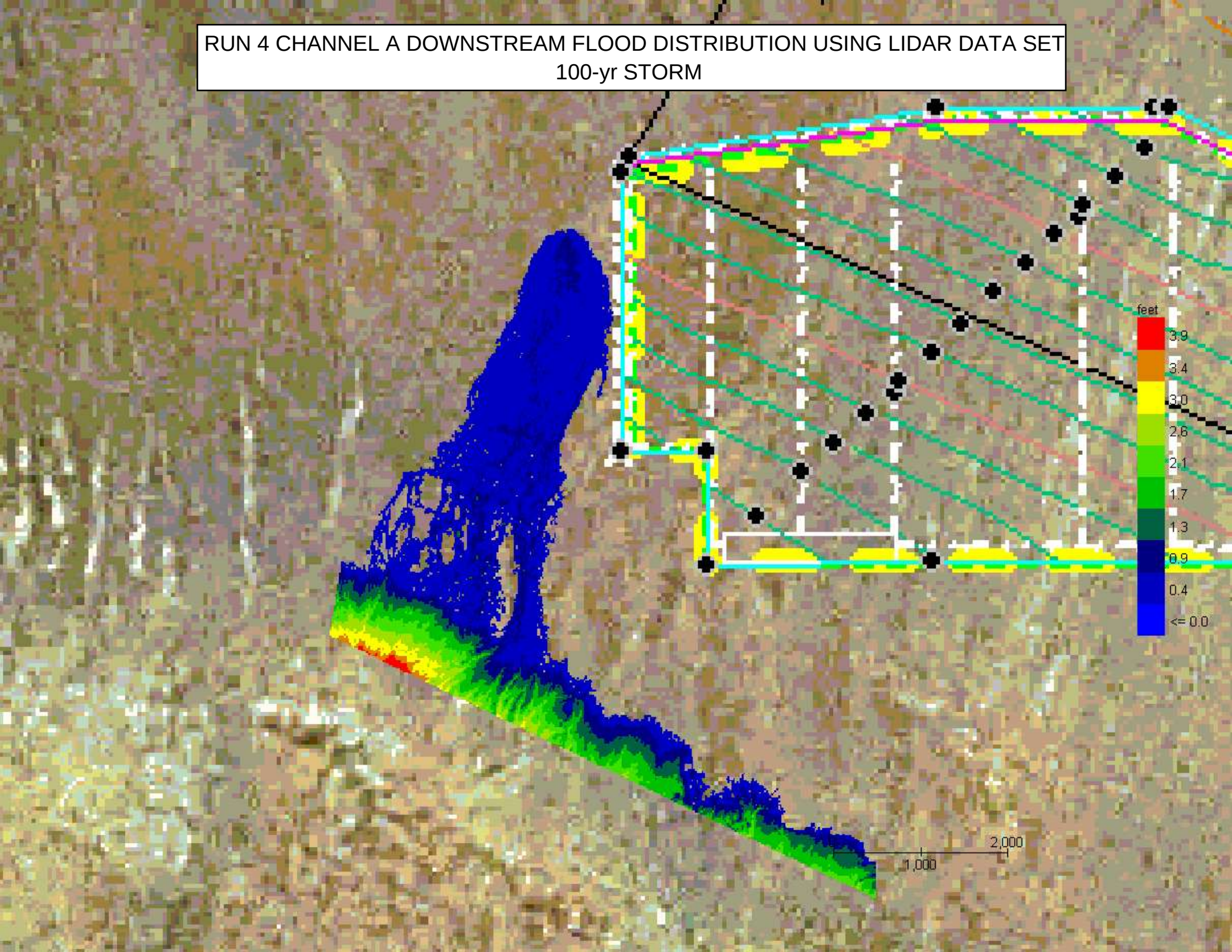
THE MAXIMUM DISCHARGE FROM NODE 184615 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

THE MAXIMUM DISCHARGE FROM NODE 184614 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

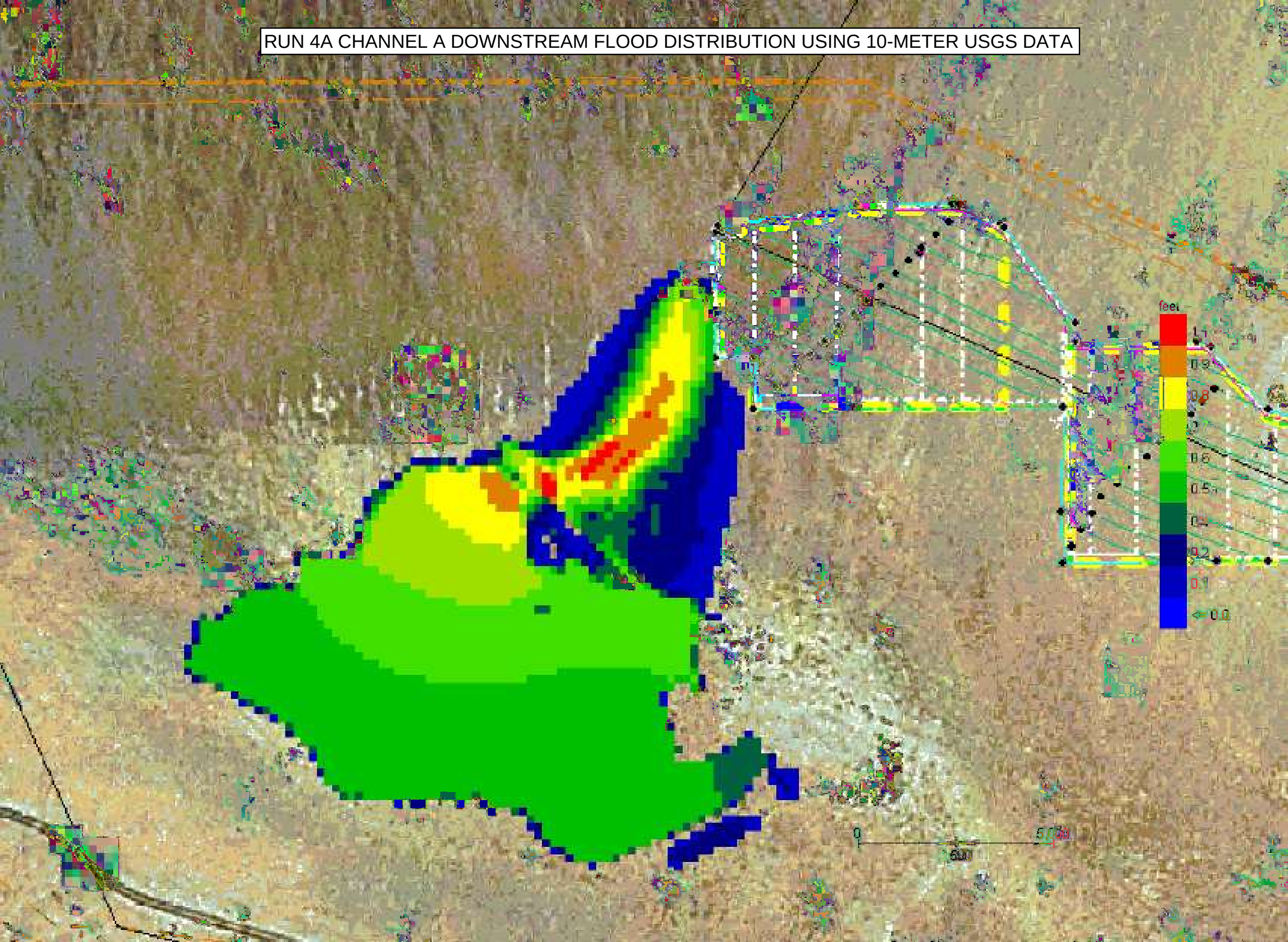
THE MAXIMUM DISCHARGE FROM NODE 184613 IS: 0.24 CFS AT TIME 12.01 HOURS WITH A MAXIMUM FLOODPLAIN DEPTH OF: 0.03 FEET AND A MAXIMUM VOLUME OF: 0.01 AF

ATTACHMENT L

RUN 4 CHANNEL A DOWNSTREAM FLOOD DISTRIBUTION USING LIDAR DATA SET
100-yr STORM



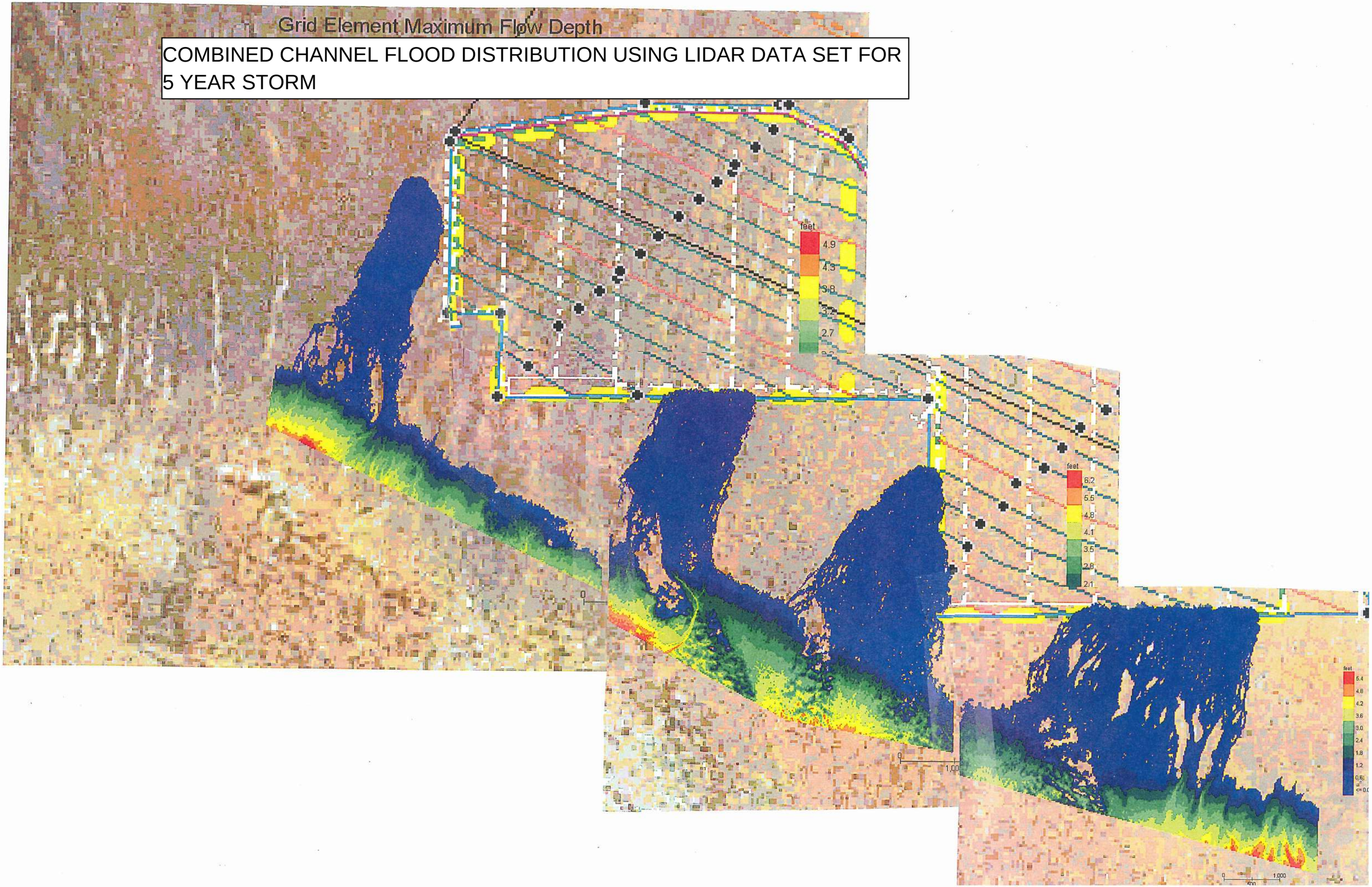
RUN 4A CHANNEL A DOWNSTREAM FLOOD DISTRIBUTION USING 10-METER USGS DATA



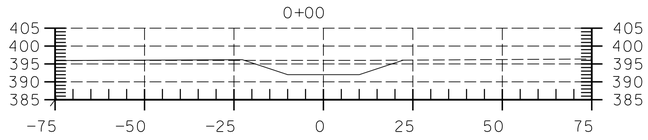
ATTACHMENT M

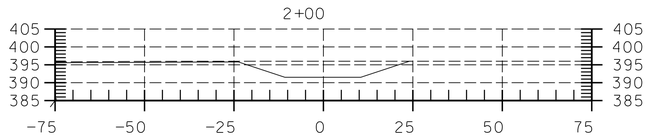
Grid Element Maximum Flow Depth

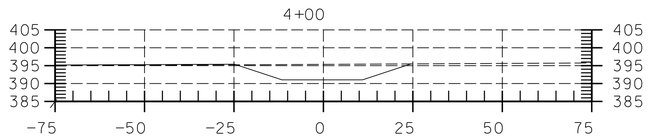
COMBINED CHANNEL FLOOD DISTRIBUTION USING LIDAR DATA SET FOR 5 YEAR STORM

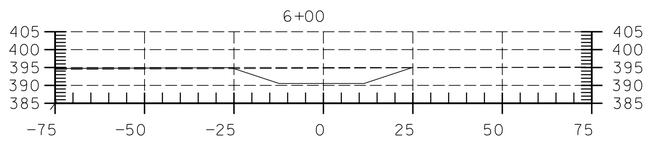


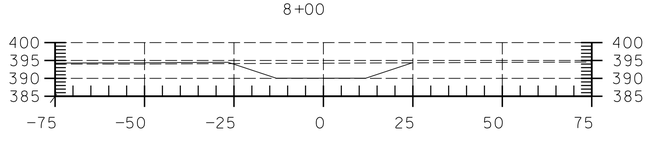
STA.0+00 TO STA.26+00

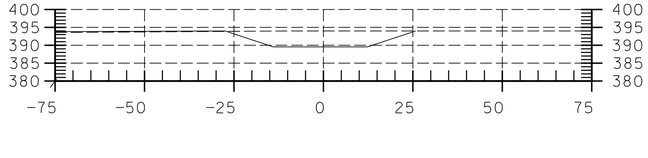


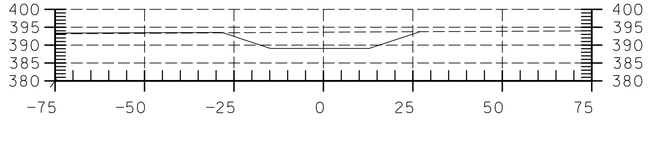


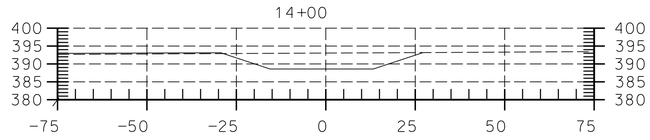


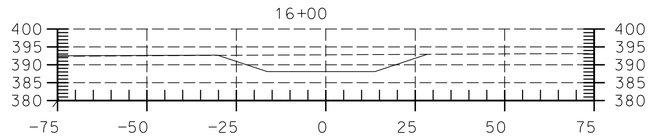


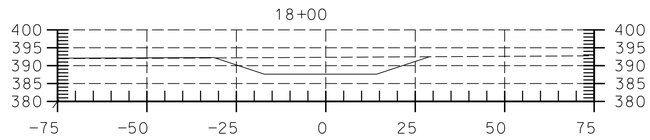


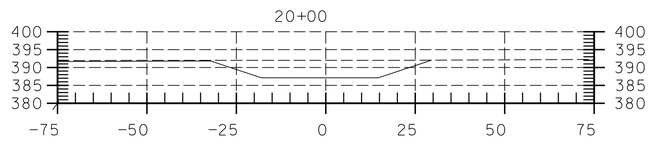


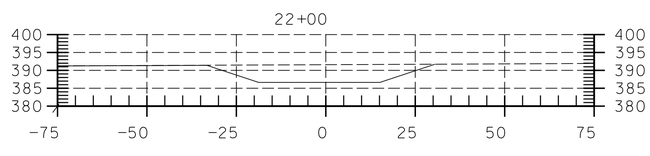


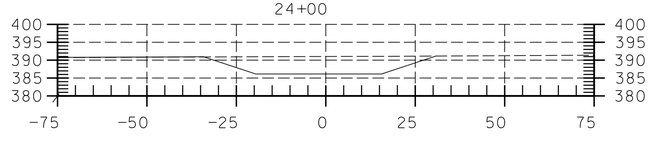


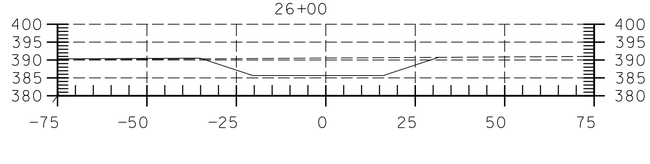












LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPEC	LEAD DISC ENGINEER	PROJECT ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

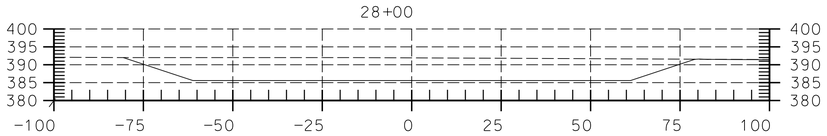
CHANNEL C CROSS SECTIONS

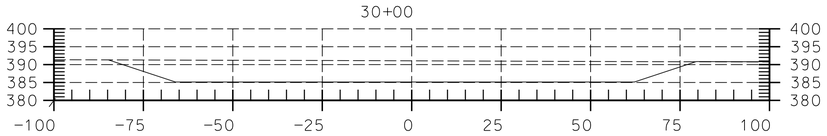
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-014
REV: 1

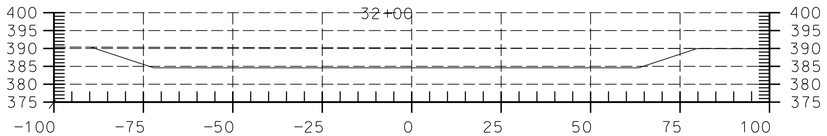
FILE NAME: $$$$$DGNSPEC$$$$$$$$$$
$$$$$SHEETS$$$$$

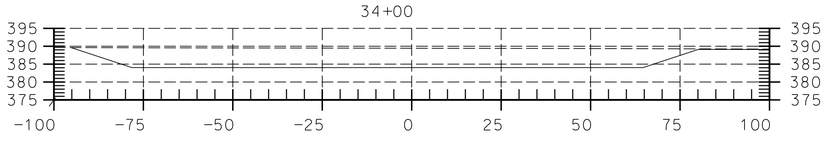
GENI-1-DW-112-716-004-014.dgn 1/14/2010 4:59:52 PM

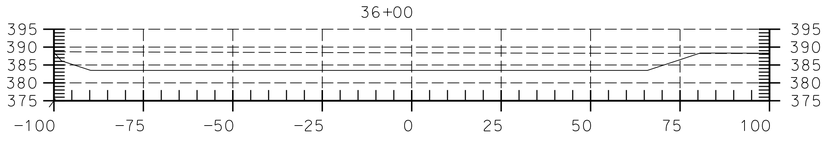
STA.28+00 TO STA.46+59

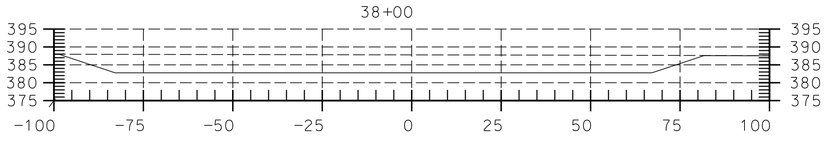


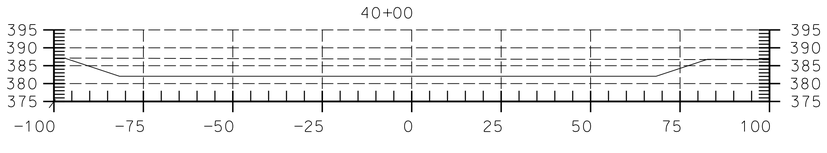


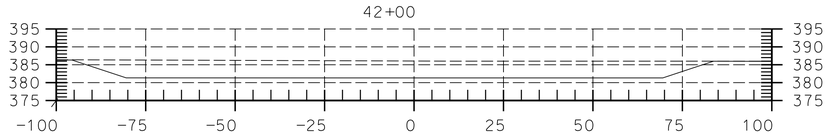


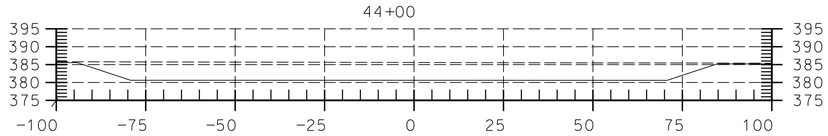


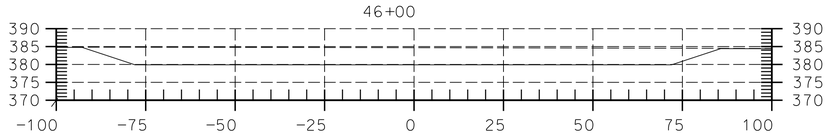


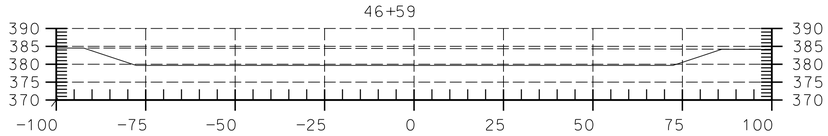












LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LOE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.
LOE

ORIGINATING PERSONNEL

DRAWN BY
A. PRATT

CHECKED BY
E. LEIBY

LEAD DESIGNER
J. DAHLGREN

ENGINEER/TECH SPECIALIST
B. ANDERS

PROJECT ENGINEERING MANAGER
B. ANDERS

PROJECT MANAGER
B. PIETRUCHA

Zero Harm — Leadership, No Incidents, Safe Behavior

PROFESSIONAL ENGINEER'S SEAL

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE:
STATE:
LIC. NO.:
DATE:

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B CROSS SECTIONS

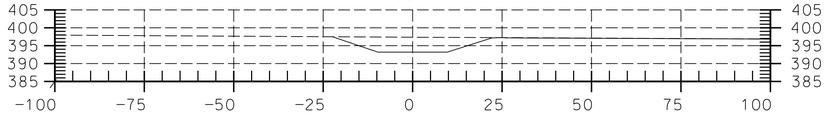
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-013
REV: 1

FILE NAME: $$$$$DONSPEC$$$$$$$$$$$$
$$$$$TIME$$$$$
$$$$$DATE$$$$$

GENI-1-DW-112-716-004-013.dgn 1/14/2010 4:59:08 PM

STA.0+00 TO STA.26+00

0+00



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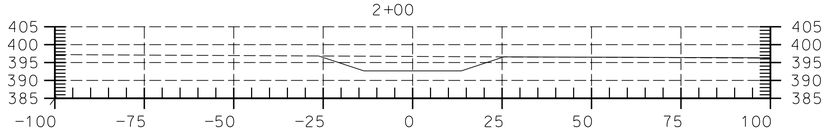

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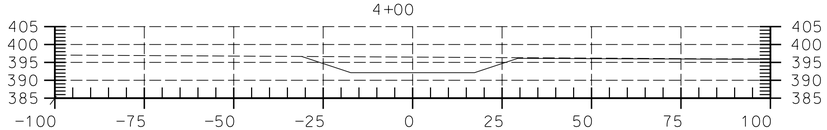

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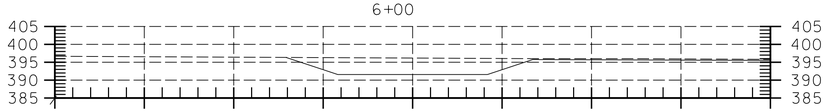

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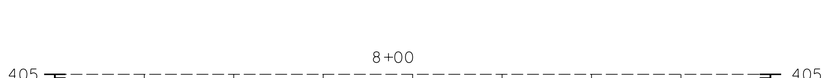

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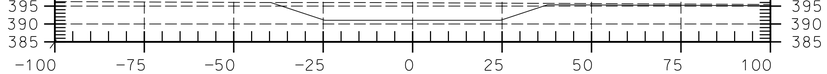

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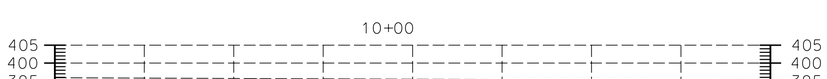

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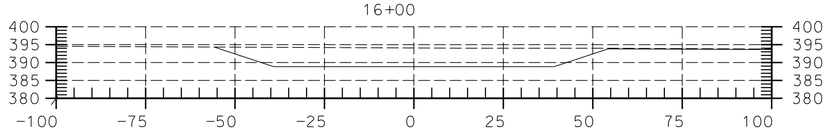
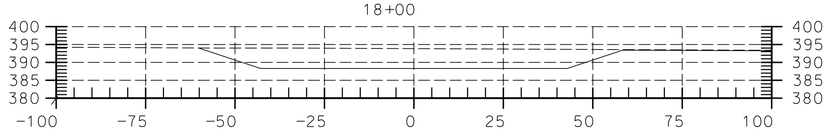


LEGEND:

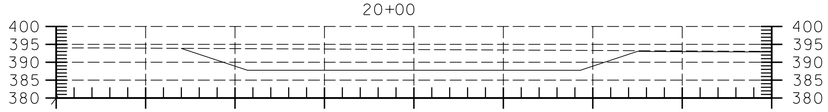
EXISTING GRADE

PROPOSED GRADE

18+00



20+00



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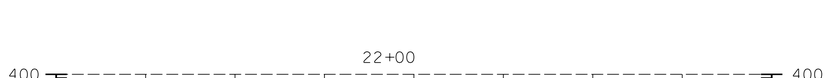

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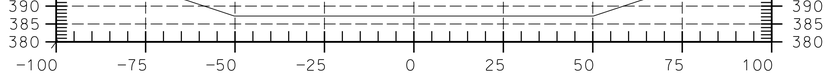
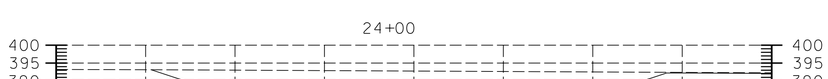


26+00



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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPEC	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	ABA	BP	

PRELIMINARY STATUS — DATE — LDE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

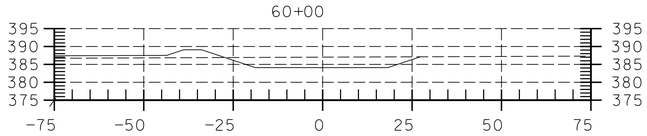
CHANNEL B CROSS SECTIONS

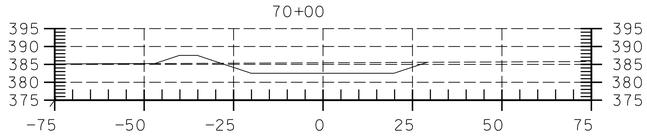
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-012
REV: 1

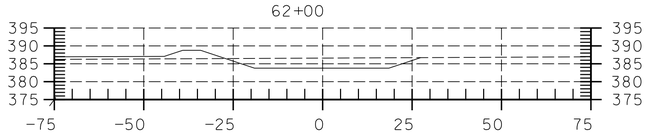
FILE NAME: $$$$$DGNSPEC$$$$$$$$$$
$$$$$TIMES$$$$$
$$$$$DATE$$$$$

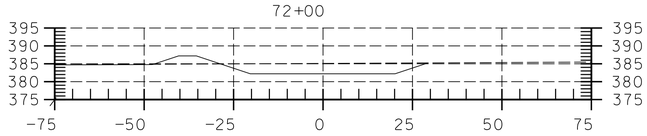
GENI-1-DW-112-716-004-012.dgn 1/14/2010 4:58:25 PM

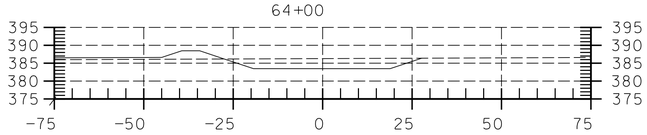
STA.60+00 TO STA.78+00

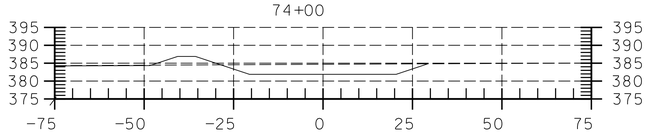


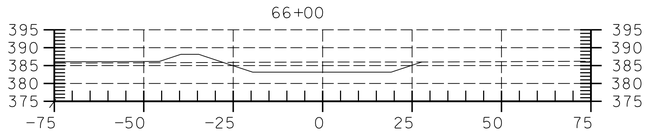


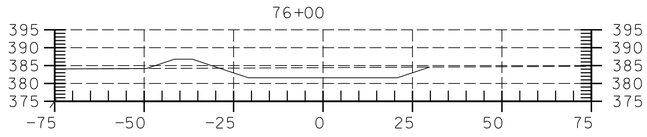


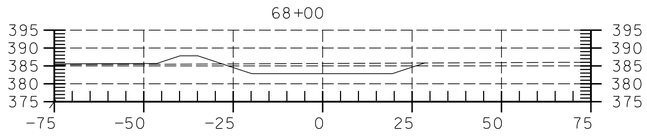


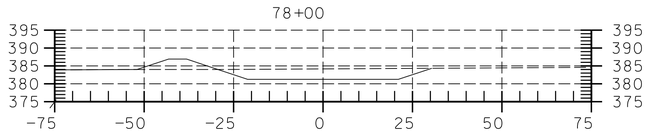












LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD ENGINEER	ENGINEER/ TECH SPEC	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — LOE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LOE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL A CROSS SECTIONS

SCALE	DRAWING SIZE
1"=20'	ARCH D (36" x 24")

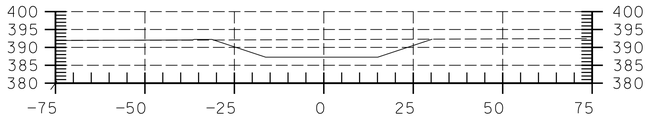
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-011 — REV: 1

FILE NAME=$$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

GENI-1-DW-112-716-004-011.dgn 1/14/2010 4:57:32 PM

STA.40+00 TO STA.58+00

40+00



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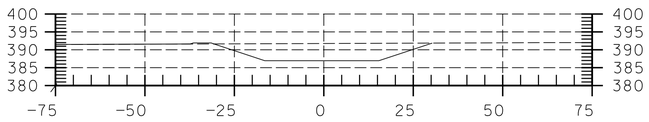

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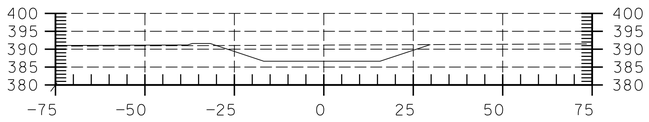

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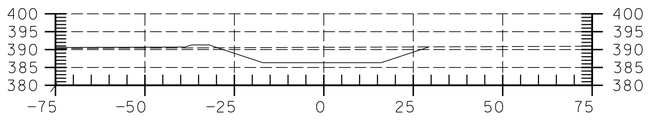
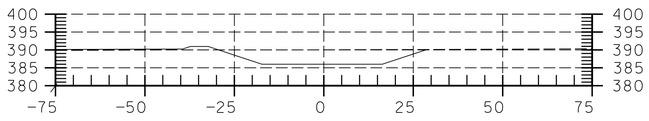
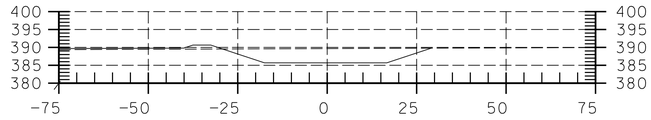


48+00



50+00



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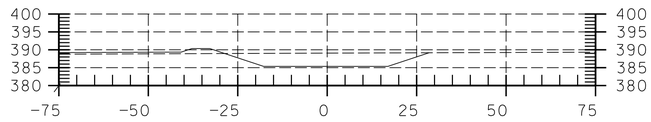

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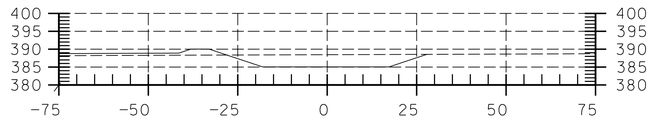

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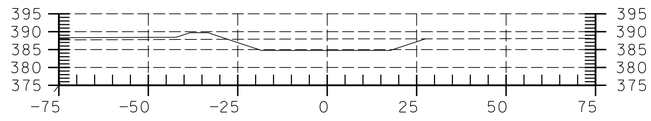

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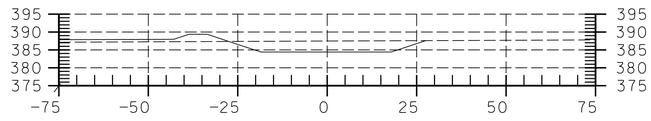


LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APE	JDB	AB	AB	AB	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF: PE:_____ STATE:_____ LIC. NO.:_____ DATE:_____
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL A CROSS SECTIONS

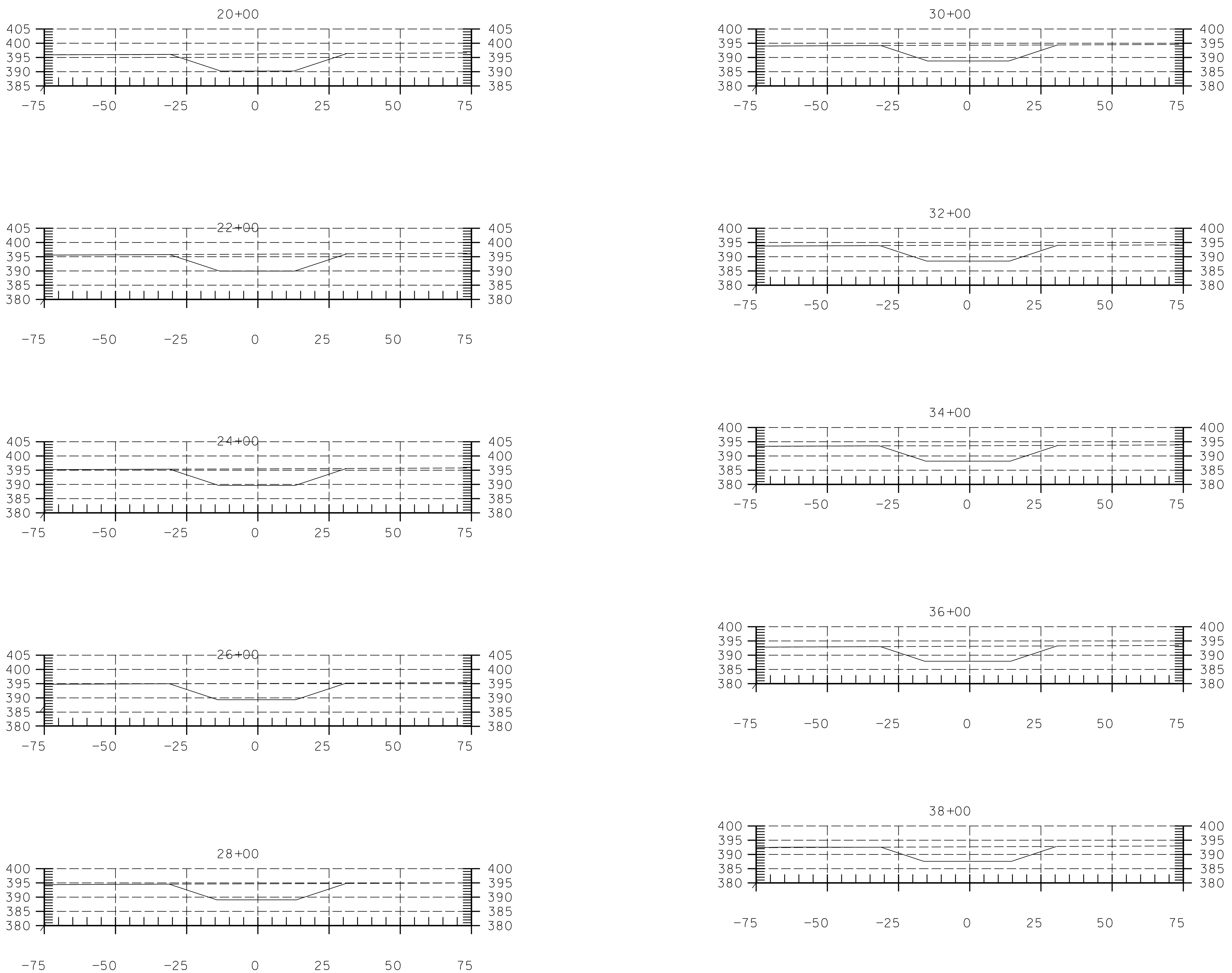
SCALE	DRAWING SIZE
1"=20'	ARCH D (36" x 24")

WORLEYPARSONS DWG. NO.	REV
GENI-1-DW-112-716-004-010	1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

GENI-1-DW-112-716-004-010.dgn 1/14/2010 4:56:56 PM

STA.20+00 TO STA.38+00



LEGEND:

- - - - - - - - EXISTING GRADE

———————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL | PROFESSIONAL ENGINEER'S SEAL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ____________ STATE: ________
LIC. NO.: ____________ DATE: ________

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL A CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-009
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

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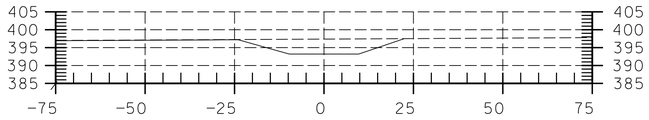
STA.0+00 TO STA.18+00

0+00



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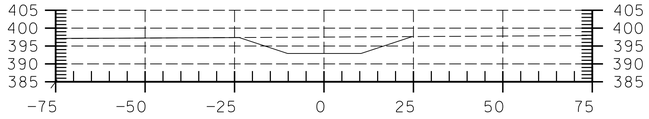

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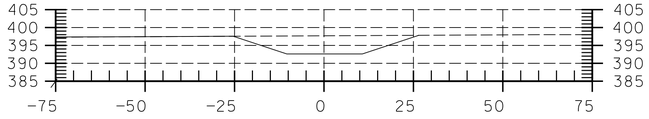

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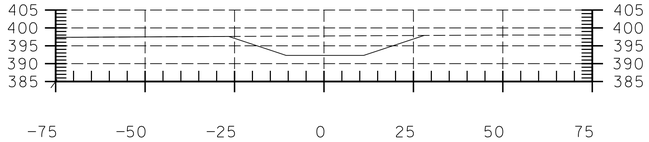

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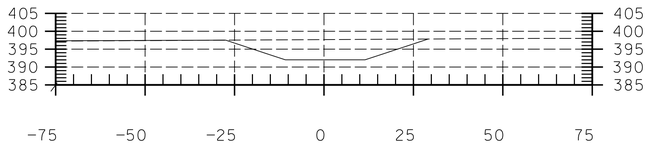

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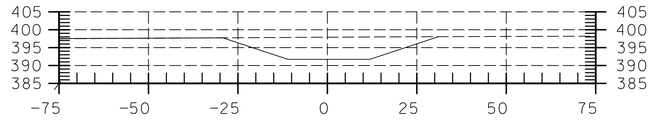

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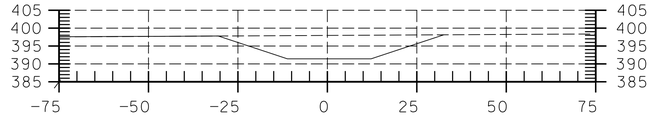

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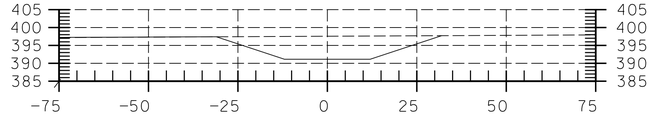

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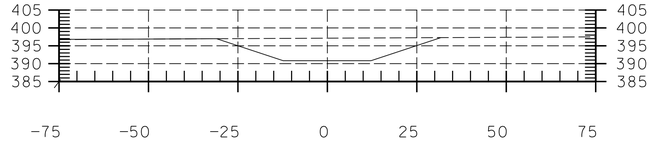
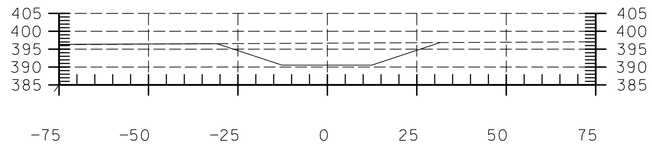


18+00



LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER / ENGINEER / TECH SPEC	ENGINEERING MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

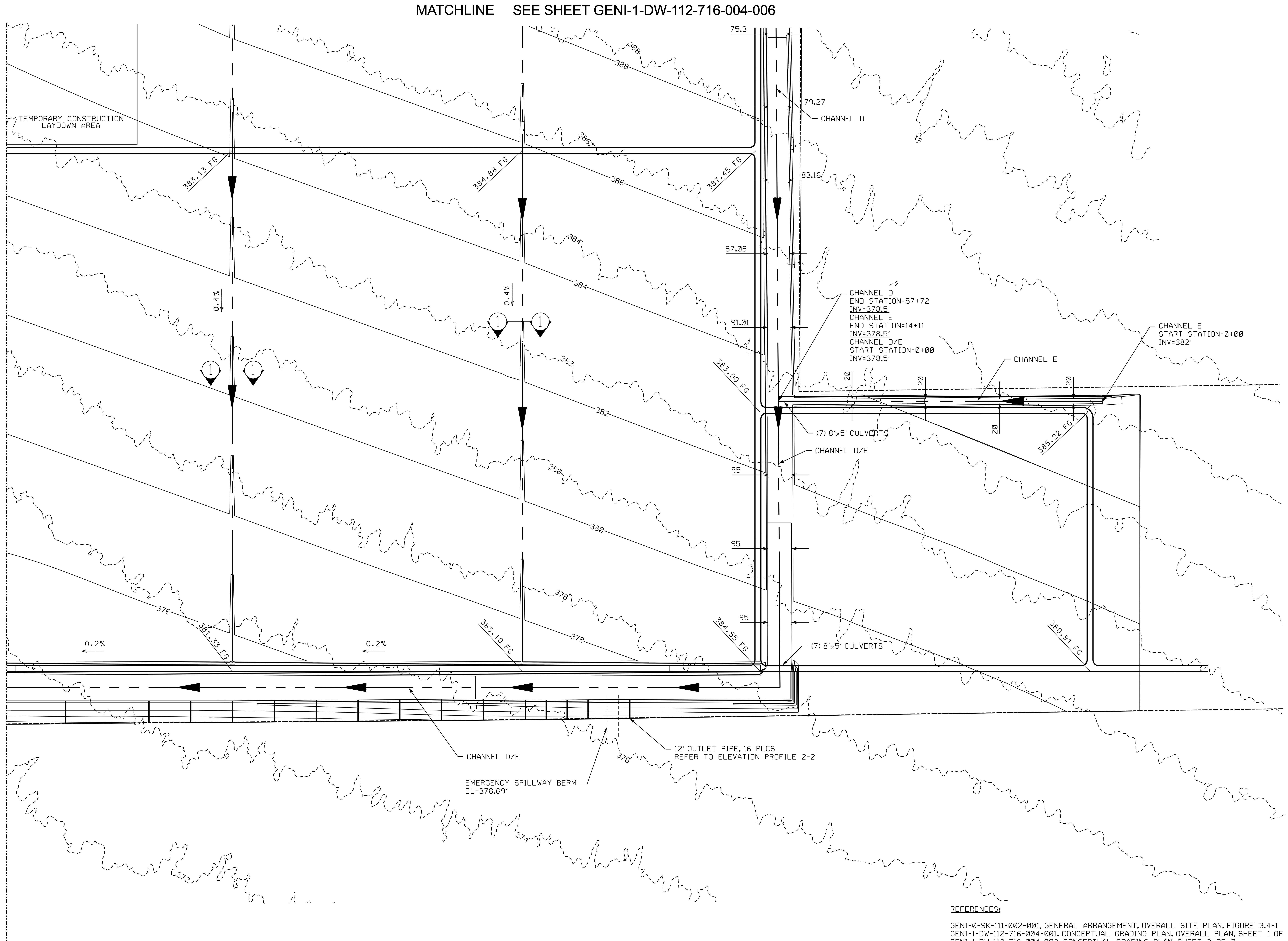
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL A CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-008
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$$
$$$$DATE$$$$

GENI-1-DW-112-716-004-008.dgn 1/14/2010 4:55:32 PM



LEGEND:

DRAINAGE CHANNEL CENTERLINE	
PROPOSED CONTOUR	392
EXISTING CONTOUR	388
PROPERTY BOUNDARY	
DITCH SLOPE	0.3%
ROAD ELEVATION	370.20 FG

N

0 200 400 600 800
1" = 200 FT

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL
DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: A. PRATT
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: STATE:
LIC. NO.: DATE:

Zero Harm — Leadership No Incidents Safe Behavior

WorleyParsons resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

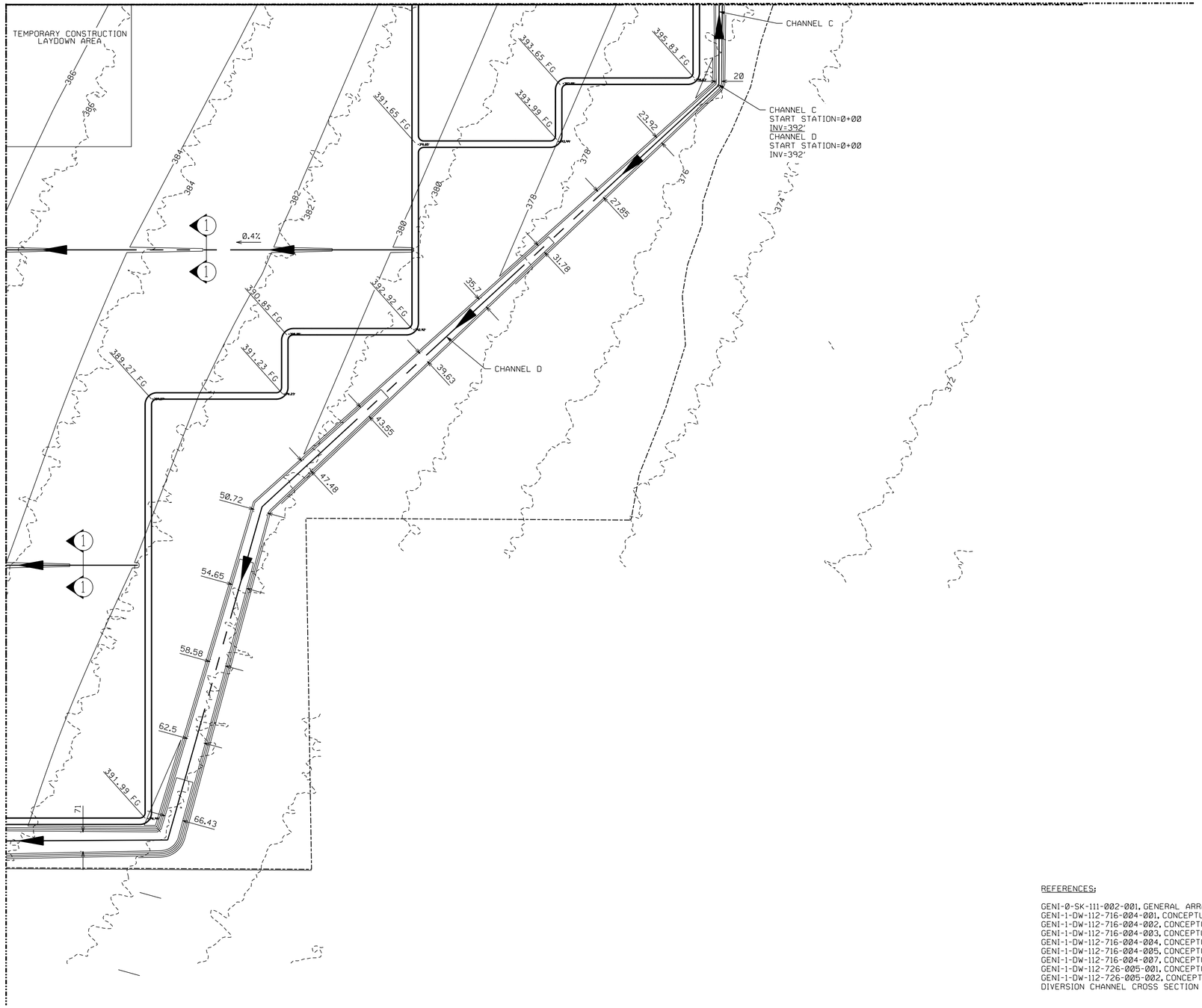
CONCEPTUAL
GRADING PLAN
DRAWING 7 OF 7

SCALE: 1"=200'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-007
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$ $$$$TIME$$$$ $$$$DATE$$$$

...\GENI-1-DW-112-716-004-007.dgn 1/15/2010 2:18:32 PM

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-004



MATCHLINE SEE SHEET GENI-1-DW-112-716-004-007

LEGEND:

DRAINAGE CHANNEL CENTERLINE

PROPOSED CONTOUR 392

EXISTING CONTOUR 388

PROPERTY BOUNDARY

DITCH SLOPE Ø.3%

ROAD ELEVATION 370.20 FG

N

0 200 400 600 800

1" = 200 FT

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-Ø-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

REFERENCES:

GENI-Ø-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	PROJECT ENGINEER	PROJECT MANAGER
1	01/15/10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED. — LOE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS. — LOE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: A. PRATT	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

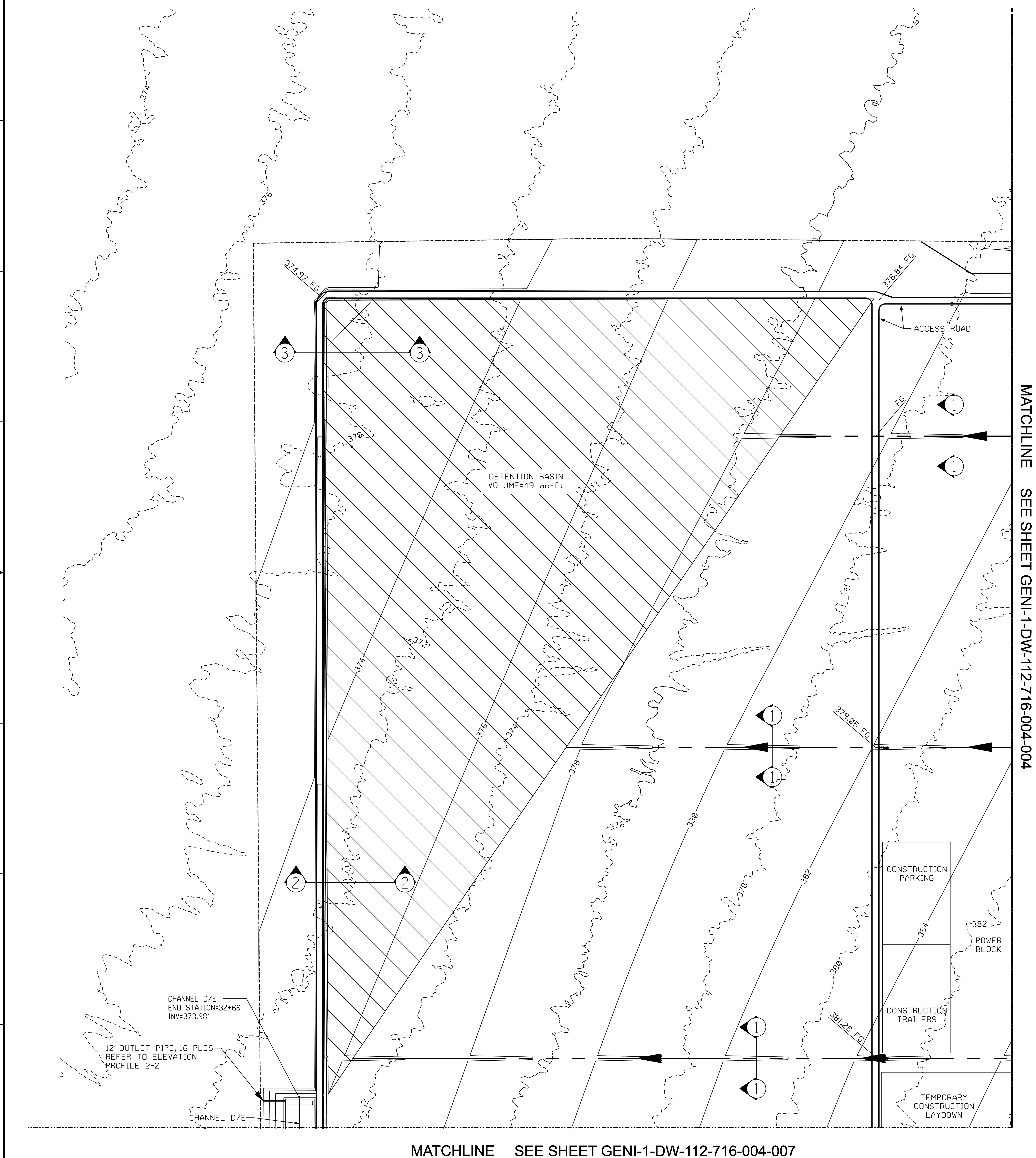
CONCEPTUAL GRADING PLAN DRAWING 5 OF 6

SCALE 1":200' | DRAWING SIZE ARCH D (36" x 24")

WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-006 | REV 1

FILE NAME: $$$$$DGNSPEC$$$$$$$$$$ $$$$$TIMESTAMP$$$$$

...\GENI-1-DW-112-716-004-006.dgn 1/15/2010 2:14:55 PM



REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

LEGEND:

DRAINAGE CHANNEL CENTERLINE	
PROPOSED CONTOUR	392
EXISTING CONTOUR	388
PROPERTY BOUNDARY	
DITCH SLOPE	0.3%
ROAD ELEVATION	370.20 FG
12' CULVERT	

N

0 200 400 600 800
1" = 200 FT

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: A. PRATT
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: __________ STATE: ______
LIC. NO.: __________ DATE: ______

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL
GRADING PLAN
DRAWING 5 OF 7

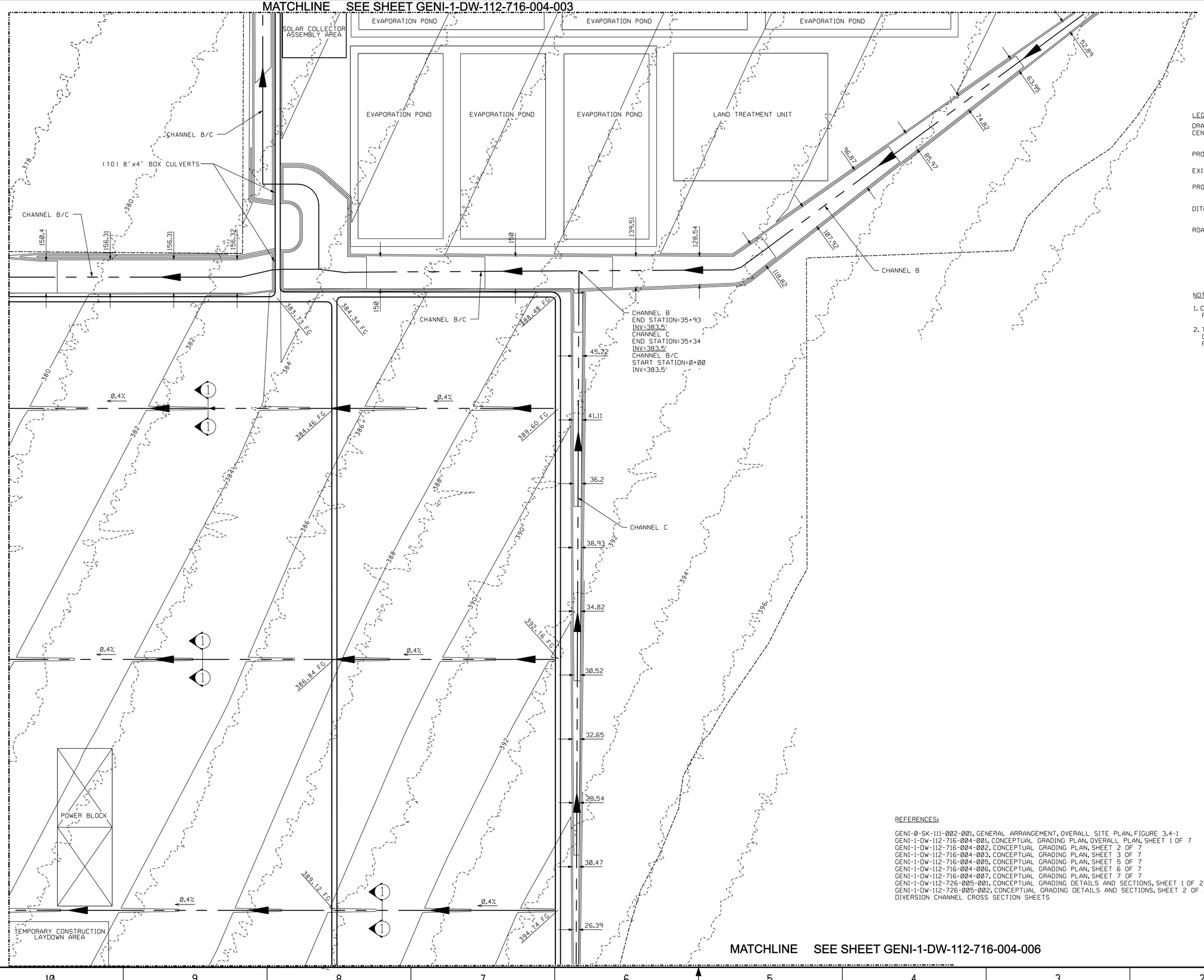
SCALE: 1"=200'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-005
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$ $$$$TIME$$$$ $$$$DATE$$$$

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-003

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-005

MATCHLINE SEE SHEET GENI-1-DW-112-716-004-006



LEGEND:

DRAINAGE CHANNEL CENTERLINE

PROPOSED CONTOUR 392

EXISTING CONTOUR 388

PROPERTY BOUNDARY

DITCH SLOPE 0.3%

ROAD ELEVATION 370.20 FG

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

N

0 200 400 600 800

1" = 200 FT

REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	
DRAWN BY	A. PRATT
CHECKED BY	E. LEIBY
LEAD DESIGNER	A. PRATT
ENGINEER/TECH SPECIALIST	B. ANDERS
PROJECT ENGINEERING MANAGER	B. ANDERS
PROJECT MANAGER	B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE:_____ STATE:_____
LIC. NO.:_____ DATE:_____

Zero Harm — Leadership No Incidents Safe Behavior

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL GRADING PLAN DRAWING 4 OF 7

SCALE 1"=200' | DRAWING SIZE ARCH D (36" x 24")

WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-004 | REV 1

FILE NAME: $$$$DONSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

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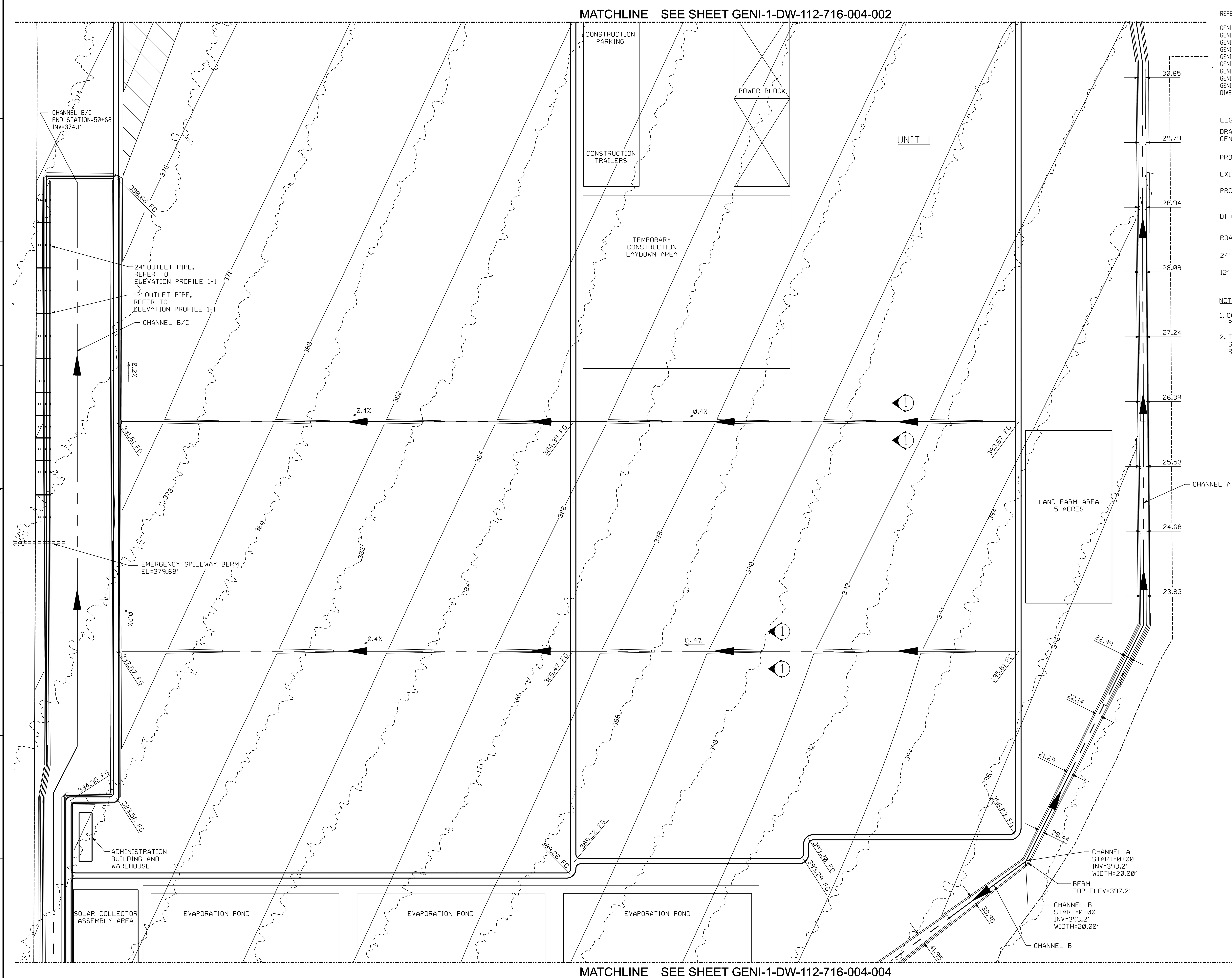


REFERENCES:

GENI-Ø-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

LEGEND:

DRAINAGE CHANNEL CENTERLINE
PROPOSED CONTOUR — 392
EXISTING CONTOUR — 388
PROPERTY BOUNDARY
DITCH SLOPE — 0.3%
ROAD ELEVATION — 370.20 FG
24" CULVERT
12' CULVERT

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

N

0 200 400 600 800
1" = 200 FT

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: A. PRATT
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: STATE:
LIC. NO.: DATE:

Zero Harm — Leadership, No Incidents, Safe Behavior

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL GRADING PLAN
DRAWING 3 OF 7

SCALE 1"=200'
DRAWING SIZE ARCH D (36" x 24")
WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-003
REV 1

FILE NAME: $$$$$$DGNSPEC$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-005-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

CHANNEL A
END STATION=88+43
INV=380.00'
END WIDTH=45'

APPROX. DETENTION BASIN
VOLUME= 66 ac-ft

371.08 FG
375.49 FG
383.57 FG
371.09 FG
373.47 FG
384.22 FG
384.94 FG
376.72 FG
385.95 FG
371.48 FG
373.07 FG
378.55 FG
380.51 FG
387.74 FP
389.54 FG

0.4%
0.3%

42.86
42.56
41.71
40.97
40.01
39.16
38.31
37.45
36.60
36.60
34.90
34.05
33.19
32.34
31.49

CHANNEL A

MATCHLINE
SEE SHEET GENI-1-DW-112-716-004-003

LEGEND

DRAINAGE CHANNEL CENTERLINE
PROPOSED CONTOUR — 392
EXISTING CONTOUR — 388
PROPERTY BOUNDARY
DITCH SLOPE — 0.3%
ROAD ELEVATION — 370.20 FG

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.

N

0 200 400 600 800
1" = 200 FT

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	01/15/10	ISSUED FOR REVIEW	AP	EL	AP	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED. — LDE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS. — LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: A. PRATT	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL GRADING PLAN DRAWING 2 OF 7

SCALE: 1"=200'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-002
REV: 1

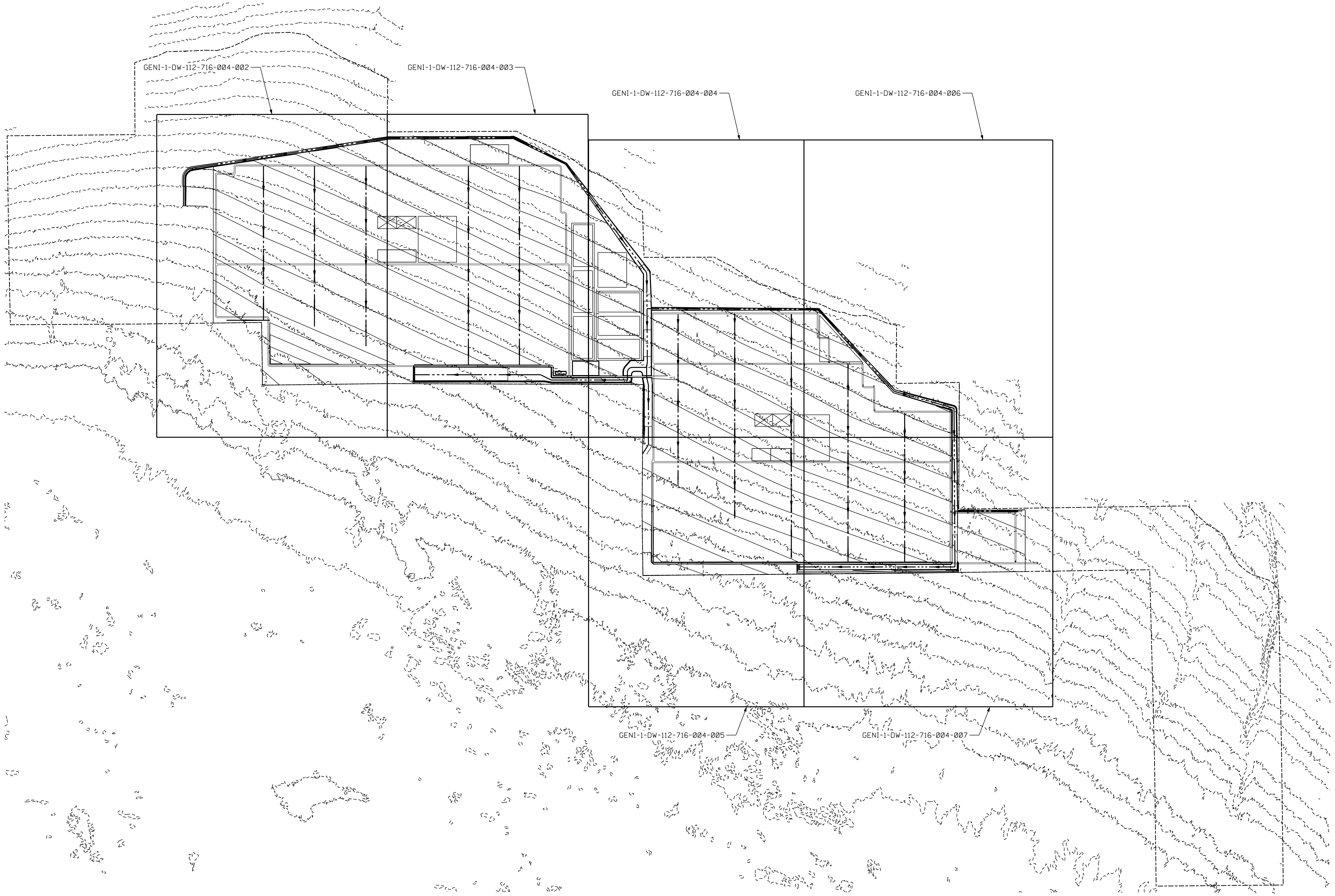
FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$USERNAME$$$$
$$$$DATE$$$$

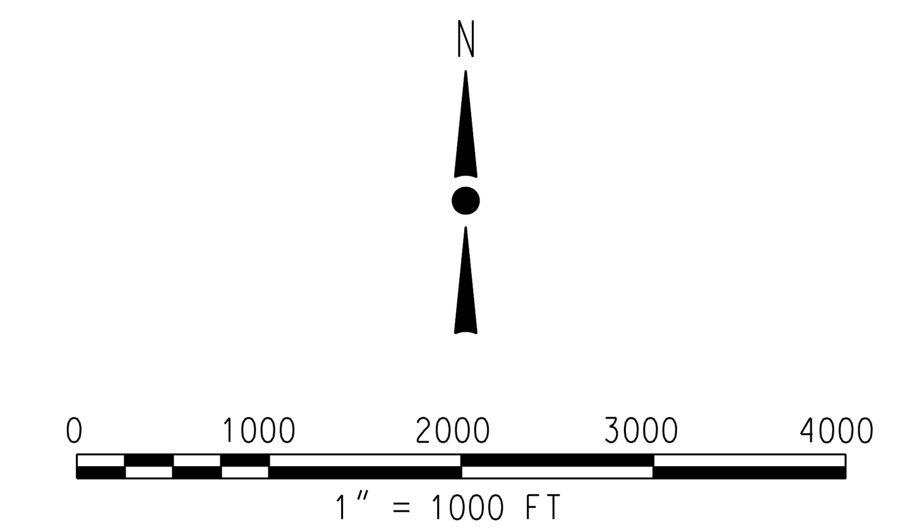
REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-002, CONCEPTUAL GRADING PLAN, SHEET 2 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-002-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
GENI-1-DW-112-726-002-002, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

NOTES:

1. COORDINATE SYSTEM BASED ON CALIFORNIA STATE PLANE, ZONE 6, NAD 83.
2. THE GRADING PLANS ARE BASED ON GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, REVISION D.





REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL
DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

Zero Harm — Leadership No Incidents Safe Behavior

PROFESSIONAL ENGINEER'S SEAL
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE:_____ STATE:_____
LIC. NO.:_____ DATE:_____

WorleyParsons
resources & energy

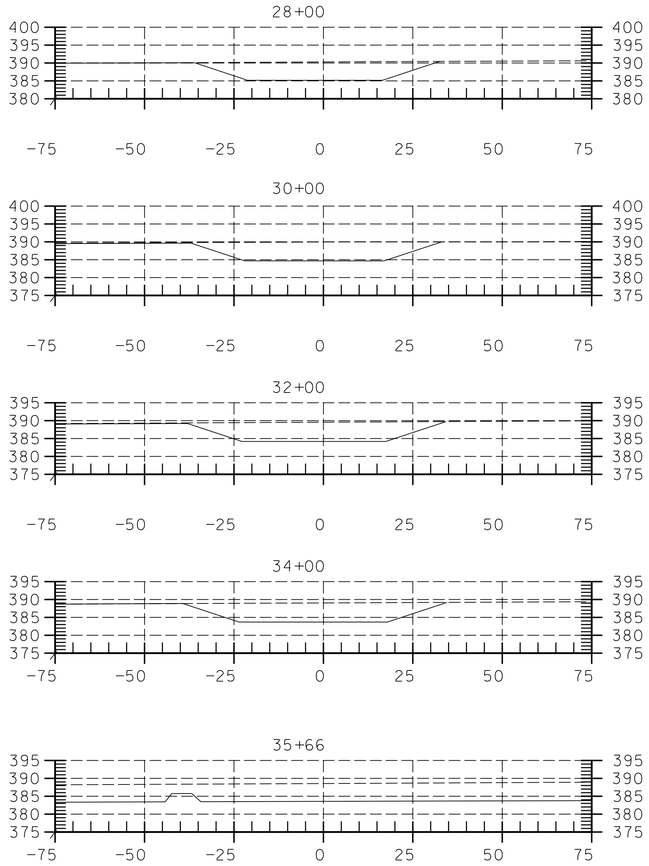
CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL GRADING PLAN
OVERALL PLAN

SCALE: 1"=200'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-001
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

STA.28+00 TO STA.35+66



LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDG	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL C CROSS SECTIONS

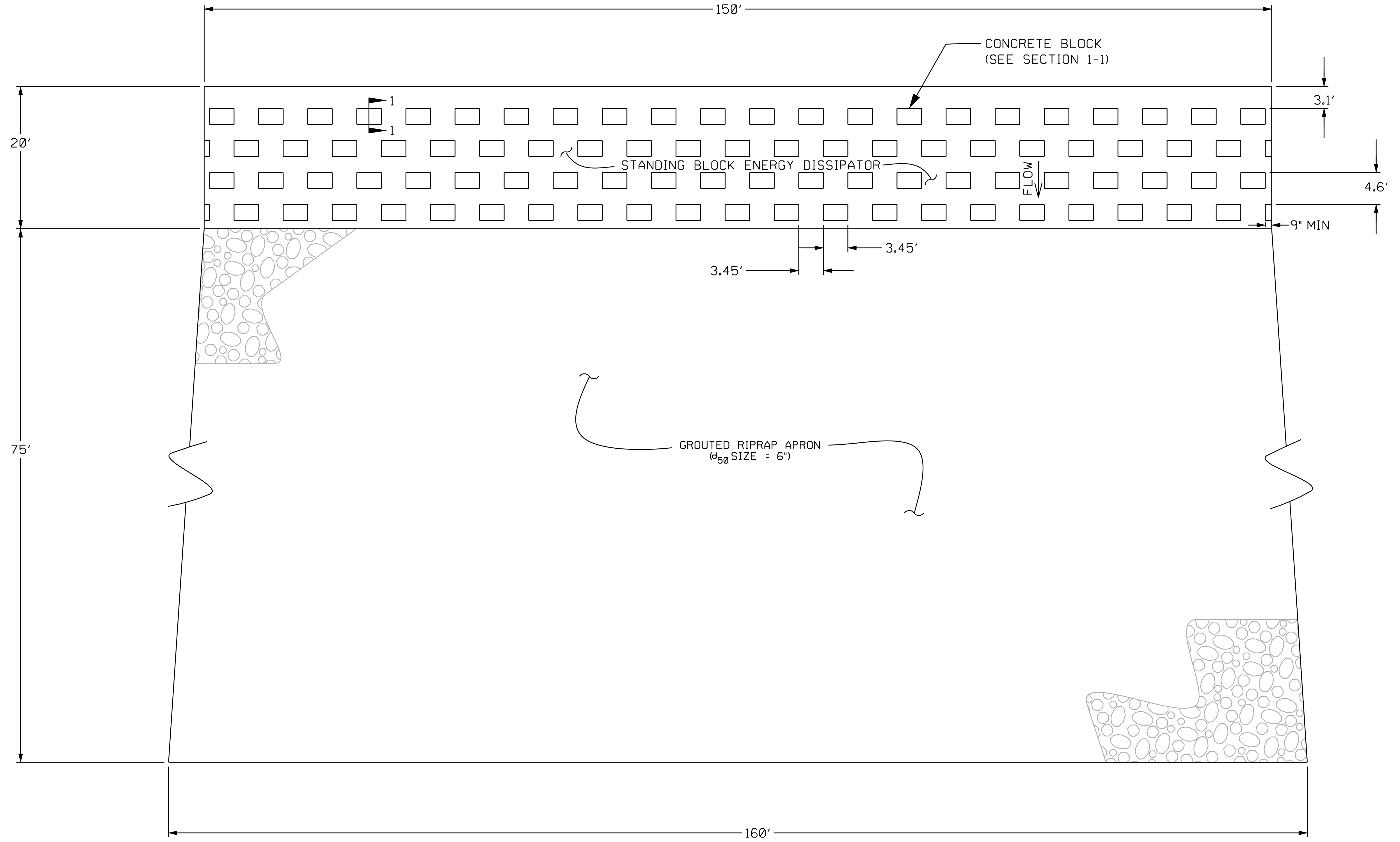
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-015
REV: 1

FILE NAME: $$$$$DGNSPEC$$$$$$$$$$
$$$$$TIMESTAMP$$$$$

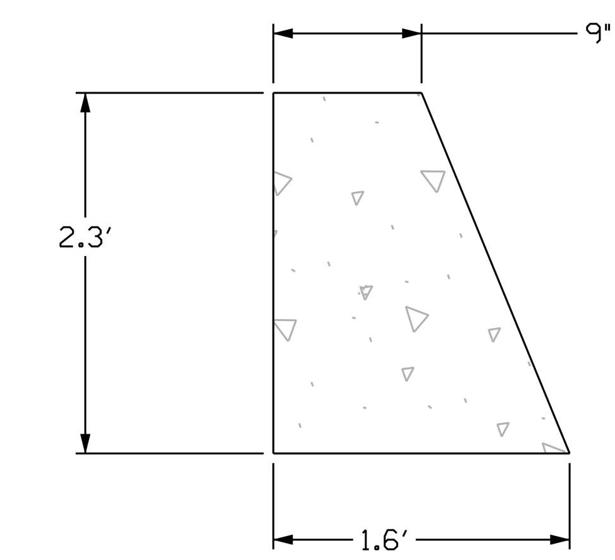
GENI-1-DW-112-716-004-015.dgn 1/14/2010 5:00:24 PM

REFERENCES:

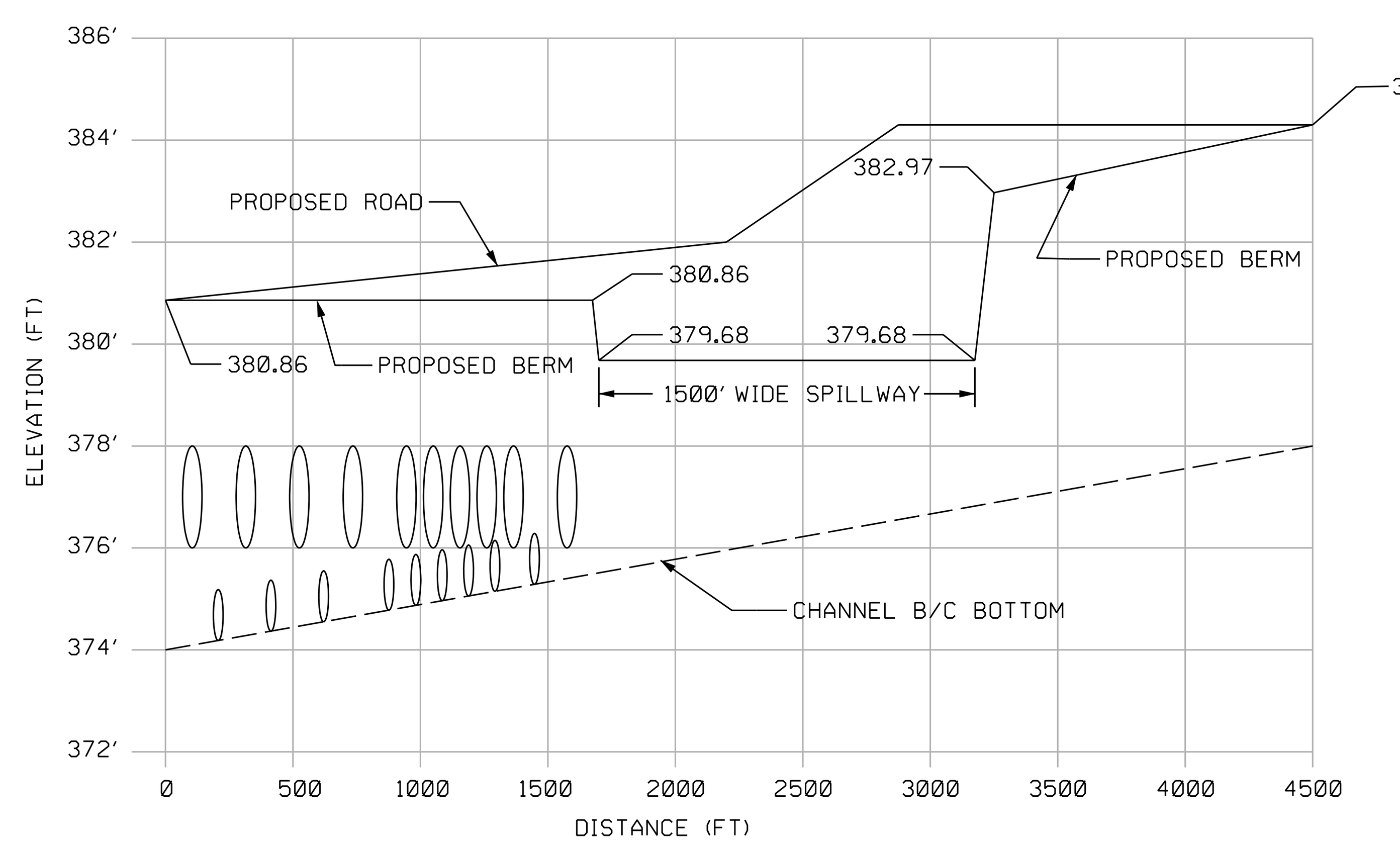
GENI-Ø-SK-111-ØØ2-ØØ1, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-ØØ4-ØØ1, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-ØØ4-ØØ3, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-ØØ4-ØØ4, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-ØØ4-ØØ5, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-ØØ4-ØØ6, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-ØØ4-ØØ7, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-ØØ5-ØØ2, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 2 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS



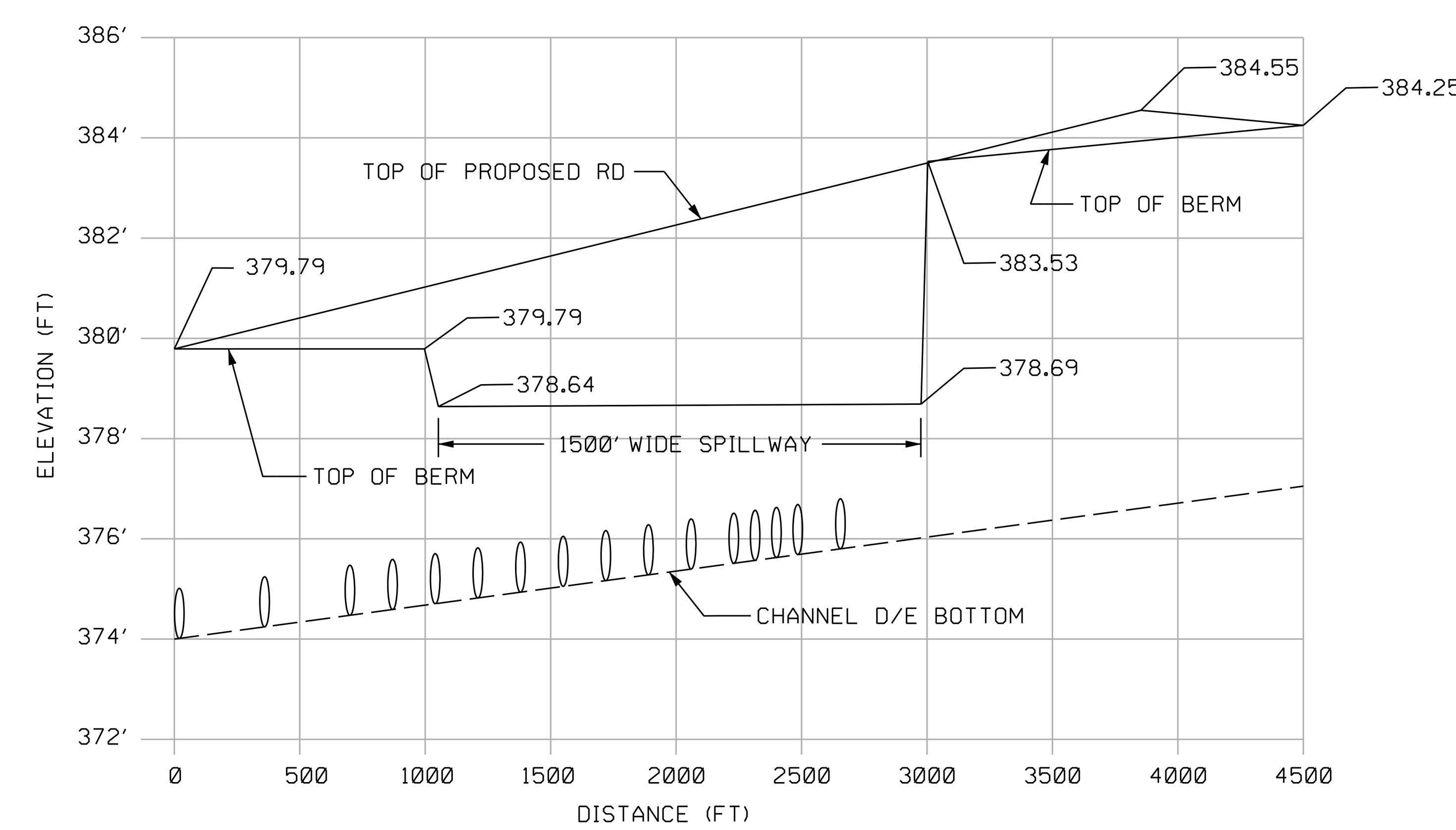
ENERGY DISSIPATOR
DETAIL A
NOT TO SCALE



SECTION 1-1
NOT TO SCALE



CHANNEL B/C
ELEVATION PROFILE 1-1



CHANNEL D/E
ELEVATION PROFILE 2-2

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	1 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL
DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

Zero Harm — Leadership, No Incidents, Safe Behavior

PROFESSIONAL ENGINEER'S SEAL
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: __________ STATE: ______
LIC. NO.: __________ DATE: ______

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL
GRADING PLAN DETAILS AND SECTIONS
DRAWING 1 OF 2

SCALE: NOT TO SCALE
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-726-005-001
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

...\GENI-1-DW-112-716-005-001.dgn 1/15/2010 2:52:54 PM

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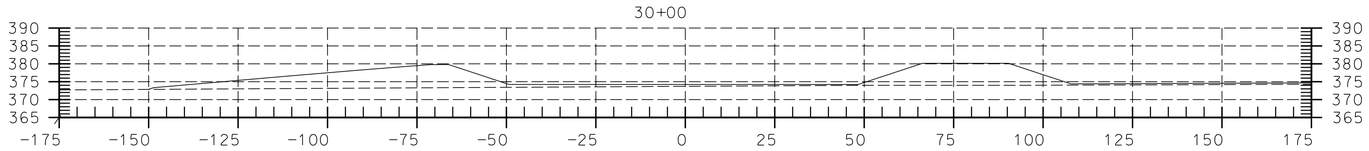
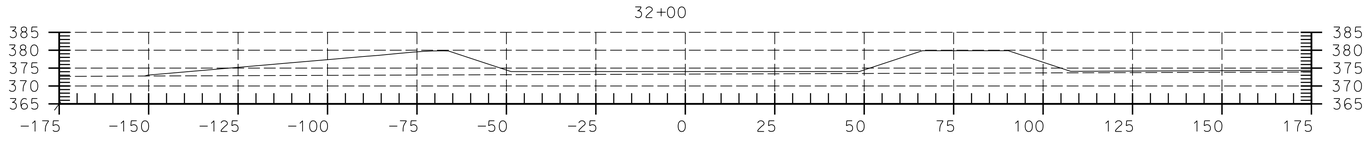
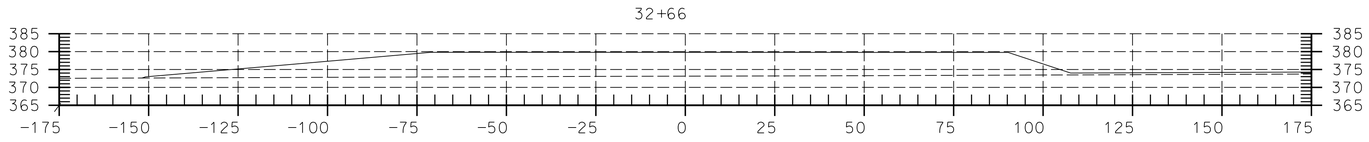






LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	Ø1/15/10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	ABA	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

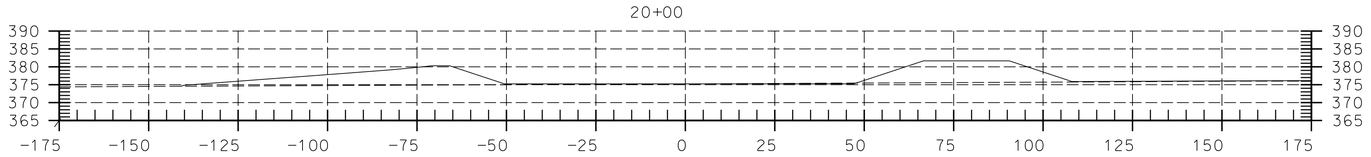
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

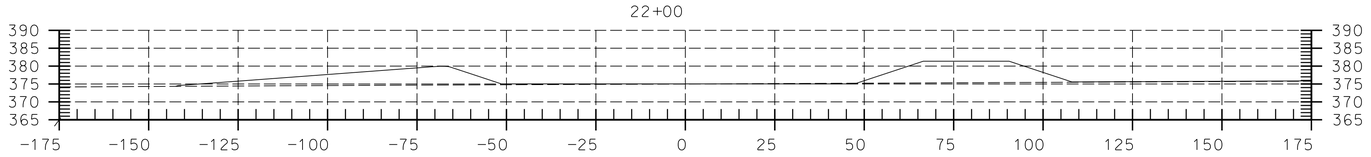
CHANNEL D/E CROSS SECTIONS

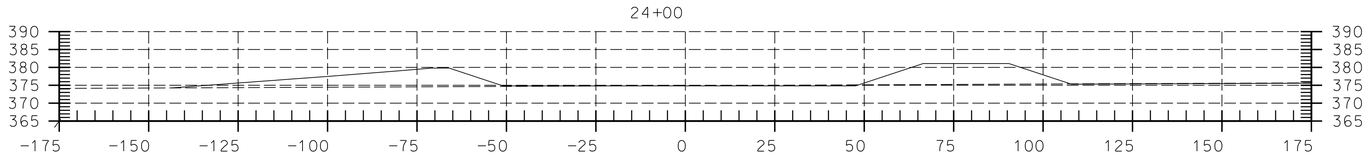
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-031
REV: 1

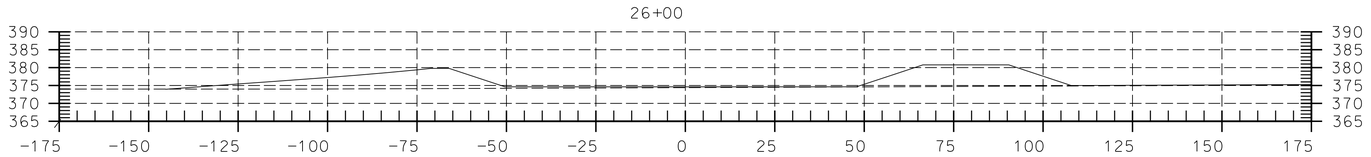
FILE NAME: $$$$DONSPEC$$$$$$$$$$$$
$$$$TIME$$$$$
$$$$DATE$$$$$

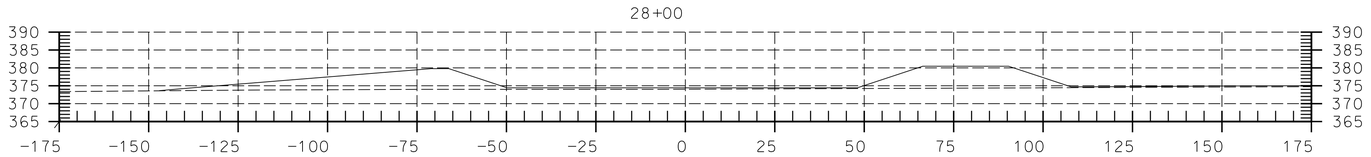
STA.20+00 TO STA.28+00











LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	ENGINEER	PROJECT ENGINEER MANAGER	PROJECT MANAGER
1	01/15/10	ISSUED FOR REVIEW	APEL	JD	BA	BA	BA	BP	

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL D/E CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-030
REV: 1

FILE NAME: $$$$$$DONSPEC$$$$$$$$$$$$
$$$$$$TIMES$$$$$$

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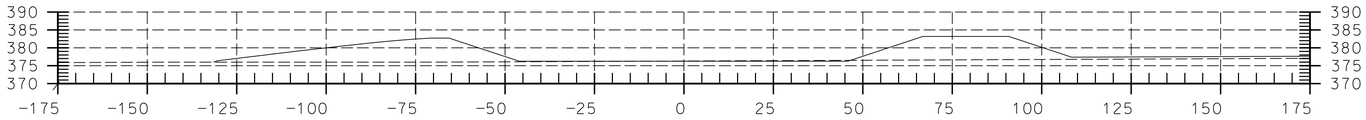
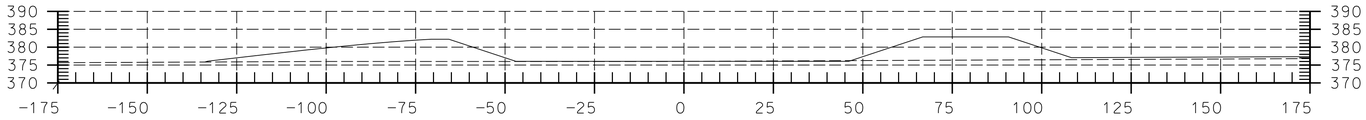
STA.10+00 TO STA.18+00

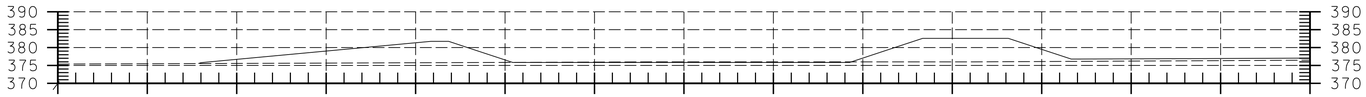
10+00



12+00

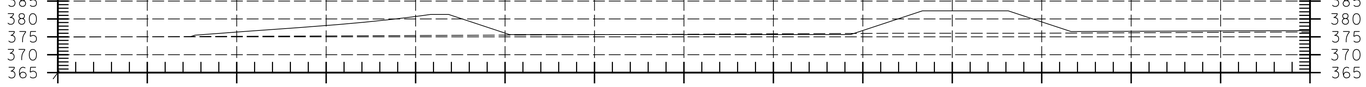


14+00



16+00

18+00



LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	LEAD ELEC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01/15/10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LOE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LOE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL D/E CROSS SECTIONS

SCALE	DRAWING SIZE
1"=20'	ARCH D (36" x 24")

WORLEYPARSONS DWG. NO.	REV
GENI-1-DW-112-716-004-029	1

FILE NAME=$$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

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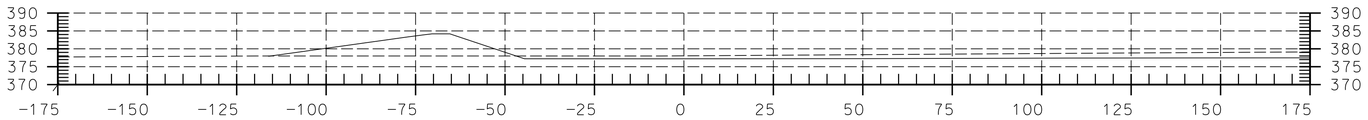
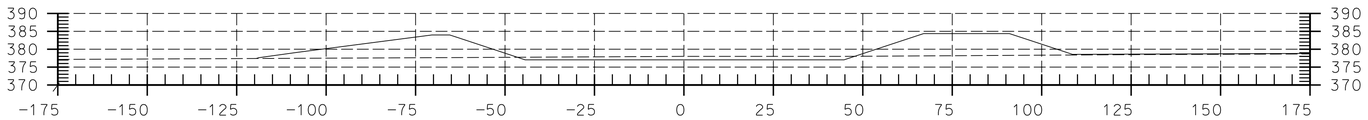
STA.0+00 TO STA.8+00

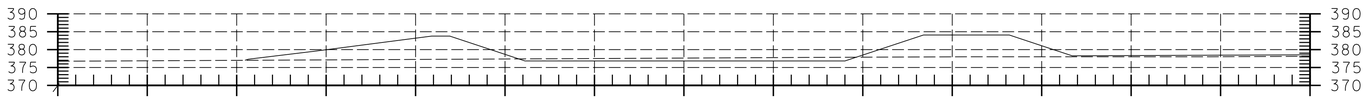
0+00



2+00

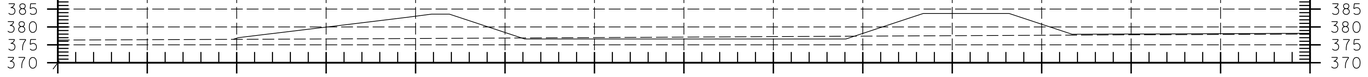


4+00



6+00

8+00



LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	LEAD ENGINEER	PROJECT ENGINEER MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JD	BA	BA	BA	BP	

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LOE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LOE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL D/E CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GEN1-1-DW-112-716-004-028
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

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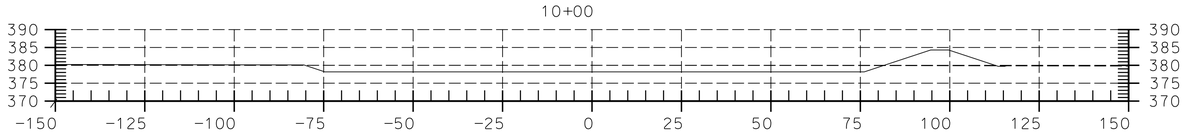
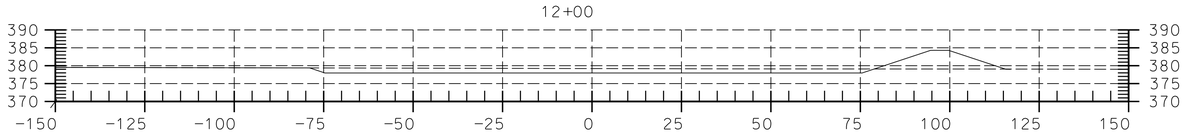
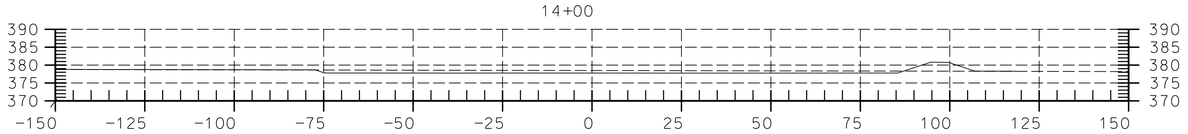
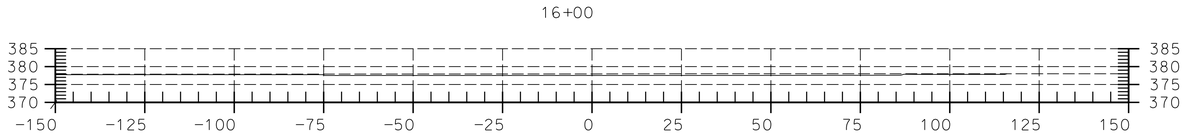
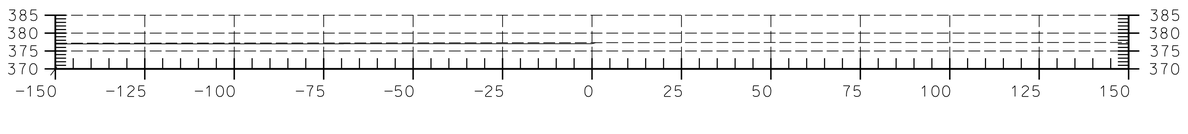
STA.10+00 TO STA.17+86











LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	ABP	

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY
A. PRATT

CHECKED BY
E. LEIBY

LEAD DESIGNER
J. DAHLGREN

ENGINEER/TECH SPECIALIST
B. ANDERS

PROJECT ENGINEERING MANAGER
B. ANDERS

PROJECT MANAGER
B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B/C CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-027
REV: 1

FILE NAME: $$$$$DONSPEC$$$$$$$$$$$$
$$$$$TIME$$$$$
$$$$$DATE$$$$$

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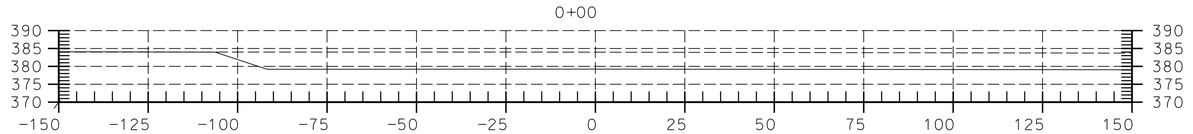
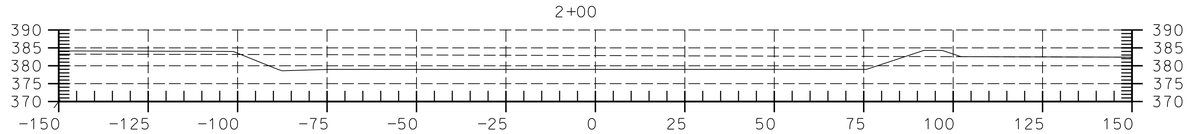
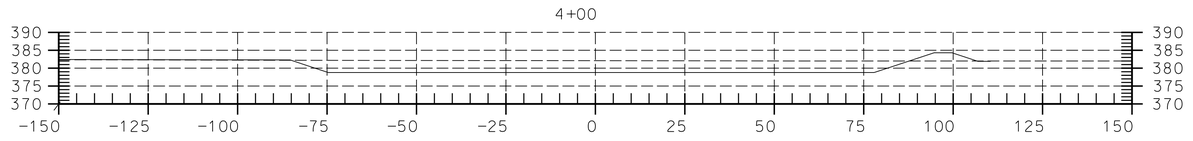
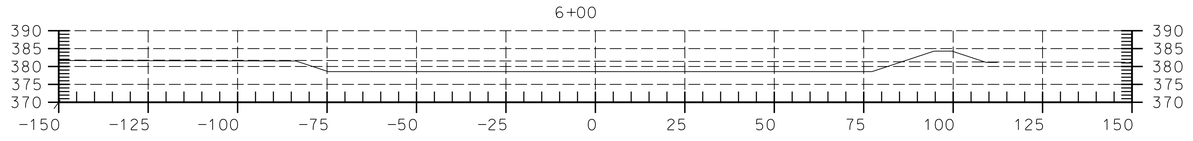
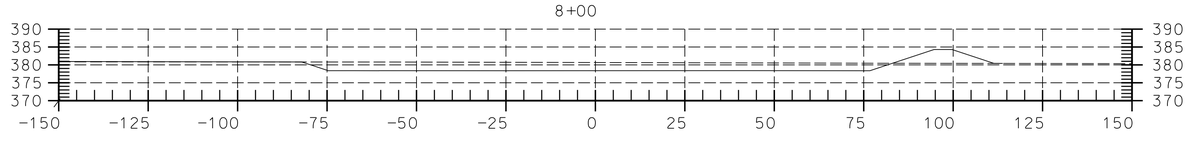
STA.0+00 TO STA.8+00











LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	ENGINEER	PROJECT ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	ABA	BP	

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B/C-2 CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-026
REV: 1

FILE NAME: $$$$$DGNSPEC$$$$$$$$$$
$$$$$TIMESTAMP$$$$$

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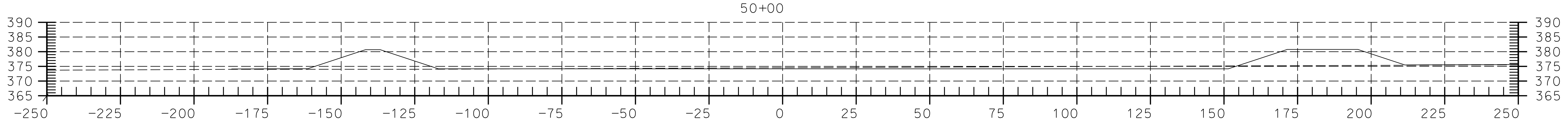
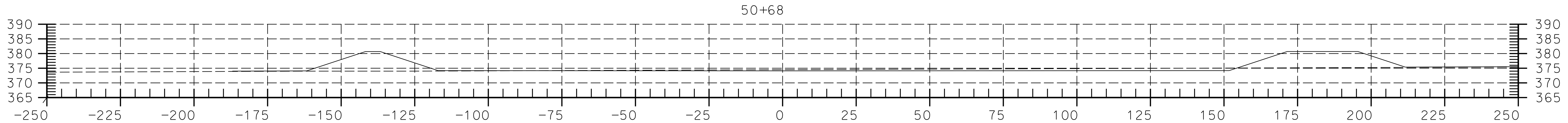
STA.50+00 TO STA.50+68





LEGEND:

- - - - - - - EXISTING GRADE

——————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY
A. PRATT

CHECKED BY
E. LEIBY

LEAD DESIGNER
J. DAHLGREN

ENGINEER/TECH SPECIALIST
B. ANDERS

PROJECT ENGINEERING MANAGER
B. ANDERS

PROJECT MANAGER
B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: STATE:
LIC. NO.: DATE:

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B/C CROSS SECTIONS

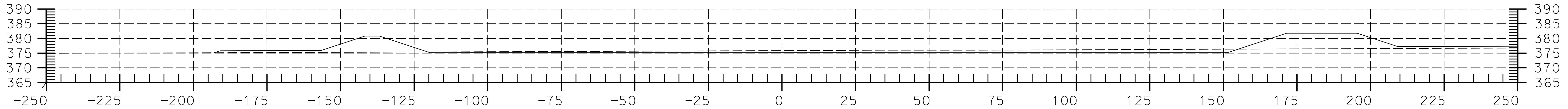
SCALE 1"=20'
DRAWING SIZE ARCH D (36" x 24")
WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-025
REV 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

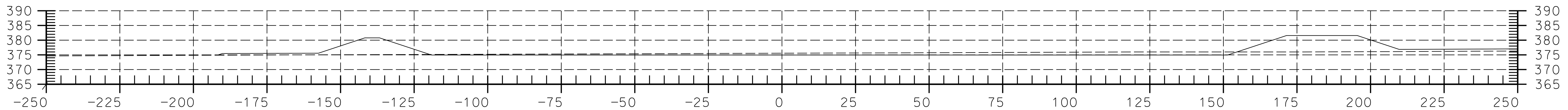
GENI-1-DW-112-716-004-025.dgn 1/14/2010 5:07:18 PM

STA.40+00 TO STA.48+00

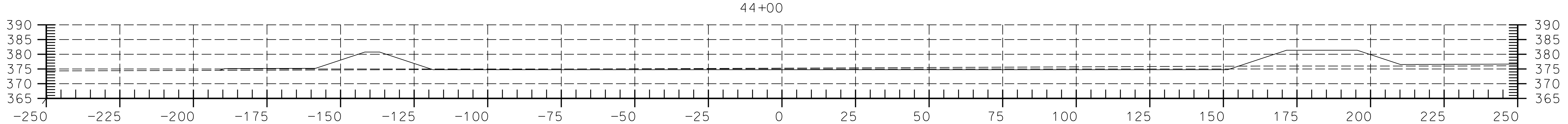
40+00



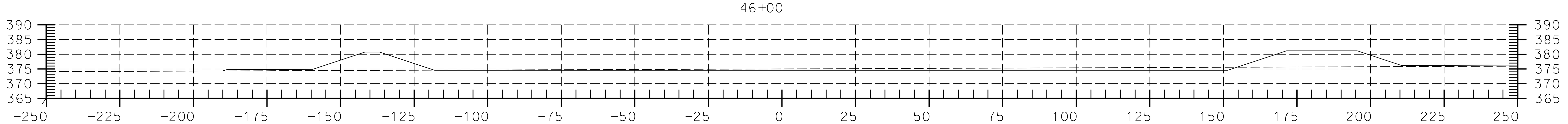
42+00



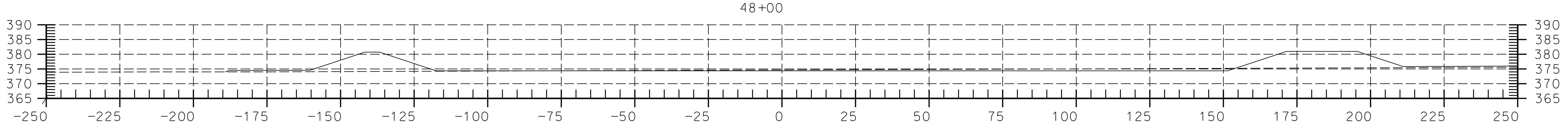
44+00



46+00



48+00



LEGEND:

- - - - - - EXISTING GRADE

———— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER J. DAHLGREN	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ____ STATE: ____
LIC. NO.: ____ DATE: ____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

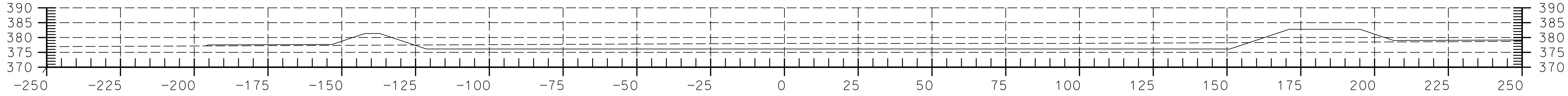
CHANNEL B/C CROSS SECTIONS

SCALE 1"=20'
DRAWING SIZE ARCH D (36" x 24")
WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-024
REV 1

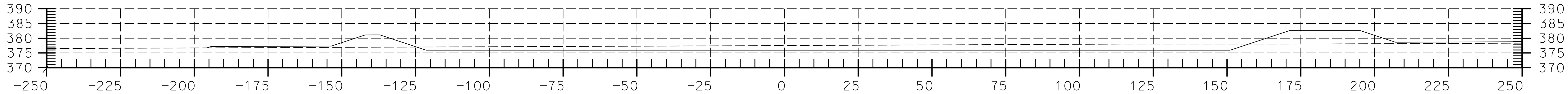
FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

STA.30+00 TO STA.38+00

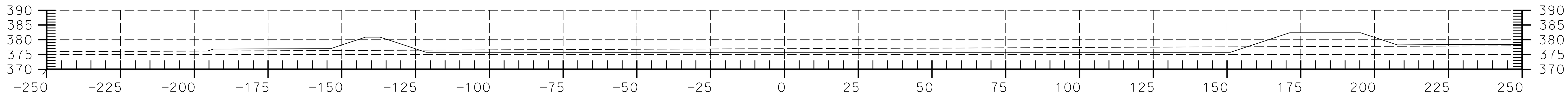
30+00



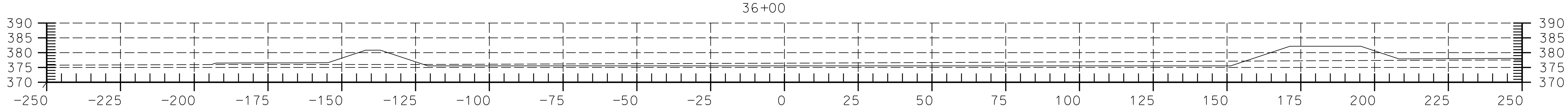
32+00



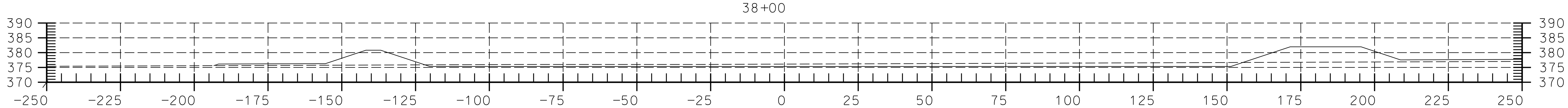
34+00



36+00



38+00



LEGEND:

- - - - - - - EXISTING GRADE

——————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECH SPEC	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS — DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS — DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL | PROFESSIONAL ENGINEER'S SEAL

DRAWN BY
A. PRATT

CHECKED BY
E. LEIBY

LEAD DESIGNER
J. DAHLGREN

ENGINEER/TECH SPECIALIST
B. ANDERS

PROJECT ENGINEERING MANAGER
B. ANDERS

PROJECT MANAGER
B. PIETRUCHA

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: STATE:
LIC. NO.: DATE:

WorleyParsons
resources & energy

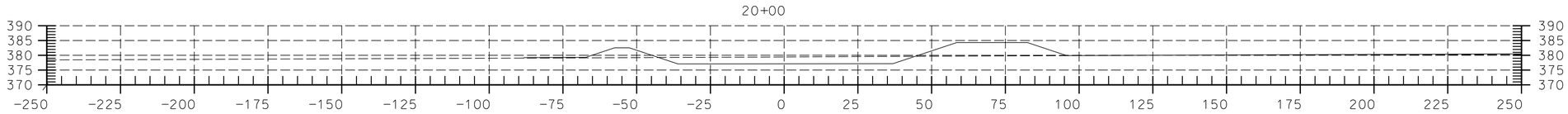
CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

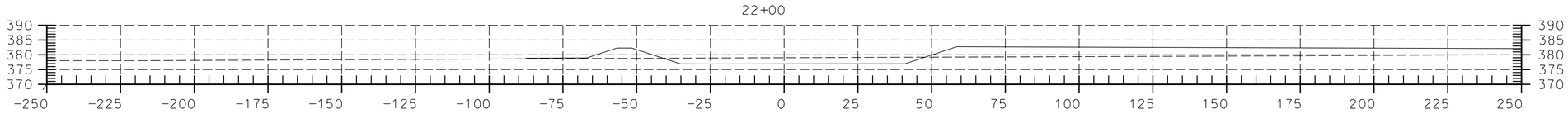
CHANNEL B/C CROSS SECTIONS

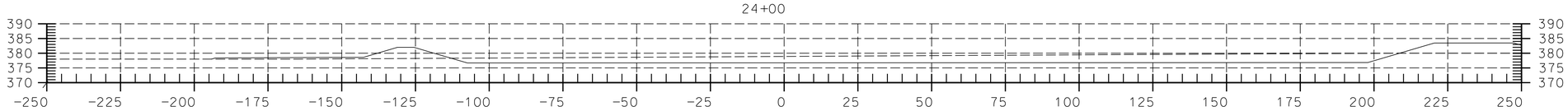
SCALE 1"=20'
DRAWING SIZE ARCH D (36" x 24")
WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-023
REV 1

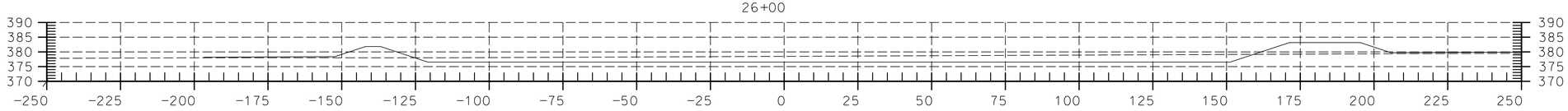
FILE NAME: $$$$DGNSPEC$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

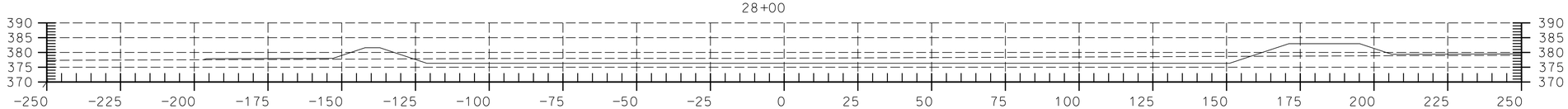
STA.20+00 TO STA.28+00











LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	ENGINEER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	APEL	JDB	ABA	BAB	ABA	BP

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED 'HOLD' RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B/C CROSS SECTIONS

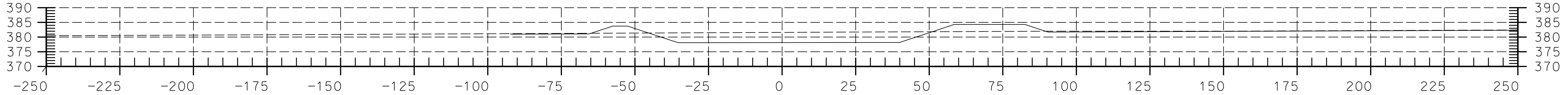
SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-022
REV: 1

FILE NAME: $$$$DONSPEC$$$$$$$$$$$$
$$$$TIME$$$$$
$$$$DATE$$$$$

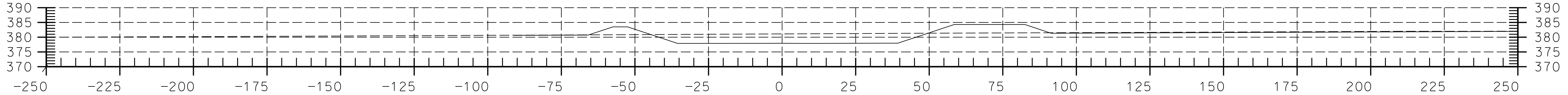
GENI-1-DW-112-716-004-022.dgn 1/14/2010 5:05:34 PM

STA.10+00 TO STA.18+00

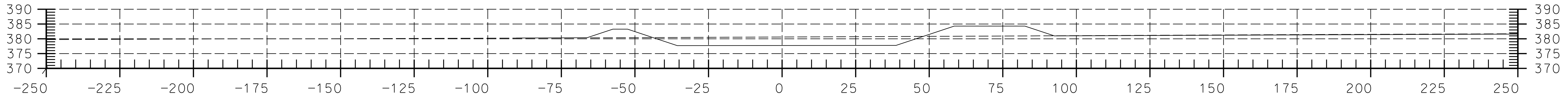
10+00



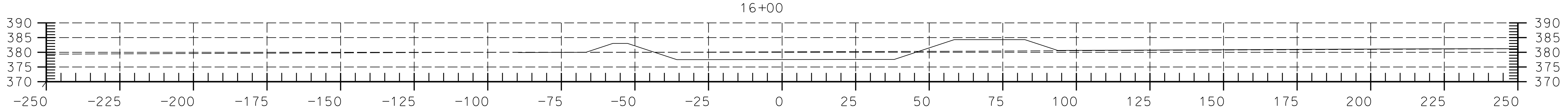
12+00



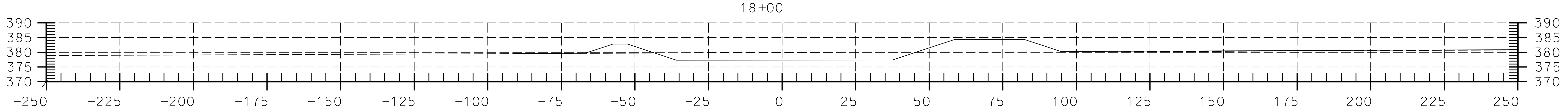
14+00



16+00



18+00



LEGEND:

- - - - - - - - EXISTING GRADE

———————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ___________ STATE: _______
LIC. NO.: _________ DATE: _______

Zero Harm — Leadership, No Incidents, Safe Behavior

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

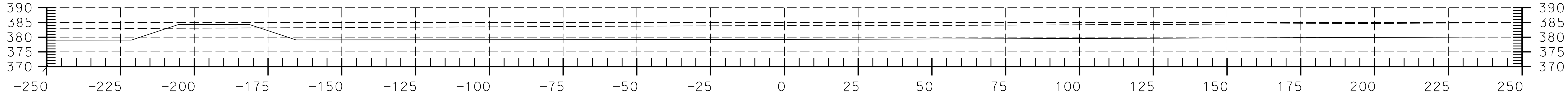
CHANNEL B/C CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-021
REV: 1

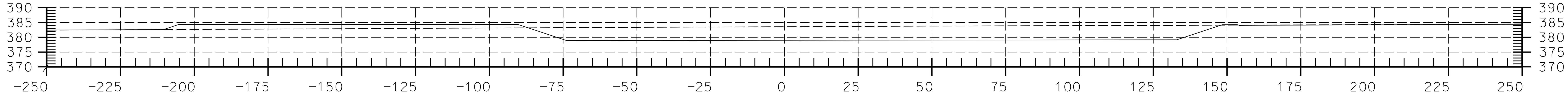
FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

STA.0+00 TO STA.8+00

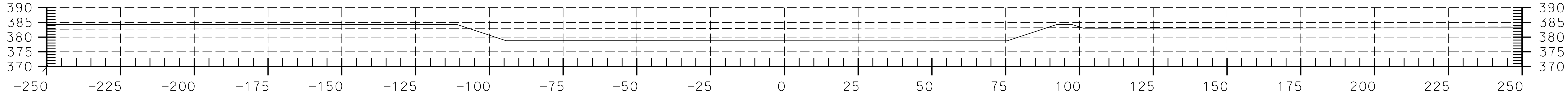
0+00



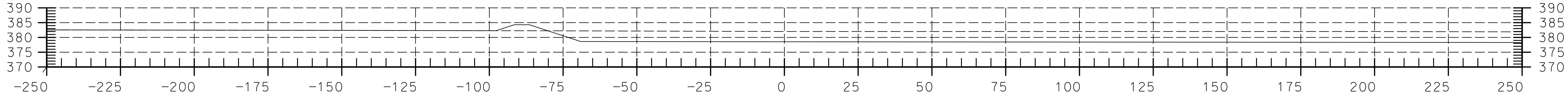
2+00



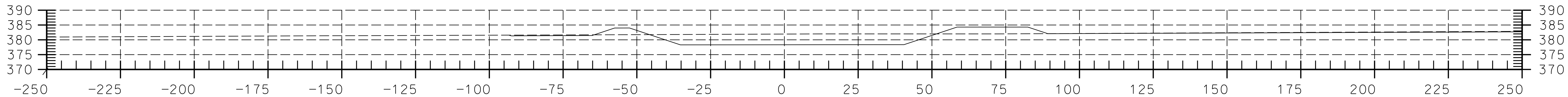
4+00



6+00



8+00



LEGEND:

- - - - - - - - EXISTING GRADE

———————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY A. PRATT	
CHECKED BY E. LEIBY	
LEAD DESIGNER J. DAHLGREN	
ENGINEER/TECH SPECIALIST B. ANDERS	
PROJECT ENGINEERING MANAGER B. ANDERS	
PROJECT MANAGER B. PIETRUCHA	
Zero Harm — Leadership, No Incidents, Safe Behavior	ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF PE: STATE: LIC. NO.: DATE:

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL B/C CROSS SECTIONS

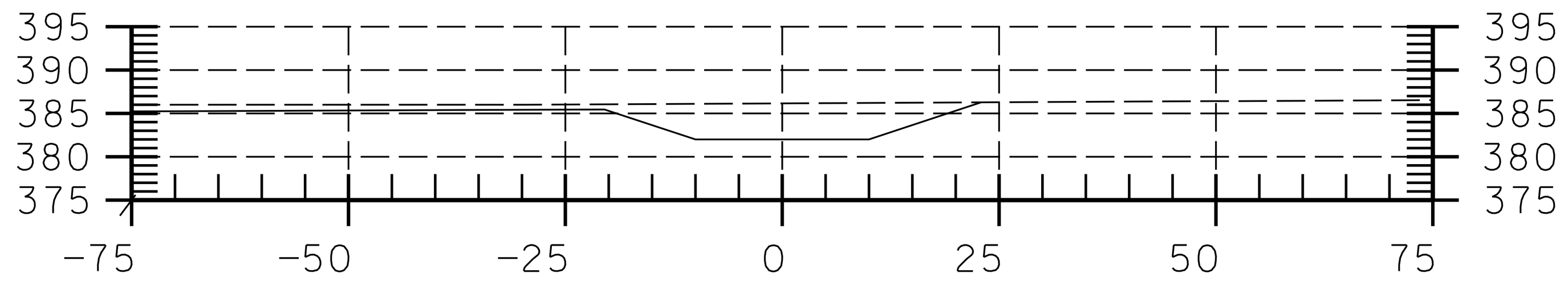
SCALE 1"=20' | DRAWING SIZE ARCH D (36" x 24")

WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-020 | REV 1

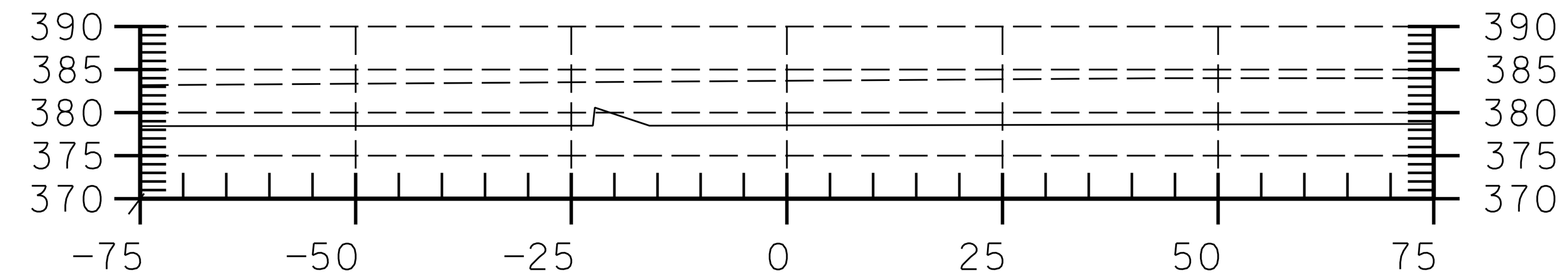
FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

STA.0+00 TO STA.13+18

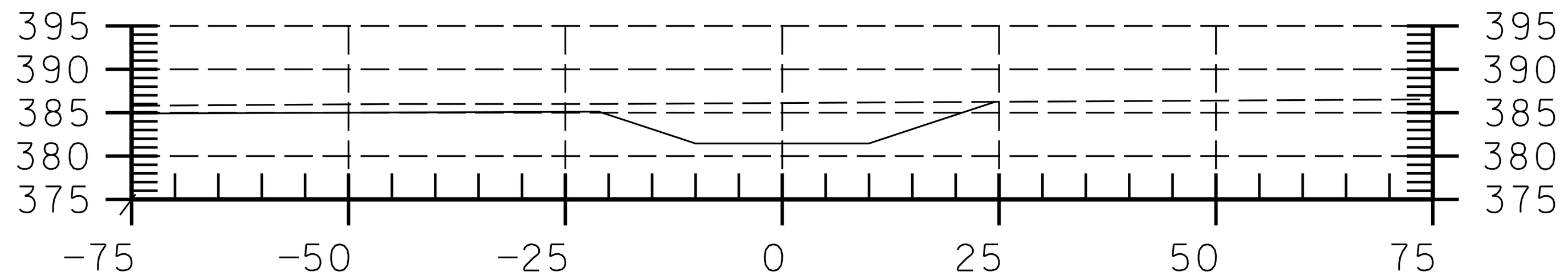
0+00



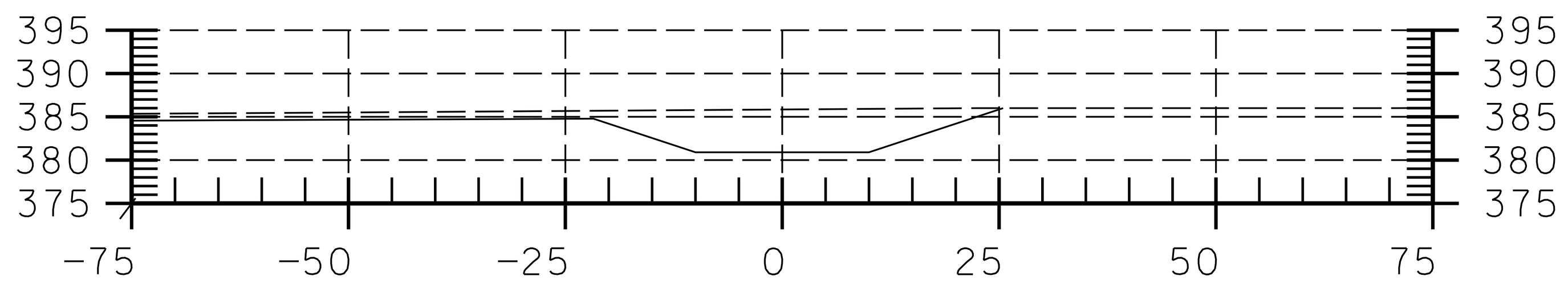
13+18



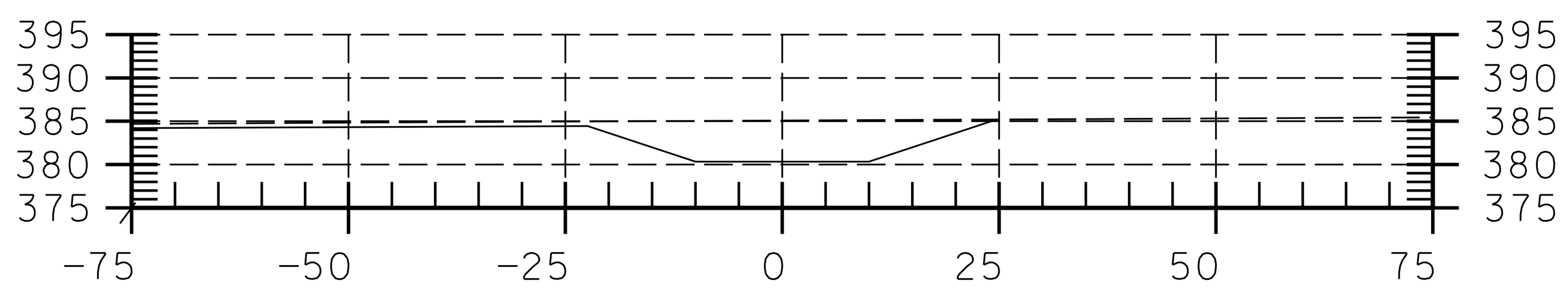
2+00



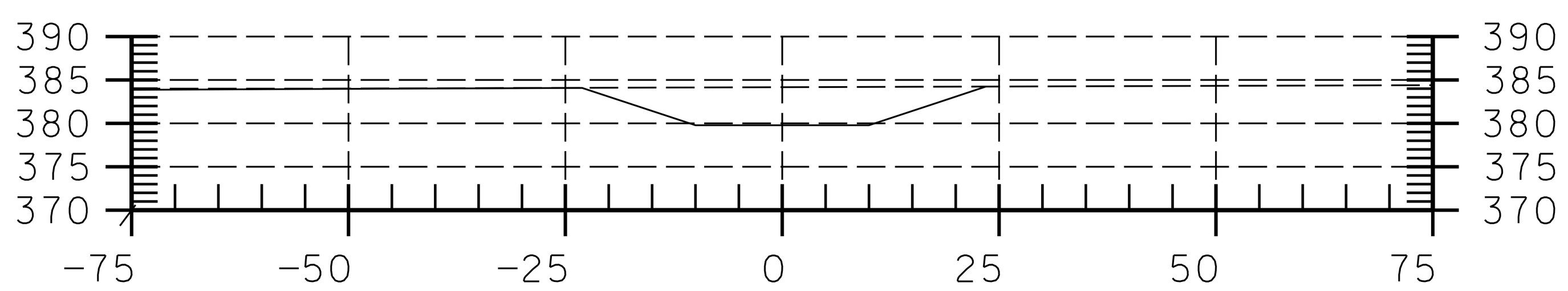
4+00



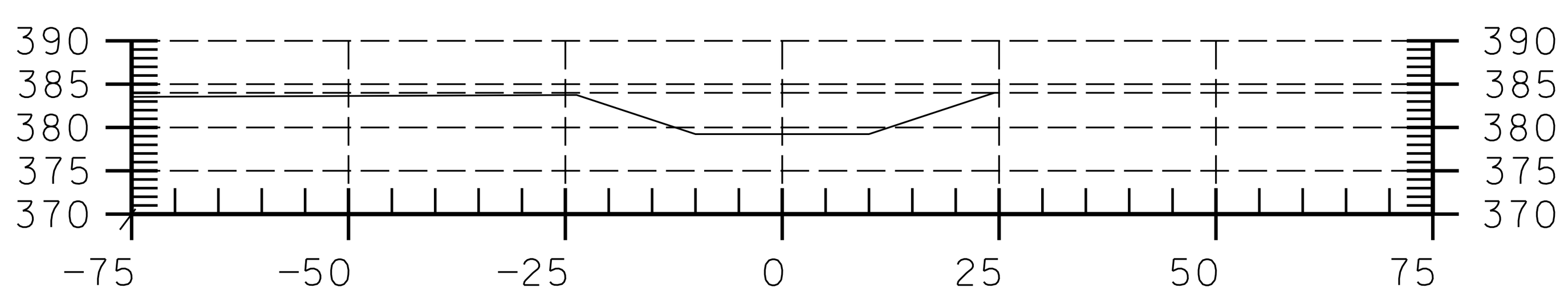
6+00



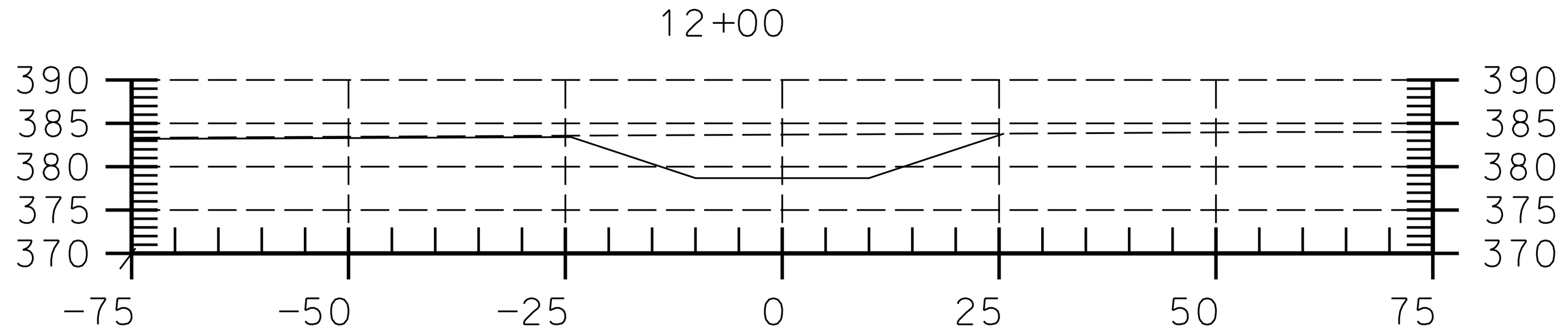
8+00



10+00



12+00



LEGEND:

------- EXISTING GRADE

——— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ______ STATE: ______
LIC. NO.: ______ DATE: ______

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

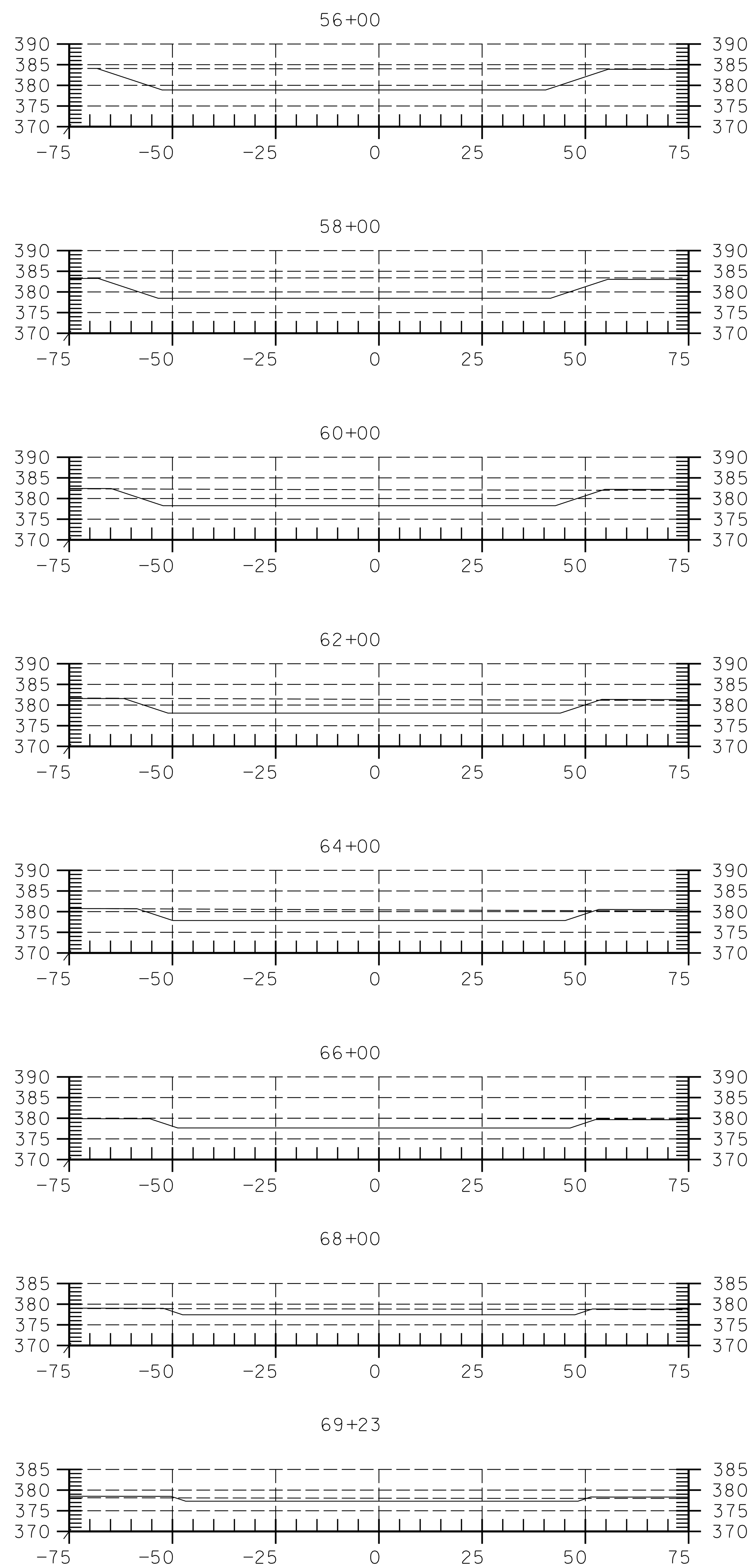
CHANNEL E CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-019
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

GENI-1-DW-112-716-004-019.dgn 1/14/2010 5:03:19 PM

STA.56+00 TO STA.69+23



LEGEND:

- - - - - - - - EXISTING GRADE

———————— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY
A. PRATT

CHECKED BY
E. LEIBY

LEAD DESIGNER
J. DAHLGREN

ENGINEER/TECH SPECIALIST
B. ANDERS

PROJECT ENGINEERING MANAGER
B. ANDERS

PROJECT MANAGER
B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: __________ STATE: ______
LIC. NO.: _________ DATE: ______

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

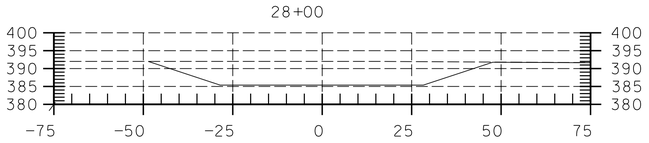
CHANNEL D CROSS SECTIONS

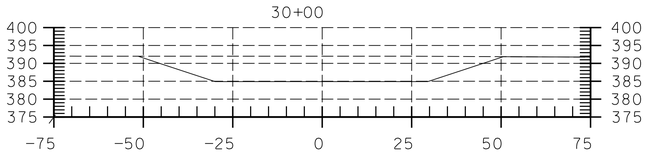
SCALE 1"=20'
DRAWING SIZE ARCH D (36" x 24")
WORLEYPARSONS DWG. NO. GENI-1-DW-112-716-004-018
REV 1

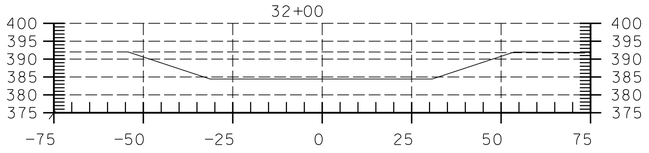
FILE NAME: $$$$DGNSPEC$$$$$$$$$$$$ $$$$DATE$$$$ $$$$TIME$$$$

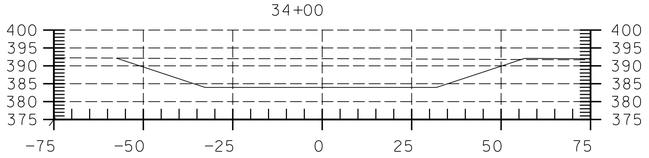
GENI-1-DW-112-716-004-018.dgn 1/14/2010 5:02:33 PM

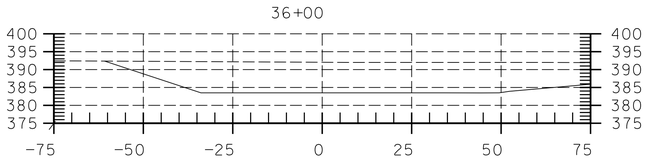
STA.28+00 TO STA.54+00

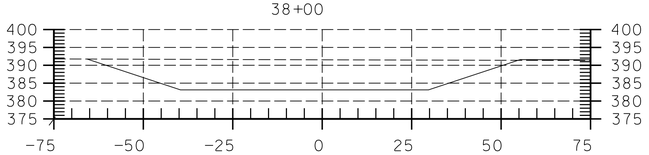


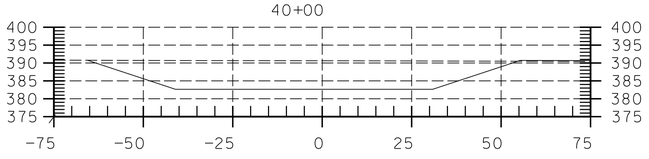


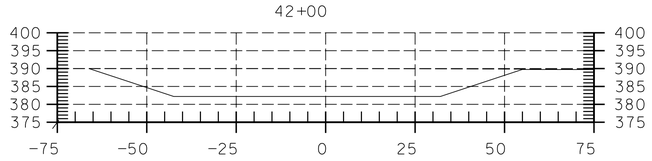


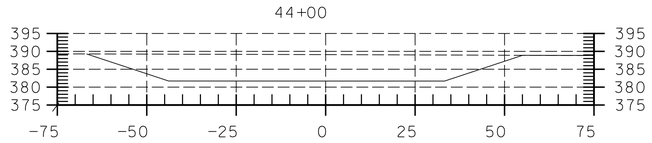


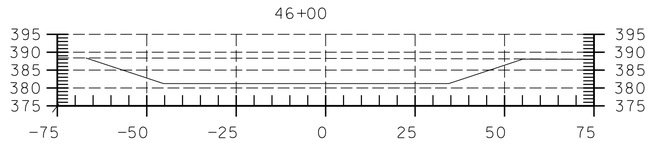


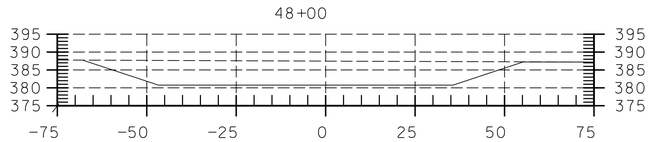


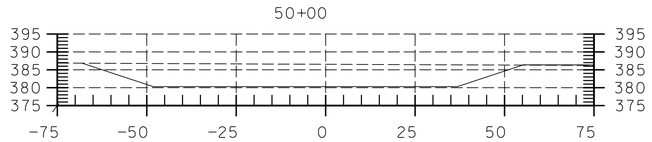


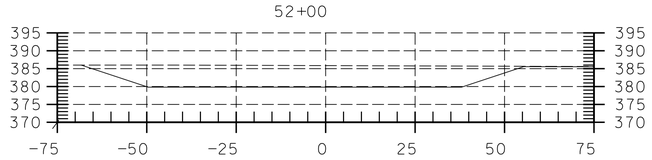


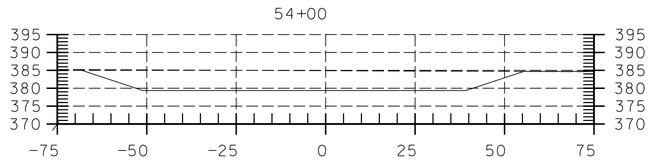












LEGEND:

EXISTING GRADE

PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LANDSCAPE ARCHITECT	PROJ. ENGR. MANAGER	PROJECT MANAGER
1	01/15/10	ISSUED FOR REVIEW	APE	LJD	BA	BA	BA	BP	

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: A. PRATT	
CHECKED BY: E. LEIBY	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: B. ANDERS	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. PIETRUCHA	

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

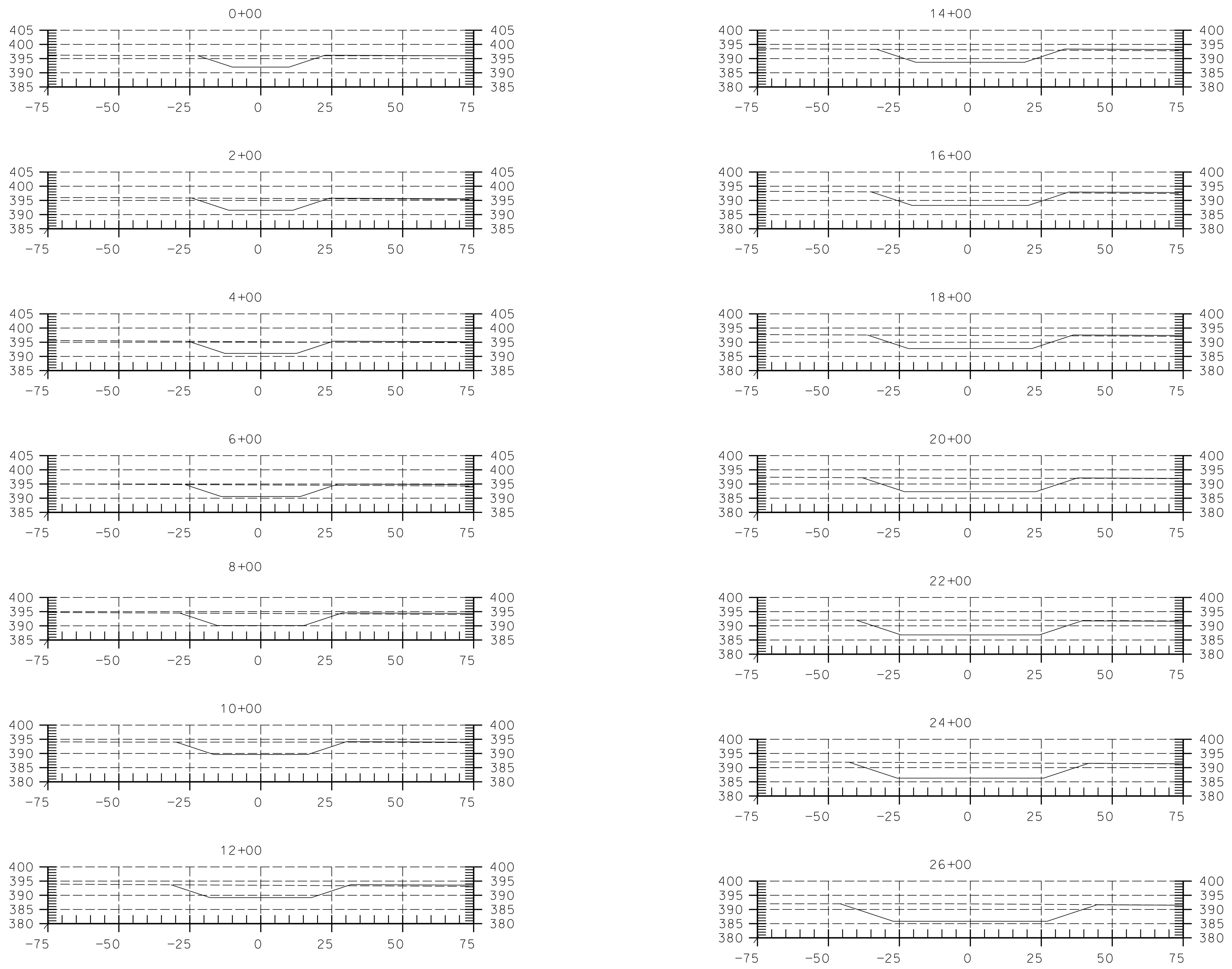
CHANNEL D CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-017
REV: 1

FILE NAME: $$$$$DGNSPEC$$$$$$$$$$
$$$$$DATE$$$$$ $$$$$TIME$$$$$

GENI-1-DW-112-716-004-017.dgn 1/14/2010 5:02:00 PM

STA.0+00 TO STA.26+00



LEGEND:

- - - - - - EXISTING GRADE

———— PROPOSED GRADE

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

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	LEAD DISC ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER
1	01 15 10	ISSUED FOR REVIEW	AP	EL	JD	BA	BA	BA	BP

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL

DRAWN BY: A. PRATT
CHECKED BY: E. LEIBY
LEAD DESIGNER: J. DAHLGREN
ENGINEER/TECH SPECIALIST: B. ANDERS
PROJECT ENGINEERING MANAGER: B. ANDERS
PROJECT MANAGER: B. PIETRUCHA

PROFESSIONAL ENGINEER'S SEAL

Zero Harm — Leadership, No Incidents, Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ____________ STATE: ________
LIC. NO.: __________ DATE: ________

WorleyParsons
resources & energy

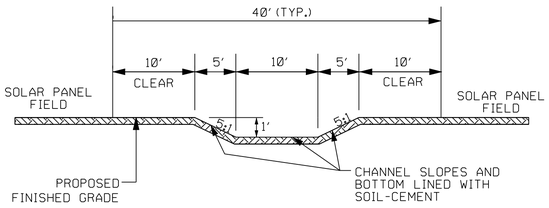
CLIENT/PROJECT TITLE
GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CHANNEL D CROSS SECTIONS

SCALE: 1"=20'
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-716-004-016
REV: 1

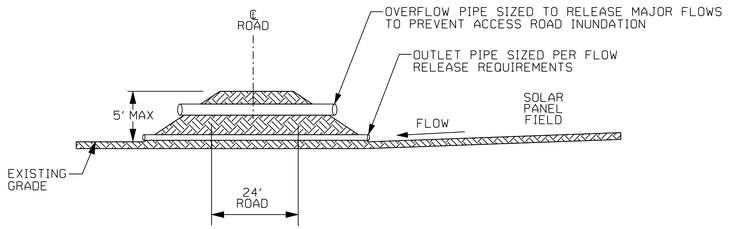
FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$DATE$$$$ $$$$TIME$$$$

GENI-1-DW-112-716-004-016.dgn 1/14/2010 5:01:14 PM



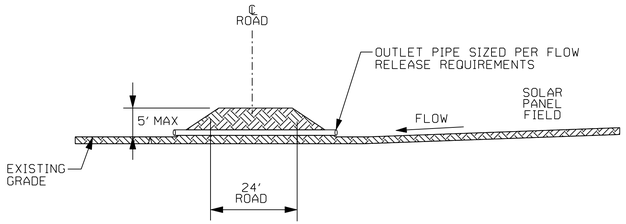
SECTION 1-1

SCALE: NTS



SECTION 2-2

SCALE: NTS



SECTION 3-3

SCALE: NTS

REFERENCES:

GENI-0-SK-111-002-001, GENERAL ARRANGEMENT, OVERALL SITE PLAN, FIGURE 3.4-1
GENI-1-DW-112-716-004-001, CONCEPTUAL GRADING PLAN, OVERALL PLAN, SHEET 1 OF 7
GENI-1-DW-112-716-004-003, CONCEPTUAL GRADING PLAN, SHEET 3 OF 7
GENI-1-DW-112-716-004-004, CONCEPTUAL GRADING PLAN, SHEET 4 OF 7
GENI-1-DW-112-716-004-005, CONCEPTUAL GRADING PLAN, SHEET 5 OF 7
GENI-1-DW-112-716-004-006, CONCEPTUAL GRADING PLAN, SHEET 6 OF 7
GENI-1-DW-112-716-004-007, CONCEPTUAL GRADING PLAN, SHEET 7 OF 7
GENI-1-DW-112-726-005-001, CONCEPTUAL GRADING DETAILS AND SECTIONS, SHEET 1 OF 2
DIVERSION CHANNEL CROSS SECTION SHEETS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	PROJECT ENGINEER	PROJECT MANAGER
2	12 03 09	ISSUED FOR REVIEW	JD	JD	JD	JB	JB	BA	BA
1		N/A							

PRELIMINARY STATUS — DATE — LDE
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE — LDE
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: J. DAHLGREN	
CHECKED BY: J. DAHLGREN	
LEAD DESIGNER: J. DAHLGREN	
ENGINEER/TECH SPECIALIST: J. BRAVO	
PROJECT ENGINEERING MANAGER: J. BRAVO	
PROJECT MANAGER: B. PIETRUCHA	

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ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

GENESIS SOLAR LLC
GENESIS SOLAR ENERGY PROJECT

CONCEPTUAL
GRADING PLAN SECTIONS
DRAWING 2 OF 2

SCALE: NOT TO SCALE
DRAWING SIZE: ARCH D (36" x 24")
WORLEYPARSONS DWG. NO.: GENI-1-DW-112-726-005-002
REV: 1

FILE NAME: $$$$DGNSPEC$$$$$$$$$$
$$$$TIME$$$$
$$$$DATE$$$$

..\GENI-1-DW-112-716-005-002.dgn 1/15/2010 1:41:16 PM

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV.

APPLICATION FOR CERTIFICATION FOR THE *GENESIS SOLAR ENERGY PROJECT*

Docket No. 09-AFC-8

PROOF OF SERVICE
(Revised 1/04/10)

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*indicates change

DECLARATION OF SERVICE

I, Bob Anders, declare that on January 15th, 2010, I served and filed copies of the attached ***Storm Water Flood Routing Calculation Report for the Genesis Solar Energy Project,*** dated January 15, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[http://ww.energy.ca.gov/sitingcases/genesis_solar].**

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

__x__ sent electronically to all email addresses on the Proof of Service list;

__x__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Original Signed By:

Bob Anders