M&T Pump Station Intake
Second Physical Model Report

Prepared for

TetraTech, Inc. and Ducks Unlimited, Inc.

Prepared by

A. L. Cox, J. L. Woidt, and C. I. Thornton

November 2011

Colorado State University
Daryl B. Simons Building *at the*
Engineering Research Center
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EXECUTIVE SUMMARY

In 1997, the M&T/Llano Seco Pumping and Fish Screening Facility was moved from its previous location on Big Chico Creek to its current site located on the east bank of the Sacramento River. Since this time, changes in channel morphology have resulted in lateral migration of the west bank and the formation of a large gravel bar that continues to migrate downstream from its present location directly upstream of the current pump intake. The combined effects of both conditions have resulted in increased sedimentation in the vicinity of the M&T/Llano Seco Pumping and Fish Screening Facility. Dredging has been conducted to continue operation of the M&T Pumping Facility and the expanding gravel bar has introduced concern regarding the viability of long-term operation at the current pump-intake location.

In 2010, TetraTech, Inc., on behalf of Ducks Unlimited, Inc., contracted the Colorado State University (CSU) Hydraulics Laboratory to construct and evaluate a physical model of the Sacramento River near the M&T Pumping Facility. The existing pump-intake location and two relocation sites were evaluated with three channel configurations. The evaluated three pump location sites were:

1. the current pump-intake location;
2. Proposed Alternative 1 site, located approximately 2,200 ft downstream of the current pump-intake location; and
3. Proposed Alternative 2 site, located approximately 3,500 ft downstream of the current pump-intake location.

Three channel configurations were tested to evaluate the hydraulic, morphologic, and sedimentation conditions near the three pump location sites and the City of Chico Water Pollution Control Plant (WPCP) outfall, located just upstream of the Proposed Alternative 1 site. The three channel configurations were the:

1. current field conditions, identified as the Baseline configuration, that included the hardening of the model banks to account for the rock toe and brush revetment installed along the west bank in October 2008;
2. Gravel-stockpile configuration that included construction of a gravel stockpile on the west floodplain near River Mile (RM) 160+00 from dredged channel-bed material; and
3. Realigned-bank configuration that included realignment, straightening, and revetting of the protruding east bank near RM 145+00 for further evaluation of the Proposed Alternative 2 site.

Three prototype discharges were tested to evaluate each of the pump location sites:

1. a 145,000 cubic feet per second (cfs) high discharge, estimated 10-yr recurrence interval flow;
2. a 90,000-cfs discharge, representing the bankfull discharge; and
3. a 10,000-cfs lower discharge, representing the 50% exceedance flow.

In the summer of 2010, the CSU Hydraulics Laboratory built a 1:100 Froude-scale, mobile-bed physical model of a 10,300-ft reach of the Sacramento River that encompassed the three pump locations. A non-cohesive silica sand with a median size (d_{50}) of 0.150 mm was used to model the 40-mm diameter prototype mobile-bed material; and a cohesive material was used to model the cohesive east bank along the downstream end of the project reach. For sediment scaling of the bed material, ratios of Shields parameter to critical Shields parameter, flow velocity to critical flow velocity, and the Rouse number were evaluated.

The testing program initiated with testing of all three discharges with the Baseline configuration. After the Baseline configuration testing was completed, the gravel bar was constructed on the west floodplain and the Gravel-stockpile configuration was tested with the 145,000-cfs discharge. The Gravel-stockpile configuration was not tested at the 10,000-cfs or 90,000-cfs discharges, as the lower discharges did not sufficiently inundate the gravel stockpile and thus did not affect low-flow conditions from the Baseline configuration. At the conclusion of the Gravel-stockpile configuration testing, the gravel stockpile was removed and the east bank was realigned, straightened, and revetted. The Realigned-bank configuration was tested with all three discharges. Additional 145,000-cfs Realigned-bank configuration testing was conducted to evaluate the effect of the realignment on sedimentation patterns near the WPCP outfall.

The Baseline configuration testing indicated that sedimentation would continue at the current pump-intake location, thus supporting the need to consider alternate pump locations. Lower flow velocities compared to the main channel were observed near the current pump-intake location during the 90,000-cfs and 145,000-cfs discharge testing. The following summarizes the erosion and sedimentation trends observed from the 145,000-cfs Baseline configuration testing:

- aggradation of up to 5 ft at the current pump-intake location;
- aggradation of up to 5 ft in the main channel near the Proposed Alternative 1 site;
- a strip of degradation of 2 to 5 ft along the bank near the Proposed Alternative 1 site, which continued tangentially downstream from the east-bank protrusion;
- negligible aggradation and degradation at the Proposed Alternative 2 site; and
- negligible aggradation and degradation at the WPCP outfall.

The Gravel-stockpile configuration testing yielded similar results to the Baseline configuration and suggested the gravel stockpile would have a minimal effect on the hydraulics and sedimentation trends within the reach. Conversely, the Realigned-bank configuration testing yielded distinct differences in hydraulic and sedimentation trends when compared to the Baseline and Gravel-stockpile configurations. Flow velocities at the current pump-intake location and the Proposed Alternative 2 site were consistent with the Baseline configuration testing; however, main-channel flow velocities were higher for the Realigned-bank configuration indicating that straightening of the bank produces a higher concentration of flow near the thalweg. The following summarizes the erosion and sedimentation trends observed from the 145,000-cfs Realigned-bank configuration testing:

- aggradation of up to 5 ft immediately northwest of the current pump-intake location;
- an aggradation zone of 2 to 5 ft near the Proposed Alternative 1 site and just downstream of the WPCP outfall; and
- negligible bed-elevation changes in the area of the Proposal Alternative 2 site.

The following conclusions were drawn from the physical model results:

- continued sedimentation up to 5 ft is expected with existing field conditions near the current pump-intake location;
- construction of the gravel stockpile on the west floodplain would have an insignificant effect on the hydraulics and erosion and sedimentation trends within the study reach;
- the Proposed Alternative 1 site may be suitable for pump-intake relocation because the model predicted degradation up to 5 ft near the Proposed Alternative 1 site for both the existing field conditions and with the construction of the gravel stockpile;
- the Proposed Alternative 2 site may be suitable for pump-intake relocation because the model indicated minimal aggradation and degradation near the Proposed Alternative 2 site; the Proposed Alternative 2 site experienced the most consistent bed elevations with minimal aggradation and degradation in the surrounding areas as compared to the other evaluated pump location sites; and
- the model indicated aggradation immediately upstream of the WPCP outfall and degradation immediately downstream of the WPCP outfall with the bank realignment for the Proposed Alternative 2 site; the measured upstream aggradation suggests that a maximum of 2 ft of aggradation could be expected at the WPCP outfall.

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Symbols

+, -	aggradation and degradation, respectively
d_{50}	50% exceedance sediment diameter; median sediment diameter
E_p	prototype easting coordinates
L	length
L_r	length ratio
m, p	subscripts for model and prototype, respectively
N_p	prototype northing coordinates
q	unit discharge
q_{br}	bedload discharge ratio
Q	discharge
R_0	Rouse number
t_{br}	sediment time ratio
T	time
V	flow velocity
V_c	critical flow velocity for sediment
V_x	flow velocity component parallel to stream flow
V_y	flow velocity component orthogonal to stream flow
X	X-axis coordinate
X_m	model X-axis coordinates (longitudinal direction)
Y	Y-axis coordinate
Y_m	model Y-axis coordinates (lateral direction)
Z	Z-axis coordinate
$Z_{bed,post}$	post-test bed elevation
$Z_{bed,pre}$	pre-test bed elevation
Z_m	model Z-axis coordinates (elevation)
Z_p	prototype Z-axis coordinates (elevation)
Z_{WSL}	point-gage measurement of water surface level
τ	shear stress
τ_*	Shields parameter; dimensionless shear stress
τ_{*C}	critical Shields parameter

Units of Measure

cfs	cubic foot per second or cubic feet per second
ft	foot or feet
ft/s	foot per second or feet per second
hr(s)	hour(s)
in.	inch(es)
lb(s)/ft^2	pound(s) per square foot
L	length dimension
mm	millimeter(s)

M	mass dimension
%	percent
RM	River Mile
s	second(s)
T	time dimension
yr(s)	year(s)

Abbreviations

Alt 1	Proposed Alternative 1 site
Alt 2	Proposed Alternative 2 site
CSU	Colorado State University
ERC	Engineering Research Center
ESRI	Environmental Systems Research Institute, Inc.
GIS	Geographical Information System
H:V	horizontal-to-vertical
ID	identification
IDW	inverse distance weighting
LiDAR	Light Detection And Ranging
MEI	Mussetter Engineering, Incorporated
N/A	not applicable
N/S	north/south cross section
NAD	North American Datum
PVC	polyvinylchloride
®	registered
RMA2	multi-dimensional hydrodynamic modeling engine written by Resource Management Associates, Lafayette, California
SPCS	State Plane Coordinate System
TTI	TetraTech, Incorporated
USGS	U.S. Geological Survey
WPCP	City of Chico Water Pollution Control Plant
XS	cross section

1. INTRODUCTION

In 1997, the M&T/Llano Seco Pumping and Fish Screening Facility was moved from its previous location on Big Chico Creek to a site located on the east bank of the Sacramento River, near River Mile (RM) 193. Since this time, changes in channel morphology have resulted in lateral migration of the west bank and the formation of a large gravel bar that continues to migrate downstream from its present location directly upstream of the pump intake and the tributary with Big Chico Creek. The combined effects of both conditions have resulted in increased sedimentation in the vicinity of the M&T/Llano Seco Pumping and Fish Screening Facility (hereafter referred to as the M&T Pumping Facility), placing facility operation in jeopardy. Figure 1-1 depicts the study area and river stationing on the Sacramento River, which is located in California near the City of Chico. Mussetter Engineering, Inc. (MEI), now TetraTech Inc. (TTI), concluded that hydraulic conditions favoring deposition at the gravel-bar location and current pump intake will persist under the current channel morphology. Further migration of the west bank will increase the propensity for sediment deposition, thereby increasing undesirable conditions at the M&T Pumping Facility (MEI, 2006).

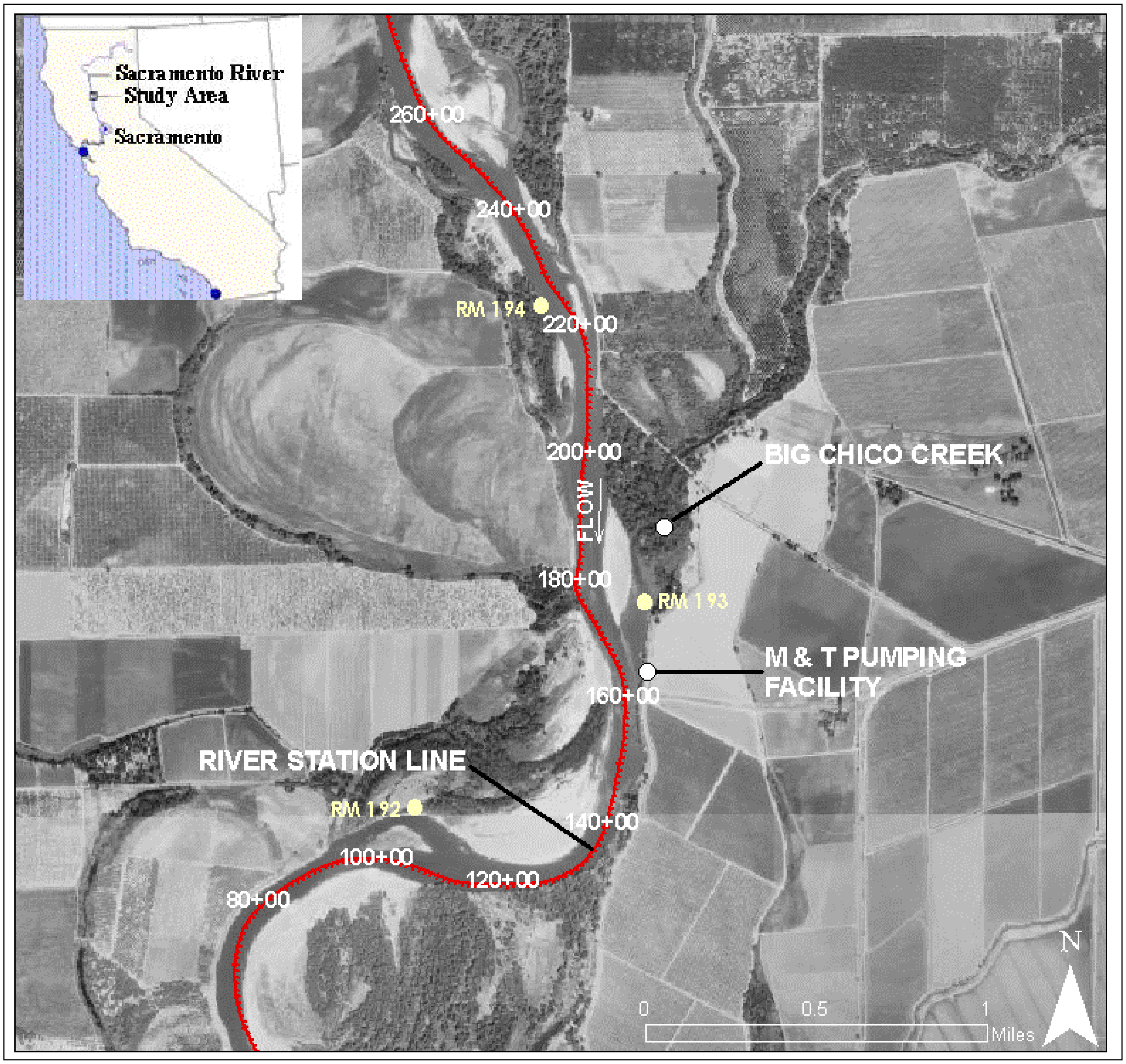

Figure 1-1: Aerial photograph of the study reach (adapted from TerraServer USA (2008)).

In 2007, Colorado State University (CSU) was contracted by MEI to construct, test, and analyze a 1:75-scale physical model of the Sacramento River (Cox *et al*., 2008). Model evaluation focused on hydraulics and morphologic conditions near the M&T Pumping Facility. The analysis included evaluating structural, maintenance, and relocation solutions to the problem of sedimentation at the M&T Pumping Facility. Tests included evaluation of spur-dike options on the west bank of the river, dredge channel options, and one relocation site approximately 670 ft downstream of the current pump-intake location. Results of the initial testing included inadequate performance of maintenance solutions, such as channel dredging, and continuation of detrimental sedimentation patterns under baseline testing conditions. Additionally, 2007 testing results indicated that a nine-dike structural option would accomplish the project goals of stabilizing the west bank and preventing excess sedimentation near the pump intake; however, property ownership did not allow for implementation of the nine-dike option.

In 2010, TTI contracted with CSU to construct and evaluate a second physical model (1:100-scale) to analyze alternative solutions to the current sedimentation problems. Specifically, hydraulic, morphologic, and sedimentation conditions near two proposed pump relocation sites in addition to the current pump-intake location were to be analyzed. The proposed relocation sites were approximately 2,200 ft (Proposed Alternative 1) and 3,500 ft (Proposed Alternative 2) downstream of the current pump-intake structure. The main goals of the study were:

1. Utilization of as much of the previous model as possible to construct a 1:100 Froude-scale model of the project area from approximately River Station 120+00 upstream to Station 230+00 (Figure 1-1).
2. Quantification of flow-velocity patterns and long-term erosion and sedimentation patterns, near both proposed intake locations, as well as the current pump-intake location, under the following conditions:

    a. current field conditions, identified as baseline conditions throughout the report;
    b. construction of a gravel stockpile on the west floodplain, to be constructed of dredged channel material from current maintenance activities, located near RM 160+00; and
    c. realignment, straightening, and revetting of the protruding east bank near RM 145+00 for further evaluation of the Proposed Alternative 2 site.

The scope of the test program focused on the flow-velocity distributions, and erosion and sedimentation trends for the existing and proposed intake sites. Flow conditions that were modeled included:

1. a 145,000 cubic feet per second (cfs) high discharge, representing the estimated 10-yr recurrence interval flow;
2. a 90,000-cfs discharge, representing the bankfull discharge; and
3. a 10,000-cfs low discharge, representing the 50% exceedance flow.

Results from baseline testing of the physical model with 10,000 cfs and 90,000 cfs were consistent with the results from the previous model study (Cox *et al*., 2008) and with trends observed in the field. The 10,000-cfs, 90,000-cfs, and 145,000-cfs discharges were tested to obtain flow-velocity distributions, and measure erosion and sedimentation trends for both the baseline and realigned channel-bank conditions. The inclusion of a gravel stockpile was tested exclusively at the 145,000-cfs discharge as it was located outside of the water surface extents of the 90,000-cfs flow. During testing, a continuous and uniform supply of sand was input at the upstream end of the model to simulate sediment transport in the gravel-bed prototype system.

2. PHYSICAL MODEL DEVELOPMENT

Physical modeling involved the construction of an undistorted, 1:100 Froude-scale model of a 10,300-ft reach of the Sacramento River, between River Stations 120+00 and 230+00. Figure 2-1 identifies the extent of the physical model on an aerial photograph of the Sacramento River. An existing flume at the CSU Engineering Research Center (ERC) Hydraulics Laboratory was modified to accommodate the research program. Section 2.1 and Section 2.2 detail the scale and construction of the physical model, respectively.

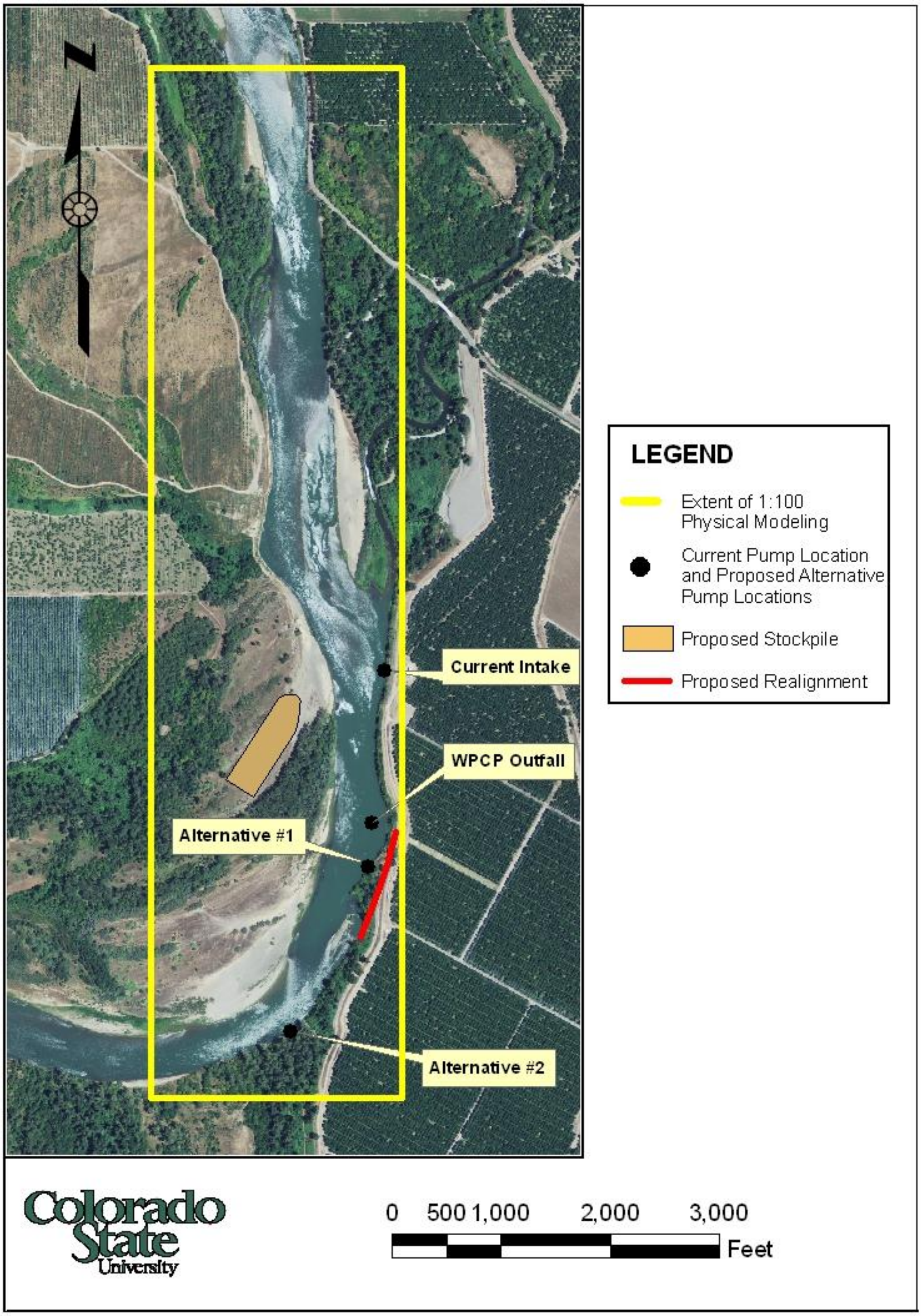

Figure 2-1: Physical model limits.

2.1. MODEL SCALING

An undistorted, 1:100-scale physical model was constructed that maintained Froude similitude and approximated Shields parameter and critical flow-velocity ratio similitude. Table 2-1 provides a summary of the Froude-scale conversions.

Table 2-1: Froude-scale conversions.

Variable	Symbol	Dimension	Similitude Relationship[a]
Length	L	L	$L_p = 100 \cdot L_m$
Time	T	T	$T_p = 10 \cdot T_m$
Flow Velocity	V	L/T	$V_p = 10 \cdot V_m$
Shear Stress	τ	M/LT^2	$\tau_p = 100 \cdot \tau_m$
Discharge	Q	L^3/T	$Q_p = 100{,}000 \cdot Q_m$
Unit Discharge	q	L^2/T	$q_p = 1{,}000 \cdot q_m$

[a] where subscripts *m* and *p* denote model and prototype, respectively

Two different sediment types were used for the physical model: 1) a non-cohesive silica sand with a median size (d_{50}) of 0.150 mm was used to model the 40-mm diameter prototype mobile-bed material; and 2) a cohesive material was used to model the cohesive east bank along the downstream end of the project reach. Extents of the fine sand and cohesive soils are illustrated in Figure 2-2. The model included a rigid bank at the location of the rock toe and brush revetment that was installed in 2008. Appendix A provides grain-size distributions for the sediment materials used in the physical model.

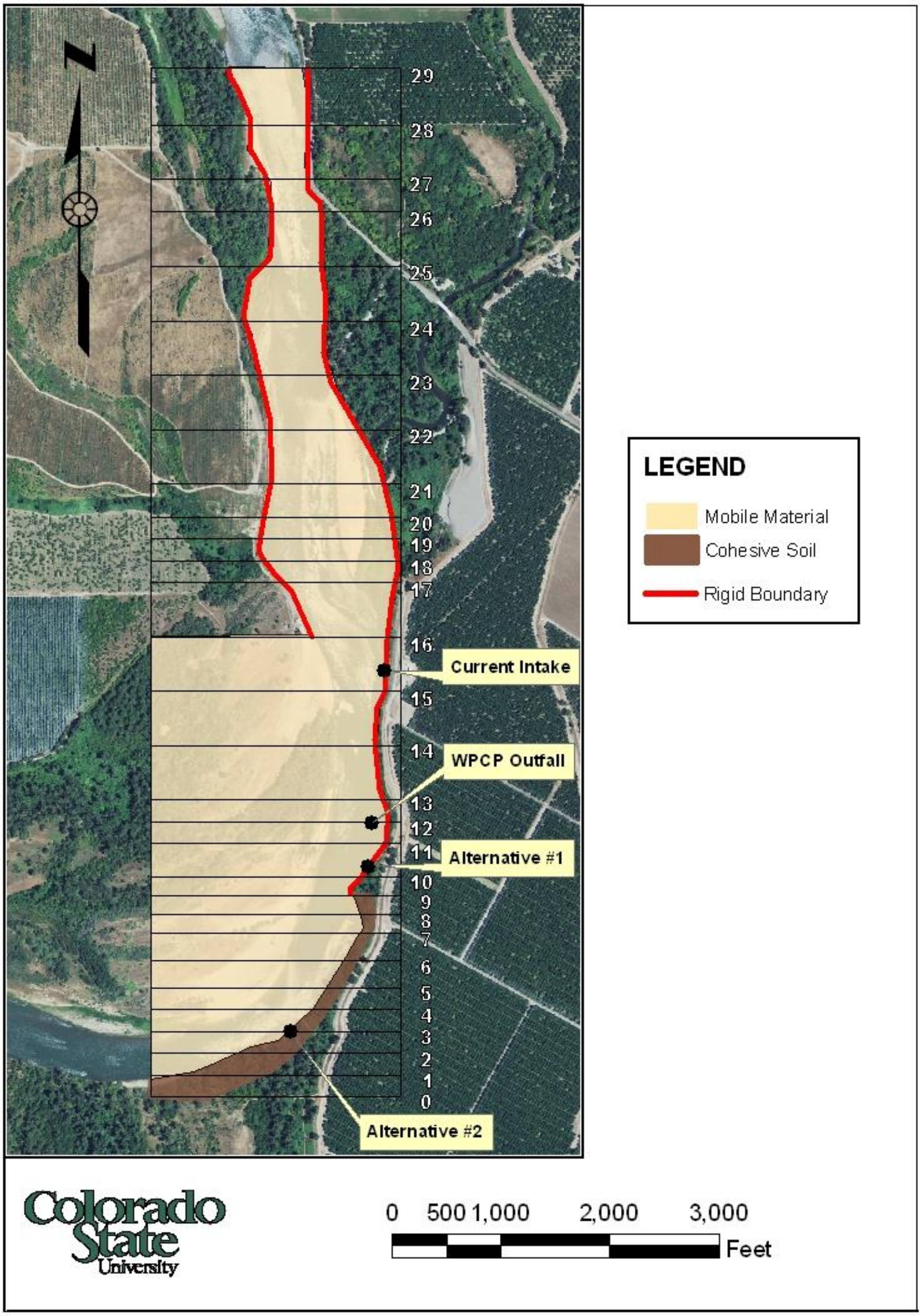

Figure 2-2: Model soil boundaries.

The mobile sediment size was selected based on investigating the Rouse number, *flow velocity* to *critical flow velocity* ratio, and *Shields parameter* to *critical Shields parameter* ratio similitude. Table 2-2 provides a summary of each computed scaling parameter for the fine-sand material based on the output from a two-dimensional RMA2 model developed by MEI (April 12, 2007). The selected non-cohesive sediment scaled most favorably in terms of the *Shields parameter* to *critical Shields parameter* ratio and the *flow velocity* to *critical flow velocity* ratio.

Table 2-2: Summary of sediment scaling variables for the very fine sand.

		Model	Prototype	Ratio	
Rouse Number[a,b]	R_0	7.23	1.84	R_{0p}/R_{0m}	3.93
Critical Flow-velocity Ratio[a,c]	(V/V_c)	0.49	0.68	$(V/V_c)_p/(V/V_c)_m$	0.72
Critical Shields Parameter Ratio[a,d]	(τ_*/τ_{*C})	1.77	2.34	$(\tau_*/\tau_{*C})_p/(\tau_*/\tau_{*C})_m$	0.76

[a] where: subscripts *m* and *p* denote model and prototype, respectively
[b] where: R_0 = Rouse number
[c] where: V = average flow velocity, V_c = critical flow velocity for sediment
[d] where: τ_* = Shields parameter, τ_{*C} = critical Shields parameter

In addition to the physical properties of the mobile sediment, time required to simulate sediment transport processes needed to be quantified. An adaptation of the Exner equation was used to compute the sediment time scale (Paola and Voller, 2005). Equation 2-1 is the formula used to compute the sediment time scale:

$$t_{br} = \frac{L_r^2}{q_{br}} \qquad \textbf{Equation 2-1}$$

where:

t_{br} = sediment time ratio;
L_r = length ratio; and
q_{br} = bedload discharge ratio.

The sediment time scale associated with bed material (t_{br}) was determined to be 22.9. Therefore, 1 hr of model testing would represent 22.9 hrs in the prototype.

Three discharges, 10,000 cfs, 90,000 cfs, and 145,000 cfs, were selected for modeling and scaled according to the Froude number. The lowest flow, 10,000 cfs, was identified as approximately a 50% exceedance flow, based on the mean daily flow record at the Hamilton City U.S. Geological Survey (USGS) stream gage, and fell within normal facility operation limits of 4,000 cfs to 14,000 cfs. The 2-yr flood event of 90,000 cfs produced bankfull conditions. The 145,000-cfs flow, based on the 10-yr flood event, was the maximum test flow and was used to investigate erosion and sedimentation trends. When scaled to model discharges, 10,000 cfs, 90,000 cfs, and 145,000 cfs represent 0.10 cfs, 0.90 cfs, and 1.45 cfs, respectively. Table 2-3 provides a summary of the prototype and model discharges.

Table 2-3: Prototype and model discharges.

Prototype Discharge (cfs)	Model Discharge (cfs)	Description
10,000	0.10	50% Exceedance Flow
90,000	0.90	2-yr Recurrence Flow; Approximate Bankfull Flow
145,000	1.45	10-yr Recurrence Flow

In summary, a 1:100 Froude-scale model was utilized for the physical model. Hydraulic scaling was based on the Froude number, and sediment scaling was based on the Rouse number, *flow velocity* to *critical flow velocity* ratios, and the *Shields parameter* to *critical Shields parameter* ratios. A sediment time scale ratio, t_{br}, of 22.9 was computed from a modification of the Exner equation. Table 2-4 provides a summary of the scaled hydraulic and sediment values.

Table 2-4: Scaled variables.

	Variable	Prototype	Model
Hydraulics	Elevation, Length (example)	110 ft	1.10 ft
	Flow Depth (example)	25.0 ft	0.25 ft
	Discharge	145,000 cfs	1.45 cfs
	Flow Velocity (example)	6 ft/s	0.60 ft/s
	Shear Stress	2 lbs/ft^2	0.02 lbs/ft^2
	Time	60 s	6 s
Sediment	Sediment d_{50}	40 mm	0.15 mm
	Time	22.9 hrs	1 hr

2.2. MODEL CONSTRUCTION

Construction of the physical model commenced in June of 2010 and was completed in August of the same year. Installation included the following:

- thirty concrete cross sections, spanning the east-west direction;
- one concrete cross section, spanning the north-south direction, at the downstream end of the model;
- very-fine sand material to model the mobile-bed and floodplain sediment;
- cohesive loam material to model the stream banks along the downstream east bank;
- a mesh baffle to straighten flow into the model;
- a downstream gate to control backwater; and
- installation of trees and canopy.

The following sub-sections detail how the model was constructed, including cross-section data, material used for modeling mobile sections of the model, and components installed to control backwater and approach conditions.

2.2.1. GENERAL MODEL CONSTRUCTION

Data from two surveys were provided to CSU by TTI and used to develop thirty cross sections of the modeled reach. Overbank elevation data were from a survey conducted in 1996 by Ayres Associates. A higher resolution survey, conducted by TTI in January 2010, provided bathymetric and topographic data for the majority of the river channel and portions of the floodplain in the study reach. Figure 2-3 identifies the location of each cross section on an aerial photograph. Cross-section 0 was located at the downstream-most portion of the reach with cross-section designations increasing upstream. Stationing for each cross section was referenced looking downstream, with Station 0 at the left and station numbering increasing left to right.

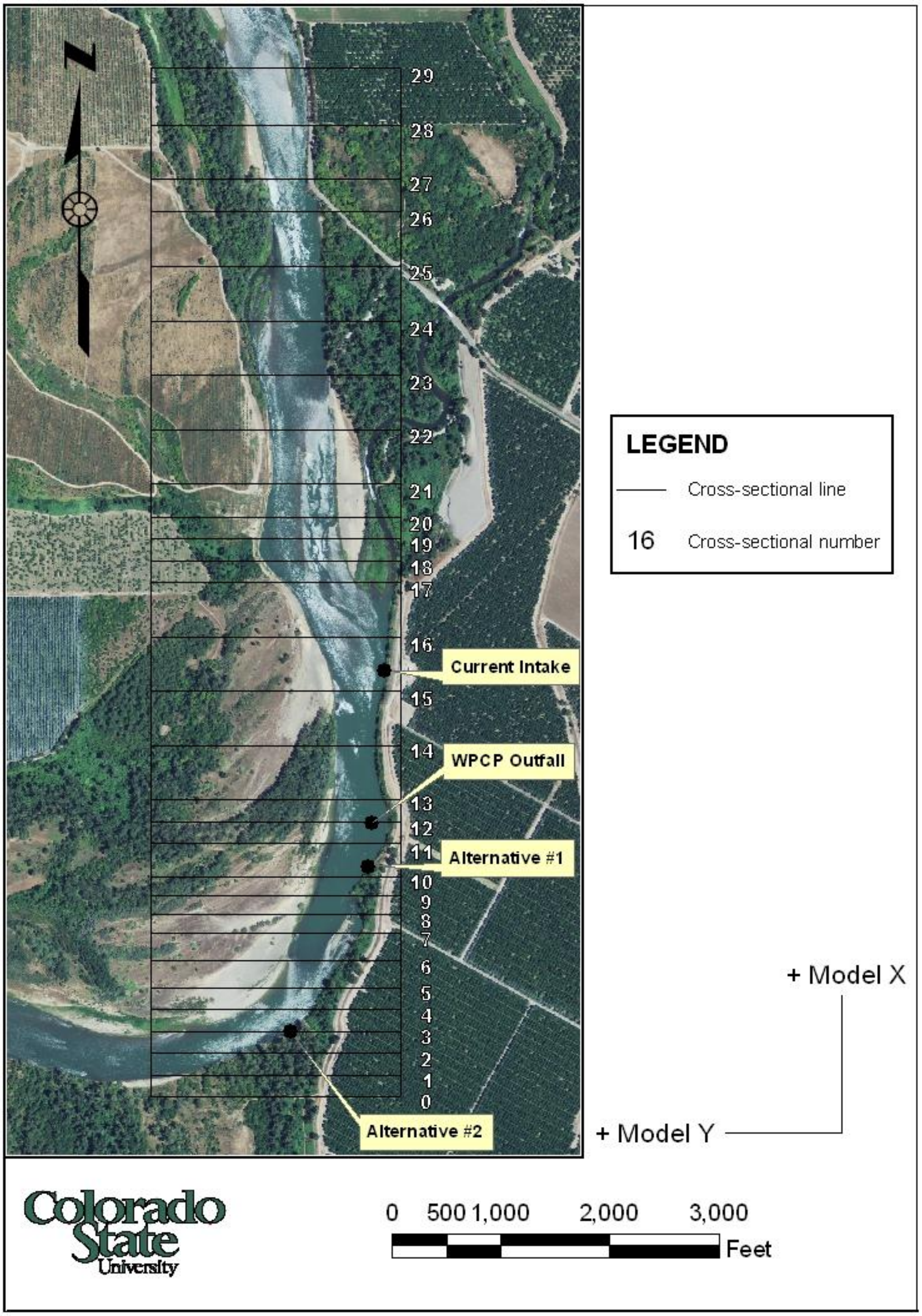

Figure 2-3: Model cross sections and axes.

Based on cross-section data and plan-view extents of mobile-bed regions, the vertical extents of the mobile section were determined at each cross section. Figure 2-4 provides an example cross section, incorporating mobile sections for the channel material and the cohesive left bank. Appendix B provides the full set of equations used to convert prototype topography data to model values and vice versa, and Appendix C provides data detailing each of the thirty cross sections used to construct the model.

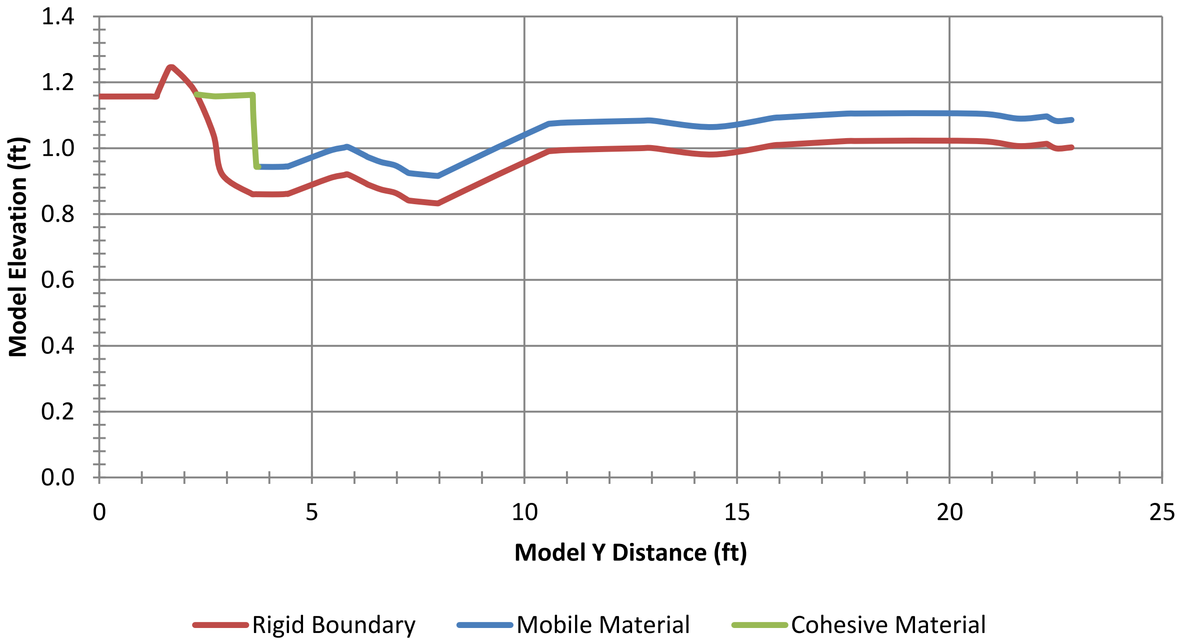

Figure 2-4: Sample design cross section.

A 20-ft section of cinder-block flume wall at the downstream end of the flume was removed prior to model construction to allow for the water to discharge from the side of the flume. Cross sections were constructed using plywood and surveyed into the model using a total station to a tolerance of ±0.005 ft. Once the plywood templates were set in place, structural fill material was added between the templates and a concrete cap was placed between the cross sections, as observed in Figure 2-5. Figure 2-6 depicts the constructed erodible bed material before vegetation was added to mimic prototype conditions. Figure 2-7 displays a photograph of the model following construction.

Figure 2-5: Construction and leveling of concrete cap.

Figure 2-6: Placement of mobile material.

Figure 2-7: Constructed model with simulated vegetation.

2.2.2. CONSTRUCTION OF GRAVEL STOCKPILE

Subsequent rounds of testing included changes to the initial model setup. After baseline testing, a proposed gravel stockpile of dredge material was constructed on the west floodplain. The stockpile spanned approximately 1,000 ft by 300 ft in the prototype with 1.5H:1V (horizontal-to-vertical) side slopes. Extents of the gravel stockpile are illustrated in Figure 2-8 and were developed based upon aerial limits from ortho-rectified shape files supplied by TTI. Stockpile elevations were based on a 10-ft height, specified by TTI, which was converted to a model height and added to the design model elevations at multiple points detailing the footprint and interior of the stockpile. Design details of the gravel stockpile are provided in Appendix D. Figure 2-9 depicts an example cross section detailing the gravel-stockpile extents and corresponding relation to the initial bed surface elevation and Figure 2-10 is a photograph of the completed stockpile installation. The mobile sand material that was used for the channel bed was also used for construction of the gravel stockpile, as the prototype stockpile would be constructed of dredged channel material.

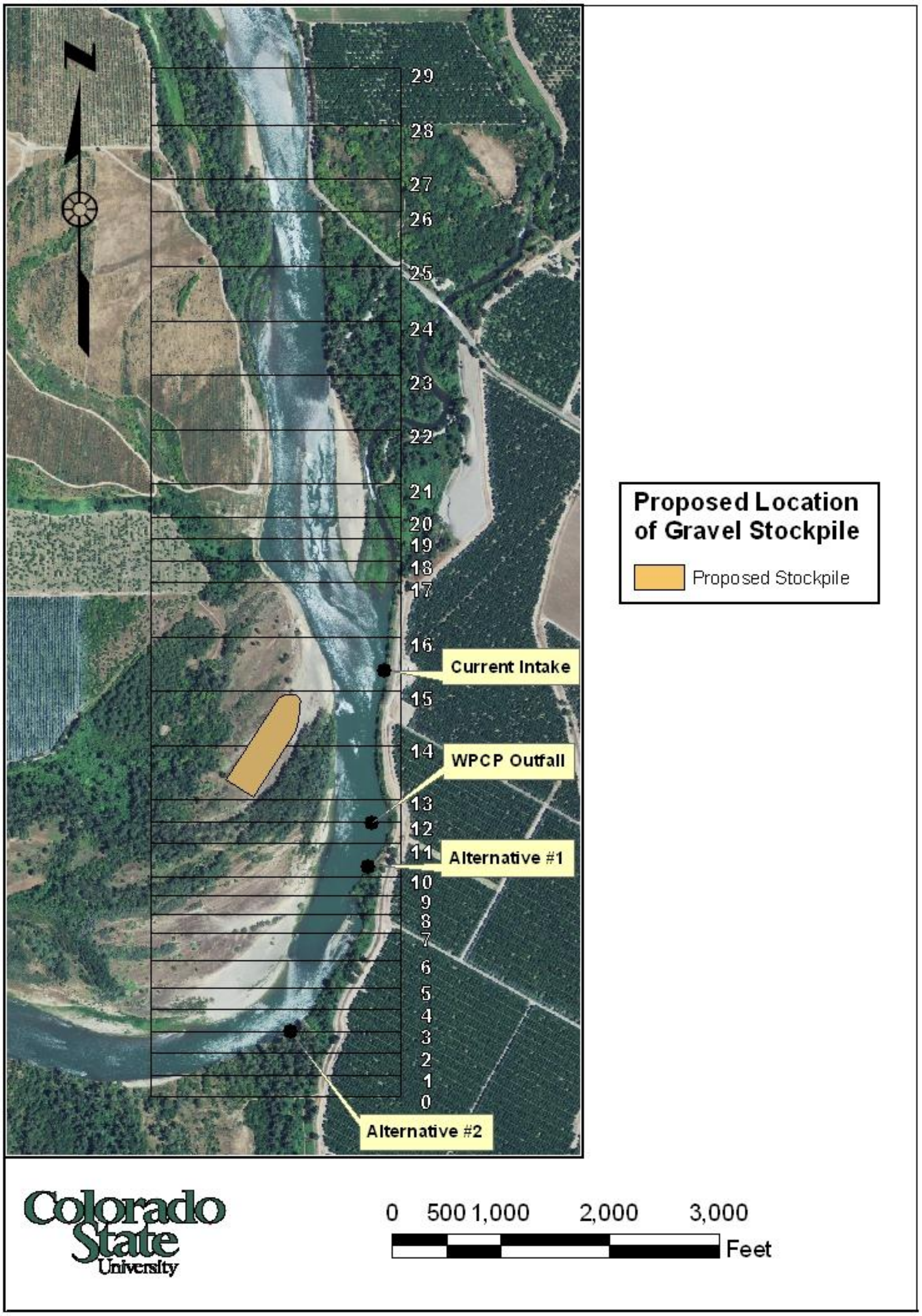

Figure 2-8: Location of proposed gravel stockpile.

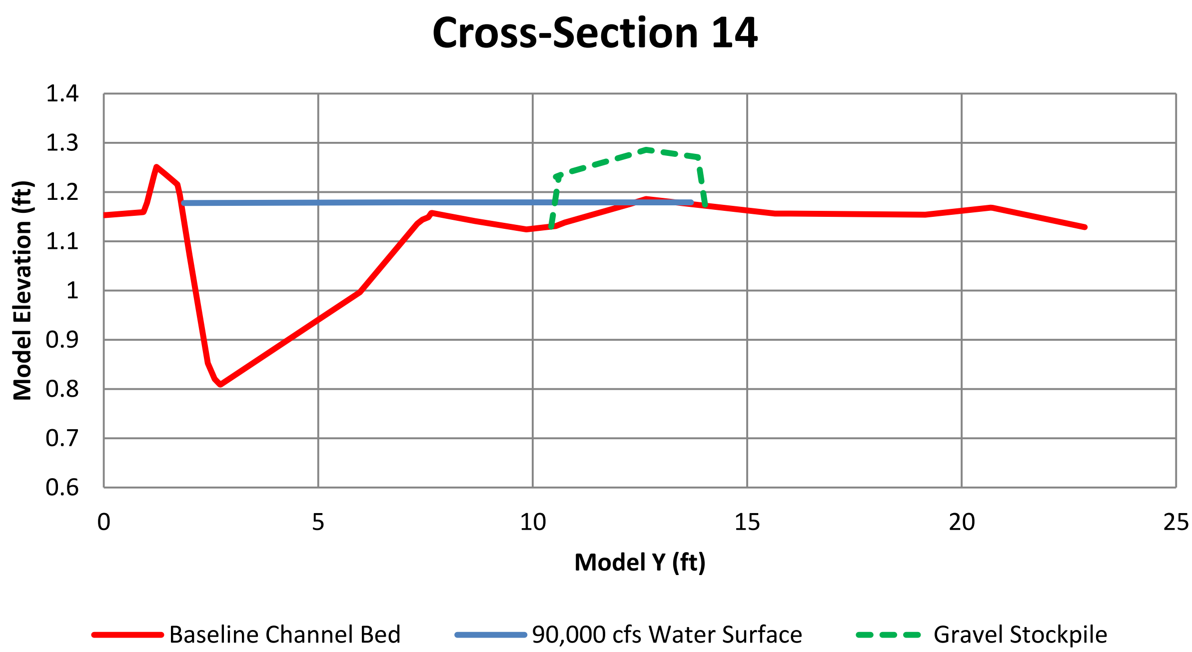

Figure 2-9: Example cross section depicting gravel stockpile.

Figure 2-10: Constructed gravel stockpile after 145,000-cfs testing.

2.2.3. CONSTRUCTION OF REALIGNED EAST BANK

After conclusion of the Gravel-stockpile configuration testing, a portion of the east bank was realigned to further evaluate the Proposed Alternative 2 site. Included in the evaluation of the bank realignment was whether the realignment will impair the functioning of the City of Chico Water Pollution Control Plant (WPCP) outfall, located approximately 1,400 ft downstream of the current pump-intake location and immediately upstream of the proposed east-bank realignment. The Proposed Alternative 1 site was not considered for a relocation site with the Realigned-bank configuration.

Figure 2-11 illustrates the approximate location of the realigned east bank. The realigned bank was constructed from modified cross sections provided by TTI. Appendix E provides the modified cross-section data used for the realigned-bank construction. Existing concrete material was removed to expose the plywood cross sections, which were then remarked and cut to the new model elevations. A soil-cement cap was placed at the new elevations, and sediment was placed in a similar fashion as for prior construction of baseline conditions. Bank realignment also included the placement of simulated riprap revetment between Cross-section 3 and Cross-section 10. The simulated riprap was constructed of pea gravel and secured with a mixture of silicone caulk and spray adhesive. Figure 2-12 is a photograph of the completed realigned bank.

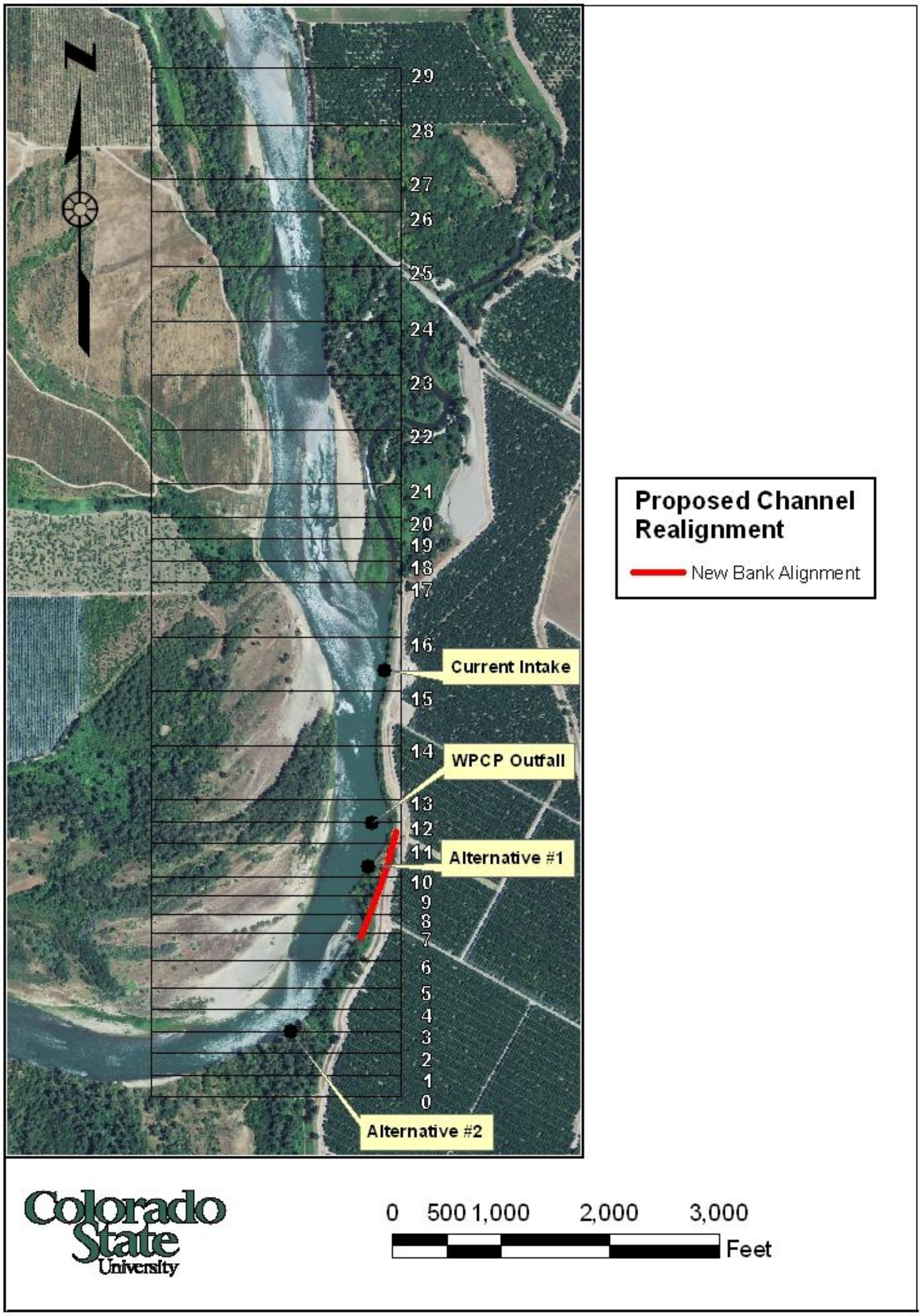

Figure 2-11: Proposed east bank realignment.

Figure 2-12: Realigned east bank.

3. HYDRAULIC MODELING

3.1. INTRODUCTION

Physical configurations of baseline channel conditions, stockpile installation, and bank realignment were constructed and evaluated at a range of flow conditions. For the Baseline and Realigned-bank configurations, flow-velocity distributions and bed-elevation measurements were obtained for the low-flow (10,000-cfs prototype), bankfull (90,000-cfs), and high-flow (145,000-cfs) discharges. Flow-velocity distributions and bed-elevation measurements were obtained for the Gravel-stockpile configuration only at the high-flow (145,000-cfs) discharge. A comparison of each test to flow velocities obtained for the Baseline configuration allowed changes to be quantified and analyzed. Bed-elevation data throughout the river channel and floodplains were collected prior to and at the conclusion of testing for each configuration. Evaluation of the bed-elevation changes allowed quantification of aggradation and degradation across each test.

3.2. TESTING EQUIPMENT

Data were collected using a movable cart installed on top of the flume walls. Longitudinal stationing, in the model *X*-axis, was measured using a tape measure with an accuracy of ±0.01 ft beginning at Cross-section 29 (Station 4.68 ft) and increased downstream to the flume end at Cross-section 0 (Station 99.16 ft). Distances along flume cross sections, in the model *Y*-axis, were also identified using a tape measure with an accuracy of ±0.01 ft. Lateral stationing began at a value of 19.94 ft at the left-hand side of the flume and increased to a value of 42.70 ft at the right-hand side of the flume looking downstream.

A 3-in. polyvinylchloride (PVC) pipe stemming from Horsetooth Reservoir was used to supply water to the model for the 0.10-cfs and 0.90-cfs discharges. The 0.10-cfs and 0.90-cfs flows (transported through the 3-in. PVC lines) were measured with an inline Venturi meter with an accuracy of ±2.5%. A 40-horsepower pump was used to supply the 1.45-cfs flow where discharge was measured using a full-bore magnetic flow meter accurate to ±1%.

Elevation measurements were collected by two methods. Elevation data were manually collected across each cross section with a point gage of ±0.001 ft accuracy. Figure 3-1 depicts the location of manual bed-elevation data-collection points (utilizing a Geographic Information System (GIS)). A more continuous array of elevation points was surveyed by means of Light Detection And Ranging (LiDAR). A Leica Geosystems Scan Station® was used to obtain the elevation data which had an *X*, *Y*, and *Z* accuracy of ±0.001 ft and an approximate data concentration of 3.5-million points. Figure 3-2 is a photograph of the Scan Station®.

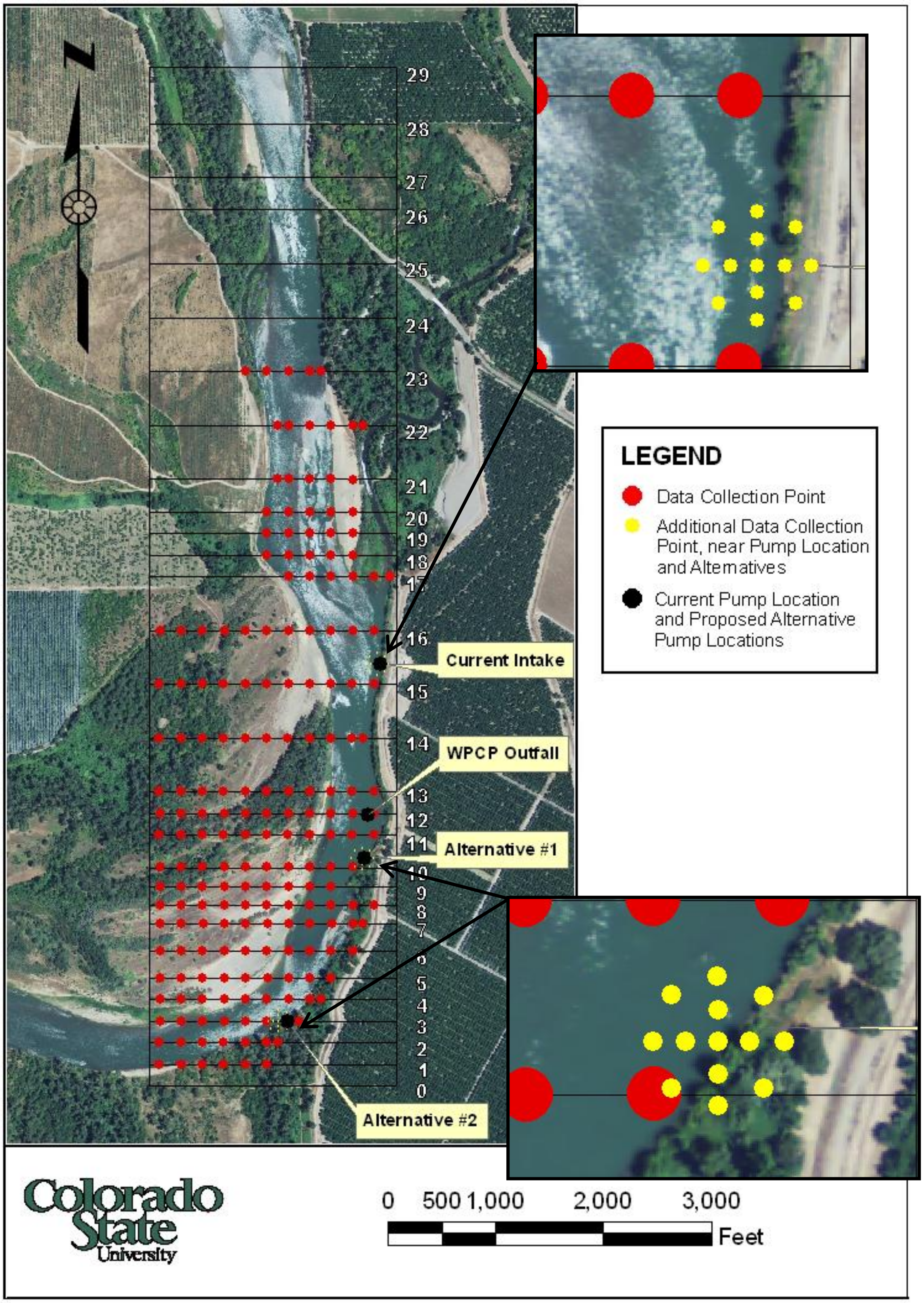

Figure 3-1: GIS image of flow-velocity and point-gage data-collection points for all testing conditions (where flow depth was sufficient).

Figure 3-2: Leica Geosystems Scan Station®.

Two-dimensional flow velocities were measured with a Marsh-McBirney electromagnetic current meter (Model 523) with an accuracy of ±0.01 ft/s. Figure 3-3 is a photograph of the current meter attached to a point gage. Time-averaged flow velocities were collected with the Marsh-McBirney current meter set at 60% of the water depth, as measured from the top of the water surface. Flow depths at some main-channel data-collection locations during the 10,000-cfs discharge and overbank data-collection locations at higher discharges were too low for use of the Marsh-McBirney current meter and, therefore, no velocity measurements were collected at these locations.

Figure 3-3: Marsh-McBirney electromagnetic current meter (Model 523).

3.3. TEST MATRIX

A test program was developed to investigate the feasibility of two proposed pump relocation sites. Three configurations were evaluated:

1. baseline conditions: the current pump-intake location and both proposed alternative pump sites were evaluated;
2. gravel stockpile on the west floodplain: the current pump-intake location and both proposed alternative pump sites were evaluated; and
3. realigned east bank: the current pump-intake location and the Proposed Alternative 2 site were evaluated.

The feasibility of the Proposed Alternative 1 site was only considered for the Baseline and Gravel-stockpile configurations, as the bank would not be realigned if the pump station were relocated to the Proposed Alternative 1 site. Table 3-1 provides a summary of each configuration and details the discharges at which the configurations were tested. Only the 145,000-cfs discharge was tested for evaluation of the gravel stockpile, as the stockpile was not inundated at the 10,000-cfs and 90,000-cfs flows. Durations for each test are provided in Table 3-2. The following sub-sections provide details for each of the configurations tested.

Table 3-1: Summary of test matrix for project testing.

Test Configuration	Discharge 10,000 cfs	Discharge 90,000 cfs	Discharge 145,000 cfs[a]	Flow Velocity	Elevation Point Gage	Elevation LiDAR
Baseline	x	x	x	x	x	x
Gravel Stockpile			x	x	x	x
Realigned Bank – Test 1[a]	x	x	x	x	x	x
Realigned Bank – Test 2			x	x	x	x
Realigned Bank – Test 3			x		x	x

[a] only the 145,000-cfs test is identified as Realigned-bank configuration Test 1

Table 3-2: Summary of testing durations.

Test Designation	Time (hrs)[a] 10,000 cfs	Time (hrs)[a] 90,000 cfs	Time (hrs)[a] 145,000 cfs [b]
Baseline configuration	8.5	143.25	7.5
Gravel-stockpile configuration	N/A	N/A	7.5
Realigned-bank configuration Test 1[b]	4.0	148.5	8.0
Realigned-bank configuration Test 2	N/A	N/A	8.0
Realigned-bank configuration Test 3	N/A	N/A	8.0

[a] N/A = not applicable
[b] only the 145,000-cfs test is identified as Realigned-bank configuration Test 1

3.3.1. BASELINE CONDITIONS

Initially, mobile-bed areas were manually shaped to model existing, baseline conditions of the Sacramento River. Subsequently, the Baseline configuration was tested at 10,000-cfs and 90,000-cfs discharges to obtain flow-velocity measurements for comparison to prior 2007 testing. The current model closely replicated flow-velocity patterns exhibited by the previous 2007 model, with the exception of the area directly above the gravel bar. Prototype bed elevations above the gravel bar varied from the previous model study due to 2008 dredging that had not occurred prior to the 2007 model construction. The new prototype bed elevations resulting from channel dredging in 2008 were incorporated into the design of the current model. Figure 3-4 and Figure 3-5 illustrate the current and previous 2007 90,000-cfs flow-velocity distributions, respectively. Figure 3-6 provides a plot of the difference in prototype flow velocities from the current 90,000-cfs baseline test to the previous 2007 90,000-cfs baseline test. Similar upstream flow velocities, main-channel flow velocities near Cross-section 14, and higher flow velocities along the west bank near the gravel bar are apparent from the comparison of Figure 3-4 and Figure 3-5.

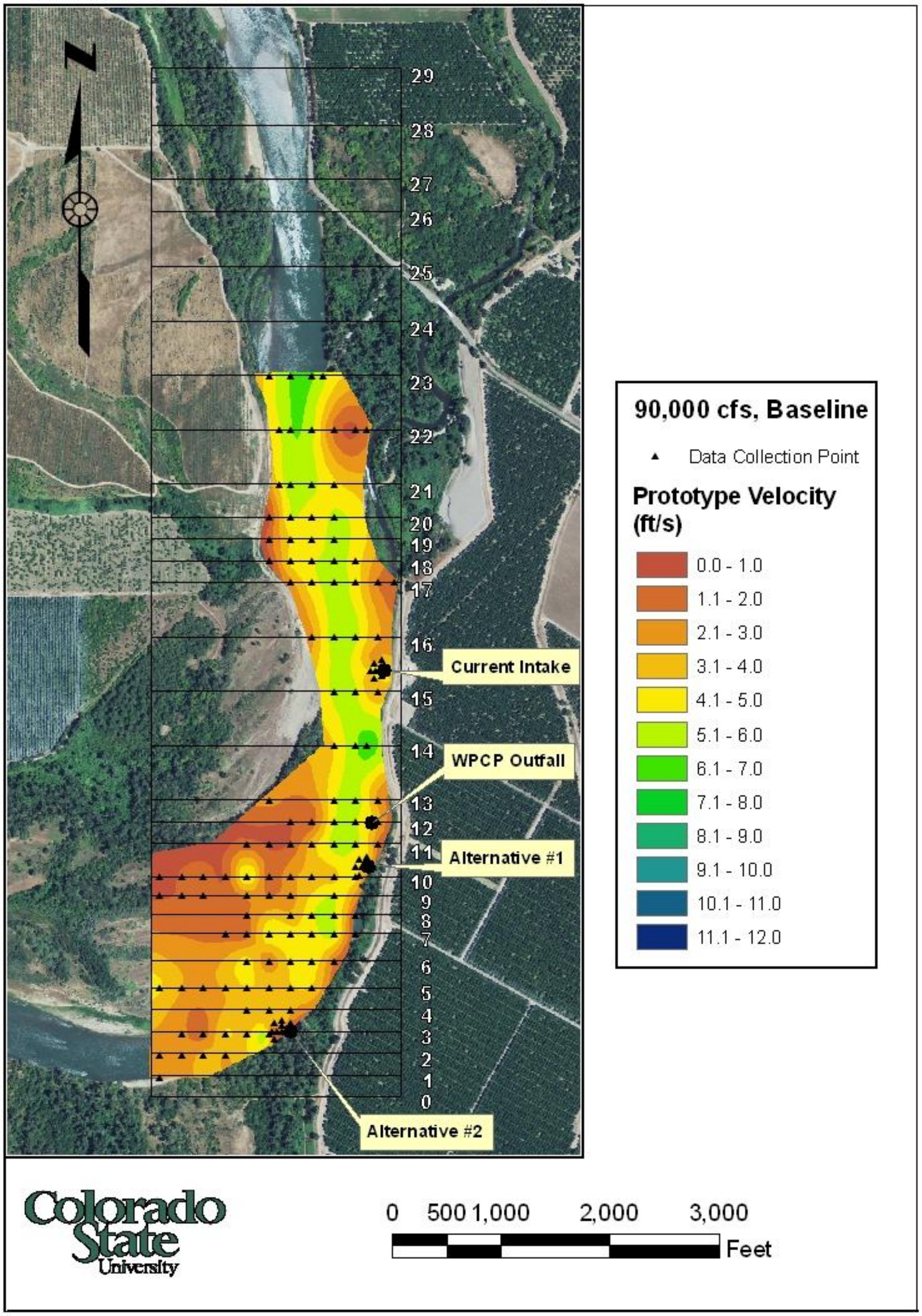

Figure 3-4: Current model 90,000-cfs flow-velocity distribution.

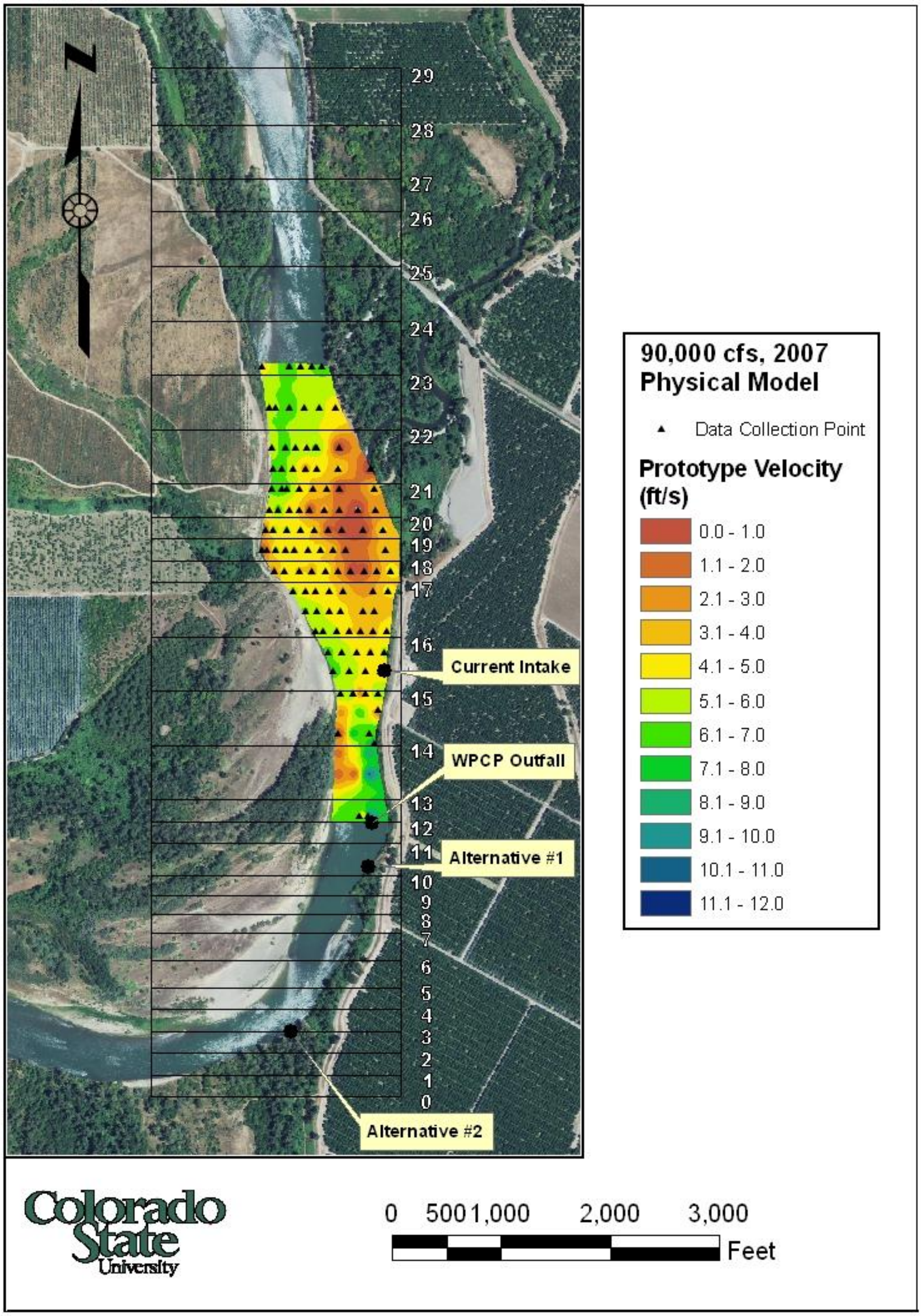

Figure 3-5: 2007 Physical Model 90,000-cfs Baseline flow-velocity distribution.

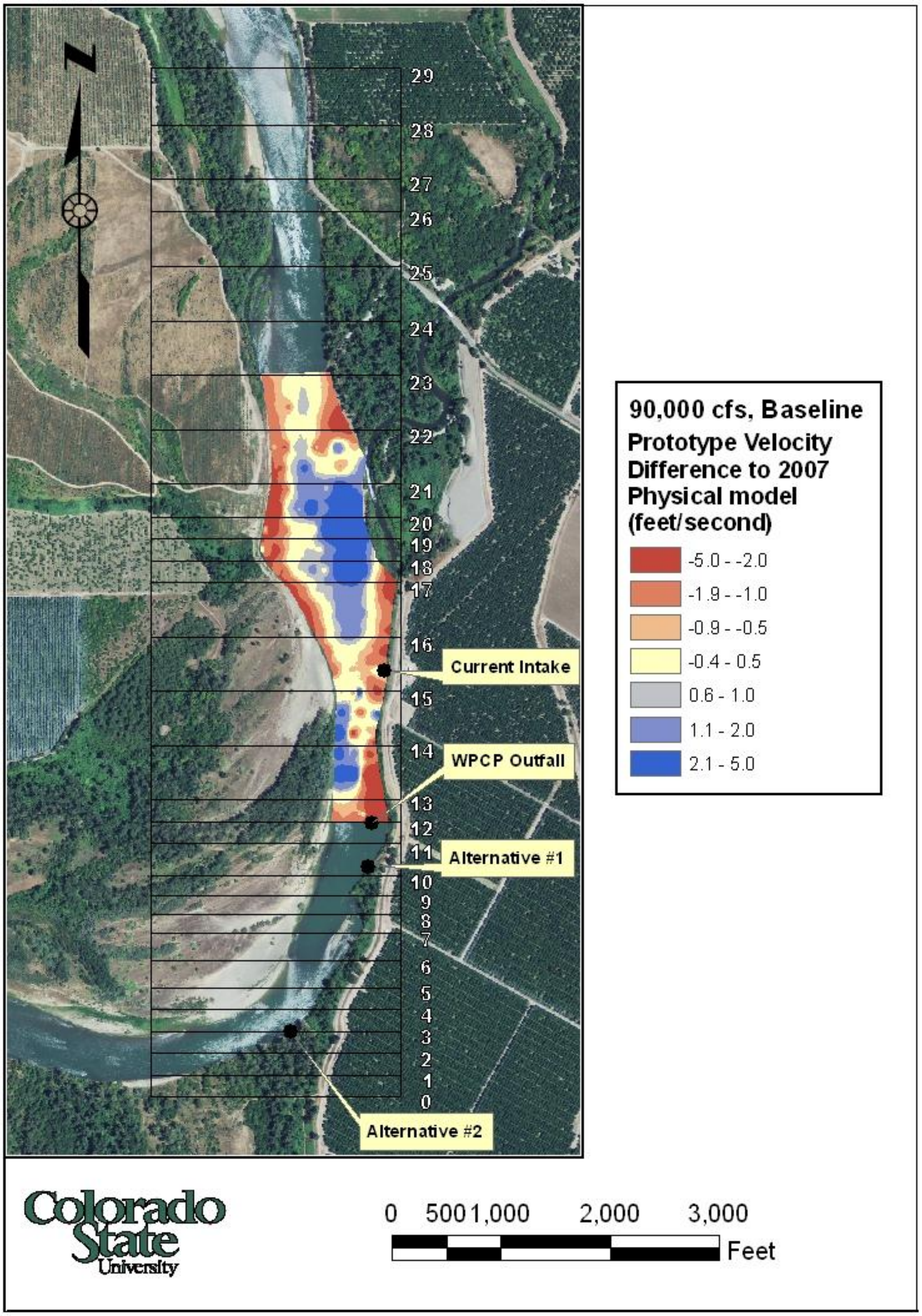

Figure 3-6: Difference in 90,000-cfs flow velocities: current baseline to 2007 physical model baseline results.

A 10,000-cfs discharge was tested for 8.5 hrs, and water-surface profile and flow-velocity data were collected. Figure 3-7 is a photograph of the 10,000-cfs Baseline testing. The bed was not reset following the 10,000-cfs test, as minimal changes in bed elevations were measured. After conclusion of the 10,000-cfs testing, 143.25 continuous hours of 90,000-cfs testing were undertaken and subsequently followed by 7.5 hrs of 145,000-cfs testing. Flow-velocity distributions and bed-elevation measurements were collected for each of the three discharges.

Figure 3-7: 10,000-cfs Baseline testing.

3.3.2. GRAVEL STOCKPILE

The Gravel-stockpile configuration testing followed the completion of the Baseline testing. The prototype stockpile was designed to be 10-ft high and 1,000 ft by 300 ft in plan view and constructed out of dredge material from continued maintenance of the current pumping station. After analysis of the 90,000-cfs Baseline testing, it was determined that the 90,000-cfs discharge did not significantly inundate the gravel stockpile. Therefore, testing of the gravel stockpile only included the 145,000-cfs discharge due to negligible effects at lower flows. The 145,000-cfs discharge was tested for 7.5 hrs which was sufficient to measure flow velocities, water-surface elevations, and observe sedimentation patterns. Figure 3-8 depicts the 145,000-cfs testing of the gravel stockpile, and Figure 3-9 is a close-up photograph of the constructed stockpile.

Figure 3-8: 145,000-cfs Gravel-stockpile configuration testing.

Figure 3-9: Constructed gravel stockpile during testing.

3.3.3. REALIGNED BANK

After conclusion of the Gravel-stockpile configuration testing, the gravel stockpile was removed and the downstream east bank was realigned, revetted with model riprap, and tested. The realigned-bank testing included the 10,000-cfs, 90,000-cfs, and 145,000-cfs discharges. Flow-velocity distributions and bed-elevation measurements were collected at each discharge. Testing began with 4.0 hrs of 10,000-cfs flow followed by 148.5 hrs of 90,000-cfs flow and then 8.0 hrs of 145,000-cfs flow. The 145,000-cfs test was identified as Realigned-bank configuration Test 1. The bed was reset to the design realigned-bank elevation following Test 1. An additional test, Test 2, of 145,000 cfs was conducted for 8.0 hrs and subsequently followed by a third 145,000-cfs test, Test 3, of 8.0 hrs. After Test 2, the bed was not reset for Test 3, which resulted in a combined total of 16.0 hrs of 145,000-cfs testing. Figure 3-10 shows the 90,000-cfs testing of the realigned channel bank.

Figure 3-10: 90,000-cfs Realigned-bank configuration testing.

3.4. TEST PROCEDURES

Comprehensive measurements of bed elevations, via point gage and LiDAR, were collected before each test for comparison to bed-elevation data following each test to evaluate sedimentation and erosion patterns. Subsequently, water was introduced into the flume slowly to ensure that the act of filling the flume did not disrupt the bed material resulting in movement not associated with natural flows at established water-surface elevations. Water-surface elevations were controlled with the downstream gates and were set according to data provided by TTI for the three discharges. Table 3-3 provides a summary of the water-surface elevation for each discharge.

Table 3-3: Backwater water-surface elevations and coordinates.

Discharge (cfs)	*Prototype Coordinates*[a,b]			*Model Coordinates*[c]		
	N_p (ft)	E_p (ft)	Z_p (ft)	X_m (ft)	Y_m (ft)	Z_m (ft)
10,000	2376639.5	6577565.0	116.0	86.63	27.60	1.052
90,000	2376639.5	6577565.0	131.4	86.63	27.60	1.206
145,000	2376639.5	6577565.0	134.4	86.63	27.60	1.236

[a] where: N_p = prototype northing coordinates, E_p = prototype easting coordinates, Z_p = prototype *Z*-axis coordinates (elevation)
[b] prototype coordinates are given in North American Datum (NAD) 1983 California State Plane Coordinate System (SPCS), Zone II
[c] where: X_m = model *X*-axis coordinates (longitudinal direction), Y_m = model *Y*-axis coordinates (lateral direction), Z_m = model *Z*-axis coordinates (elevation)

During testing, water-surface elevations were measured using a point gage in the same locations as the pre-test bed-elevation data and were used to determine flow depths. Flow velocities were measured at 60% of the flow depth along cross-sectional lines for Cross-section 0 to Cross-section 23. Flow velocities were not measured upstream of Cross-section 23 due to cart movement limitations. Point-gage readings and a LiDAR scan of the bed elevations were collected following the conclusion of testing for a given discharge and duration to allow evaluation of sedimentation and erosion trends.

4. DATA ANALYSIS

4.1. INTRODUCTION

All data collected during the test program have been tabulated and are provided in the Electronic Supplement located at the end of this report. Flow-velocity and bed-elevation data collected for each test were visually displayed using the Environmental Systems Research Institute, Inc. (ESRI) GIS software, ArcMap 9.2. Model bed-elevation data were transformed to represent prototype conditions according to a 1:100 Froude scale. The resulting prototype bed elevations were projected onto the NAD 1983 California SPCS, Zone II system, defined in feet and based on a Lambert Conformal Conic projection. Prototype bed elevations were interpolated to form continuous data coverage over the area of interest. Inverse distance weighting (IDW) interpolation provided an effective means for interpolation of high-point density bed-elevation data and allowed for visual conveyance of elevation distributions and differences. All bed-elevation values provided hereafter are prototype values unless otherwise noted.

Flow-velocity distribution profiles computed throughout the focus area give insight into erosion and sedimentation patterns. Specifically, lower flow velocities indicate a likelihood of sedimentation, and conversely, higher flow velocities indicate a likelihood of erosion. ArcGIS was used to transform model flow-velocity measurements to representative prototype flow-velocity measurements. A spline interpolation was used to graphically display the smaller dataset of flow-velocity points due to the decreased variance due to a single point utilizing the spline interpolation method over the IDW interpolation method. The flow-velocity plots in this report also contain the location of where data points were taken so that the reader can visually ascertain which visual graphs were extrapolated and which were interpolated. All flow-velocity values provided hereafter are prototype values unless otherwise noted.

4.2. BASELINE CONFIGURATION

As discussed previously, the channel bed was initially set manually according to data provided by TTI. The Baseline configuration was tested at prototype 10,000-cfs, 90,000-cfs and 145,000-cfs discharges. Figure 4-1 presents the flow-velocity distribution for the 10,000-cfs testing. Flow-velocity distributions at 10,000-cfs indicated low flow velocities of approximately 0 to 1 ft/s near the gravel bar. Flow velocities of 2.3 ft/s, 3.5 ft/s, and 4.2 ft/s were observed at the current pump-intake location, the Proposed Alternative 1 site, and the Proposed Alternative 2 site, respectively. Localized areas of higher flow velocity are evident near both proposed pump relocation sites. Figure 4-2 depicts bed elevations following the 10,000-cfs test. Bed-elevation data presented in Figure 4-2 were used as a baseline condition for comparison to subsequent Baseline and Gravel-stockpile configuration testing.

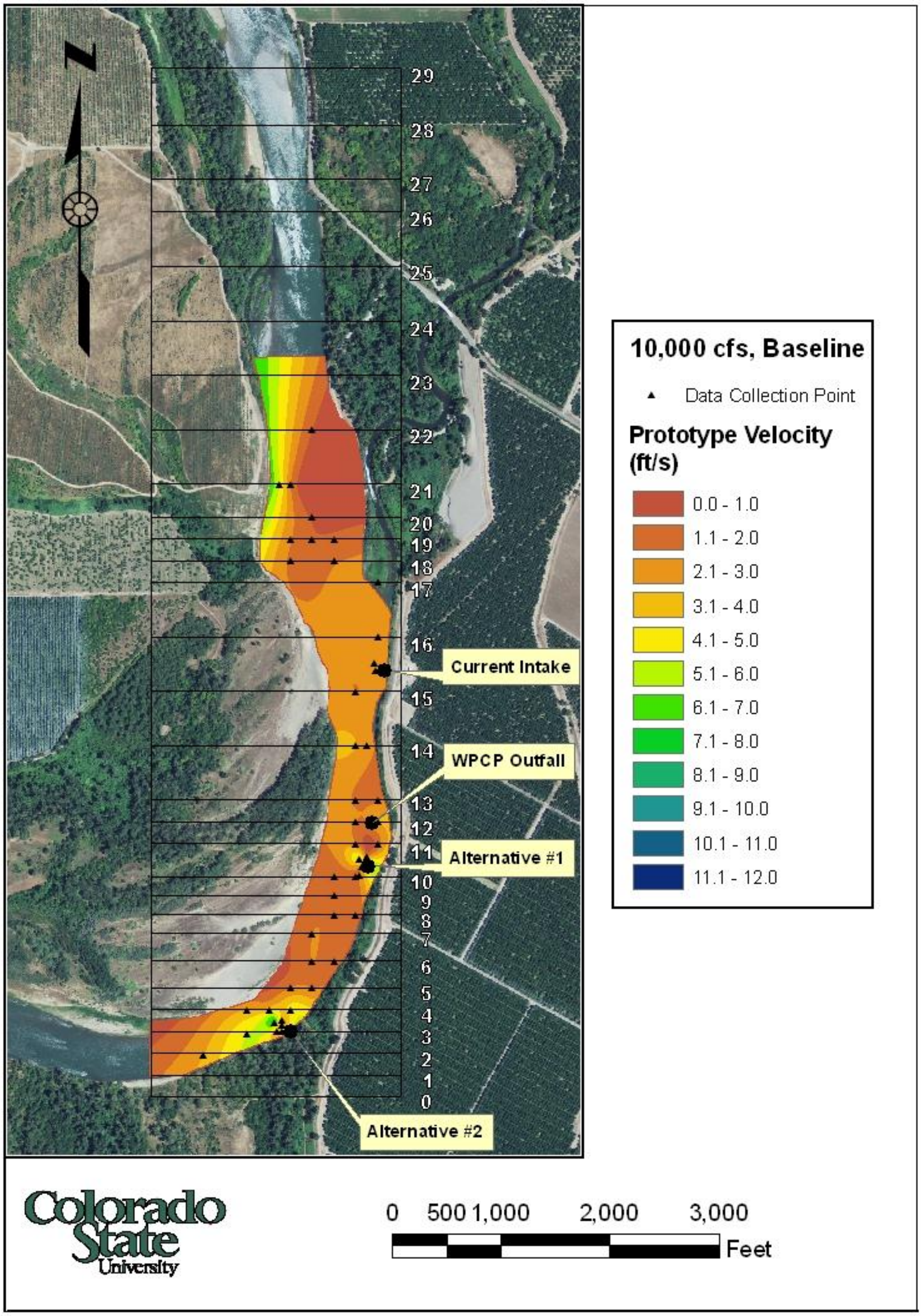

Figure 4-1: Flow-velocity distribution for 10,000-cfs Baseline testing.

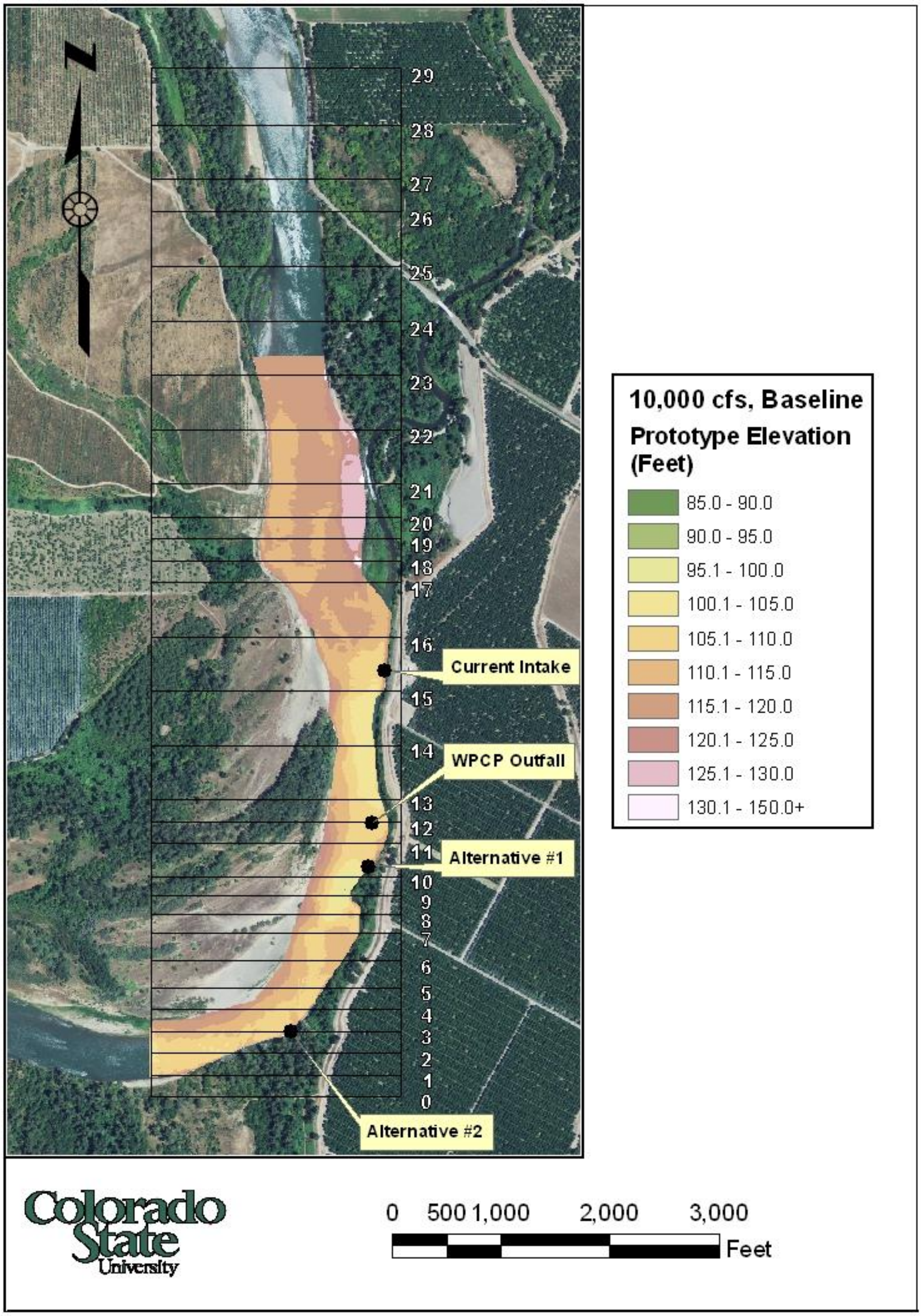

Figure 4-2: Bed elevations after 10,000-cfs Baseline testing.

The flow-velocity distribution for the 90,000-cfs Baseline configuration is presented in Figure 4-3. Baseline 90,000-cfs flow-velocity distributions indicated low flow velocities of 0 to 2 ft/s along the downstream west floodplain. Similar flow velocities of 0 to 2 ft/s were observed in the location of the gravel bar. Additionally, a relatively low flow velocity of 3.8 ft/s, as compared to the channel thalweg velocity (5 to 6 ft/s), was observed around the current pump-intake location. Flow velocities of approximately 3.7 ft/s in the immediate vicinity of the Proposed Alternative 2 site, and lower flow velocities of 2.3 ft/s in the vicinity of the Proposed Alternative 1 site were observed. The measured flow velocity at the Proposed Alternative 2 site was observed as a local decrease, as trends of 4 to 5 ft/s were observed upstream and just downstream of the Proposed Alternative 2 site.

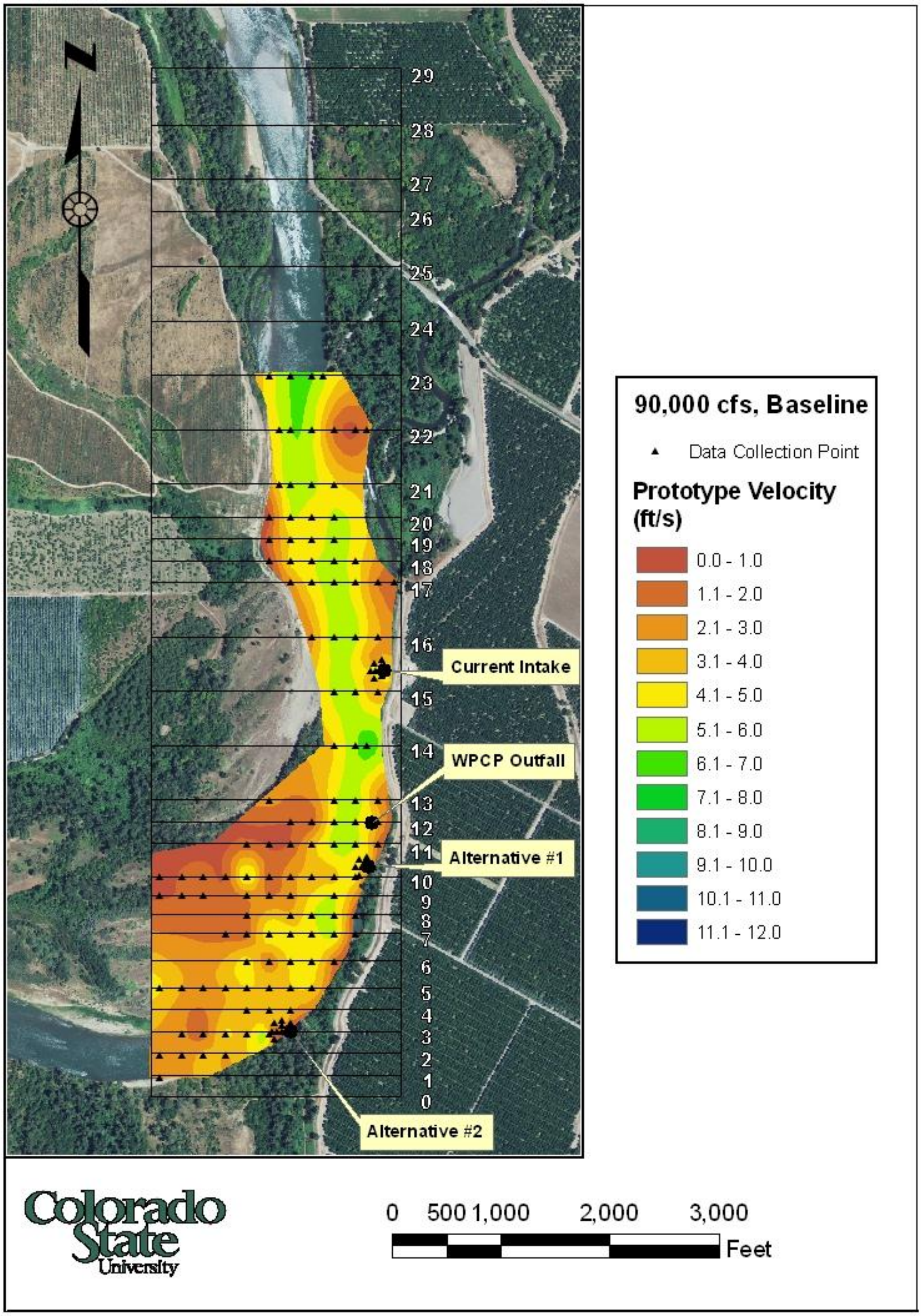

Figure 4-3: Flow-velocity distribution for 90,000-cfs Baseline testing.

Bed elevations based on the post-90,000-cfs Baseline configuration test measurements are displayed in Figure 4-4. Changes in bed elevations, based on bed-elevation differences between the post-90,000-cfs and post-10,000-cfs Baseline configuration testing, are presented in Figure 4-5. As depicted by the yellow coloration in Figure 4-5, the majority of the model experienced little bed-elevation change, with bed-elevation changes less than ±0.50 ft. Evidence of ripple formation can be observed at the upstream end of the model as alternating areas of deposition and aggradation. Zones of aggradation of up to 2 ft were measured near the current pump-intake location. Bed-elevation changes of approximately 1 ft of degradation were observed at the Proposed Alternative 1 site with approximately 1 ft of aggradation occurring approximately 100 ft downstream of the Proposed Alternative 1 site. Negligible bed-elevation changes were measured at the Proposed Alternative 2 site. The GIS display area (the area of the GIS plots that provide data) was expanded for the 90,000-cfs discharge to account for the overbank flooding observed at this discharge. Several trees and canopies within the model were included in the LiDAR scan and are primarily shown as white pixels in Figure 4-4. Data were omitted for areas that were covered with trees and canopy in Figure 4-5.

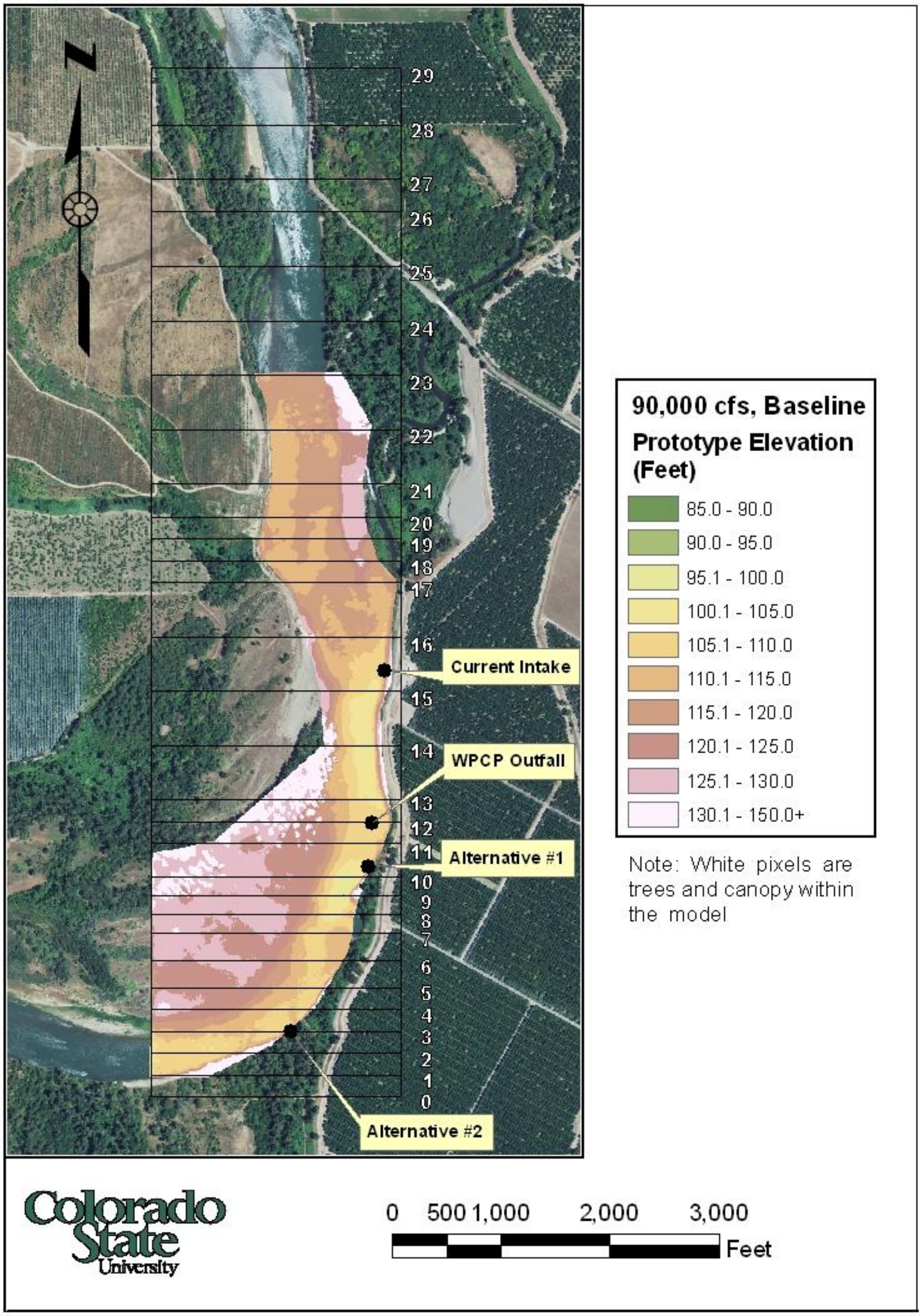

Figure 4-4: Bed elevations for post-90,000-cfs Baseline testing.

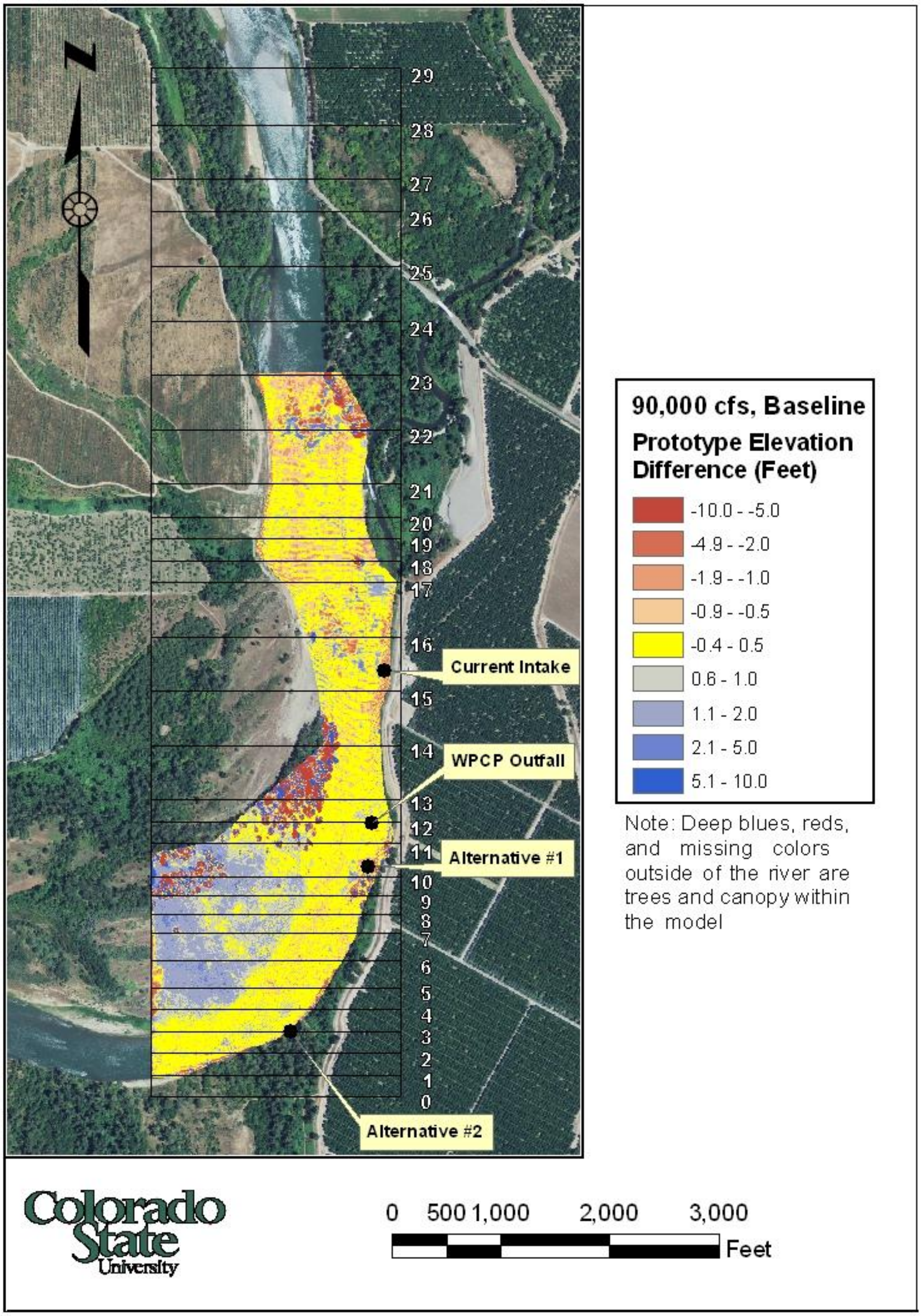

Figure 4-5: Bed-elevation differences between post-90,000-cfs and post-10,000-cfs Baseline testing.

The flow-velocity distribution for the 145,000-cfs Baseline testing is presented in Figure 4-6 and depicts a slight localized increase in flow velocity near the Proposed Alternative 1 site, with a flow velocity of 7.1 ft/s, as compared to the main-channel velocity. Flow velocities were observed to increase locally near the current pump-intake location as the flow headed into a downstream constriction. Near the current pump-intake location, flow velocities of 6.3 ft/s were measured. A flow velocity of 5.3 ft/s was measured at the Proposed Alternative 2 site. Due to shallow flow depths by the west floodplain, a limited amount of flow-velocity measurements were collected on the floodplain upstream of Cross-section 12. Consequently, the flow-velocity GIS display area was trimmed to prevent excessive extrapolation and misinterpretation of results. The trimmed analysis mask is noticeable in Figure 4-6 by lack of coverage in portions of the west floodplain.

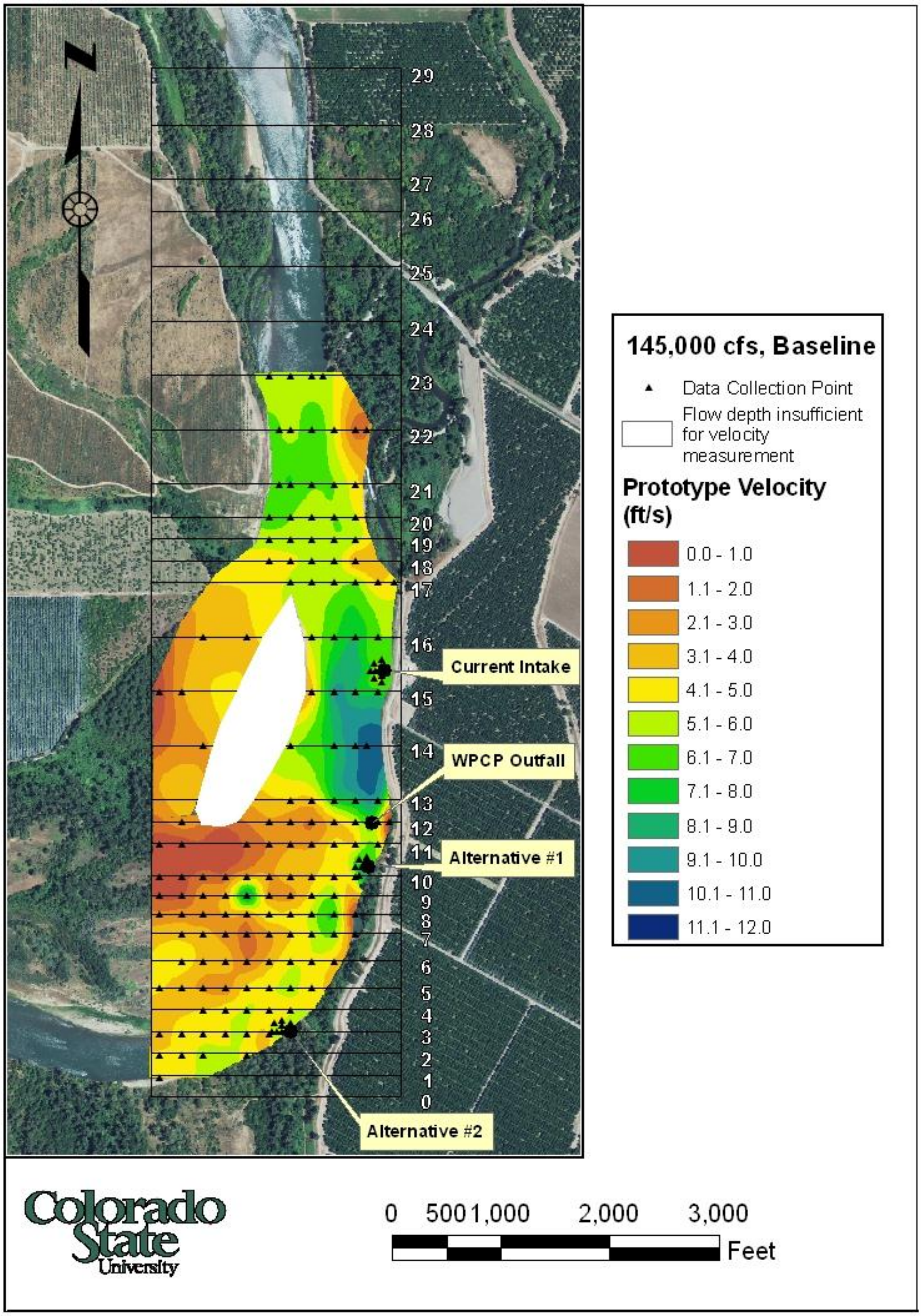

Figure 4-6: Flow-velocity distribution for 145,000-cfs Baseline testing.

Bed elevations based on the post-145,000-cfs Baseline test measurements are displayed in Figure 4-7. Changes in bed elevations, based on bed-elevation differences between the post-145,000-cfs and post-10,000-cfs Baseline testing, are presented in Figure 4-8. Ripple formations at the upstream end of the model were observed, as evidenced by alternating colors in a ripple pattern in Figure 4-8. Figure 4-9 is a photograph of the ripples observed following the 145,000-cfs baseline test. A zone of 1 to 5 ft of aggradation was measured near the current pump-intake location, primarily located to the northwest of the intake. A degradation zone of approximately 1 to 2 ft was also observed to begin approximately 300 ft downstream of the current pump-intake location where the channel is constricted. In the vicinity of the Proposed Alternative 1 site, a degradation strip of 1 to 5 ft was observed, which correlates well with higher flow velocities measured near the Proposed Alternative 1 site. Minor bed-elevation changes of ±1 ft were observed near the Proposed Alternative 2 site.

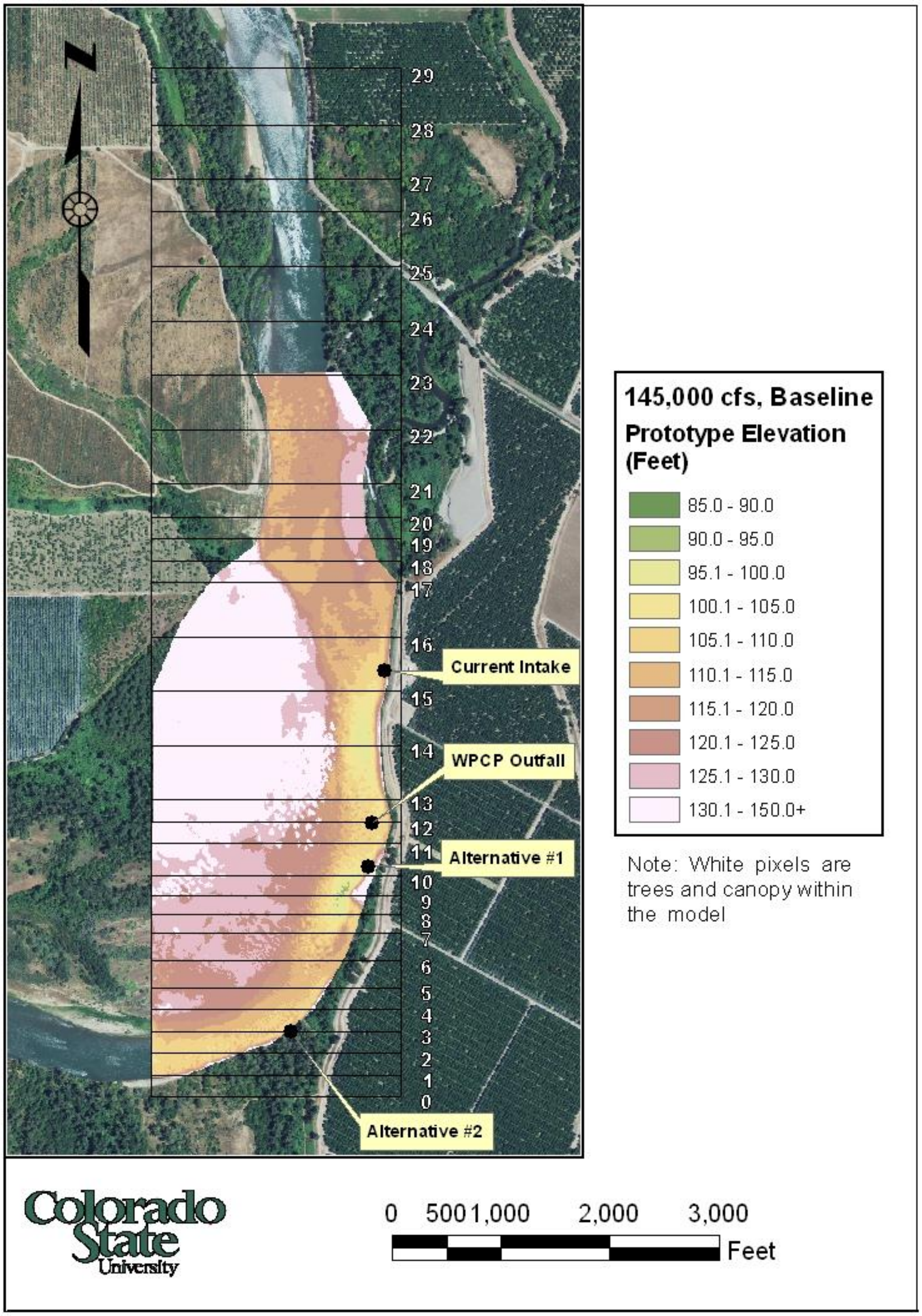

Figure 4-7: Bed elevations for post-145,000-cfs Baseline testing.

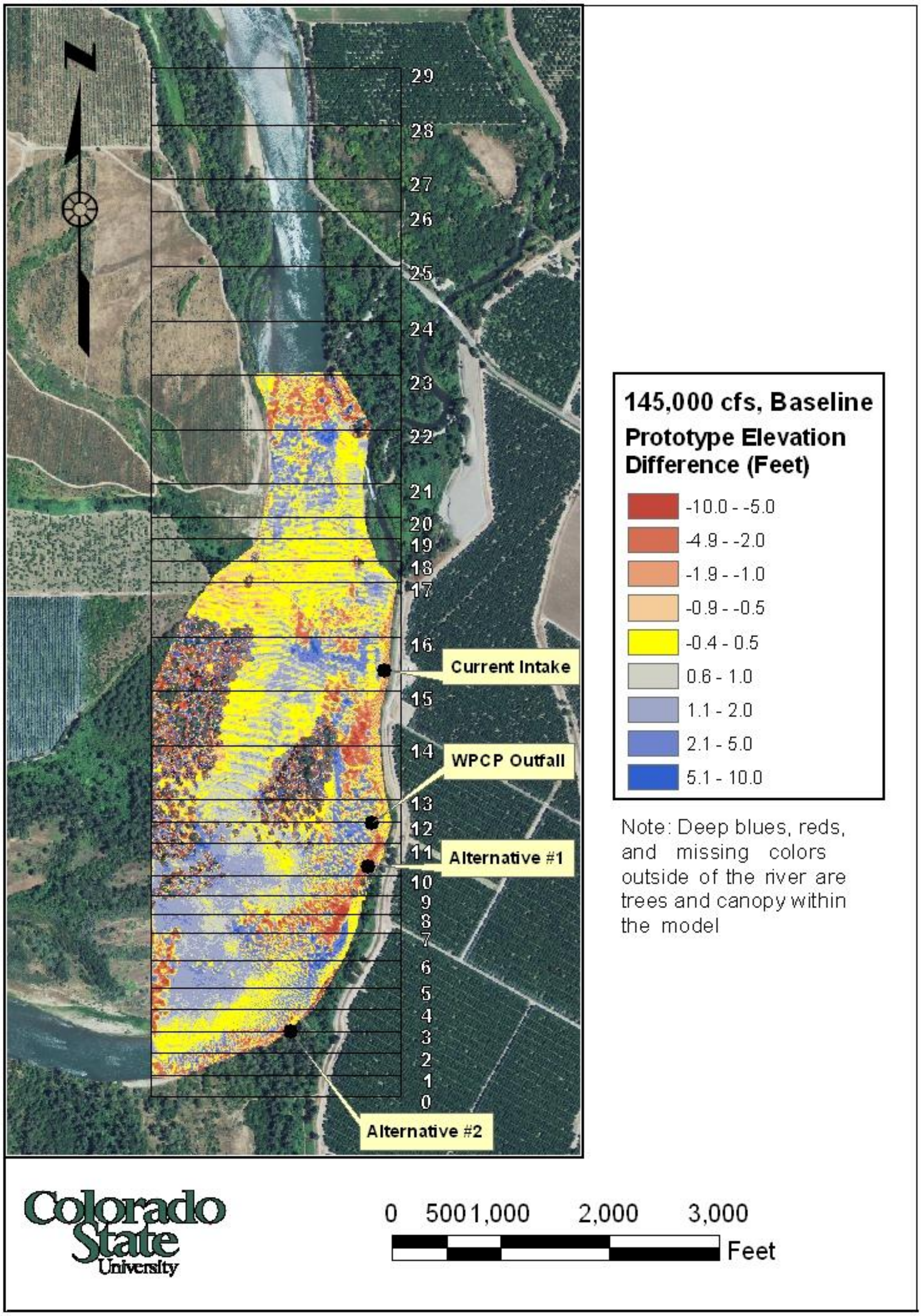

Figure 4-8: Bed-elevation differences between post-145,000-cfs and post-10,000-cfs Baseline testing.

Figure 4-9: Ripple formation during 145,000-cfs Baseline testing.

4.3. GRAVEL-STOCKPILE CONFIGURATION

The channel bed was re-leveled and the gravel stockpile installed after baseline testing. Due to the location of the gravel stockpile on the west floodplain, only the 145,000-cfs discharge for the Gravel-stockpile configuration was tested. Figure 4-10 presents the flow-velocity distributions measured for the 145,000-cfs Gravel-stockpile configuration testing. Flow-velocity distributions similar to the Baseline configuration were observed for the Gravel-stockpile configuration. Specifically, there was localized flow-velocity decrease near the current pump-intake location, localized flow-velocity increase near the Proposed Alternative 1 site, and a flow velocity near the Proposed Alternative 2 site of approximately 4 to 5 ft/s. Flow velocities of 6.6 ft/s, 7.1 ft/s, and 4.4 ft/s were observed in the immediate vicinities of the current pump-intake location, Proposed Alternative 1 site, and Proposed Alternative 2 site, respectively.

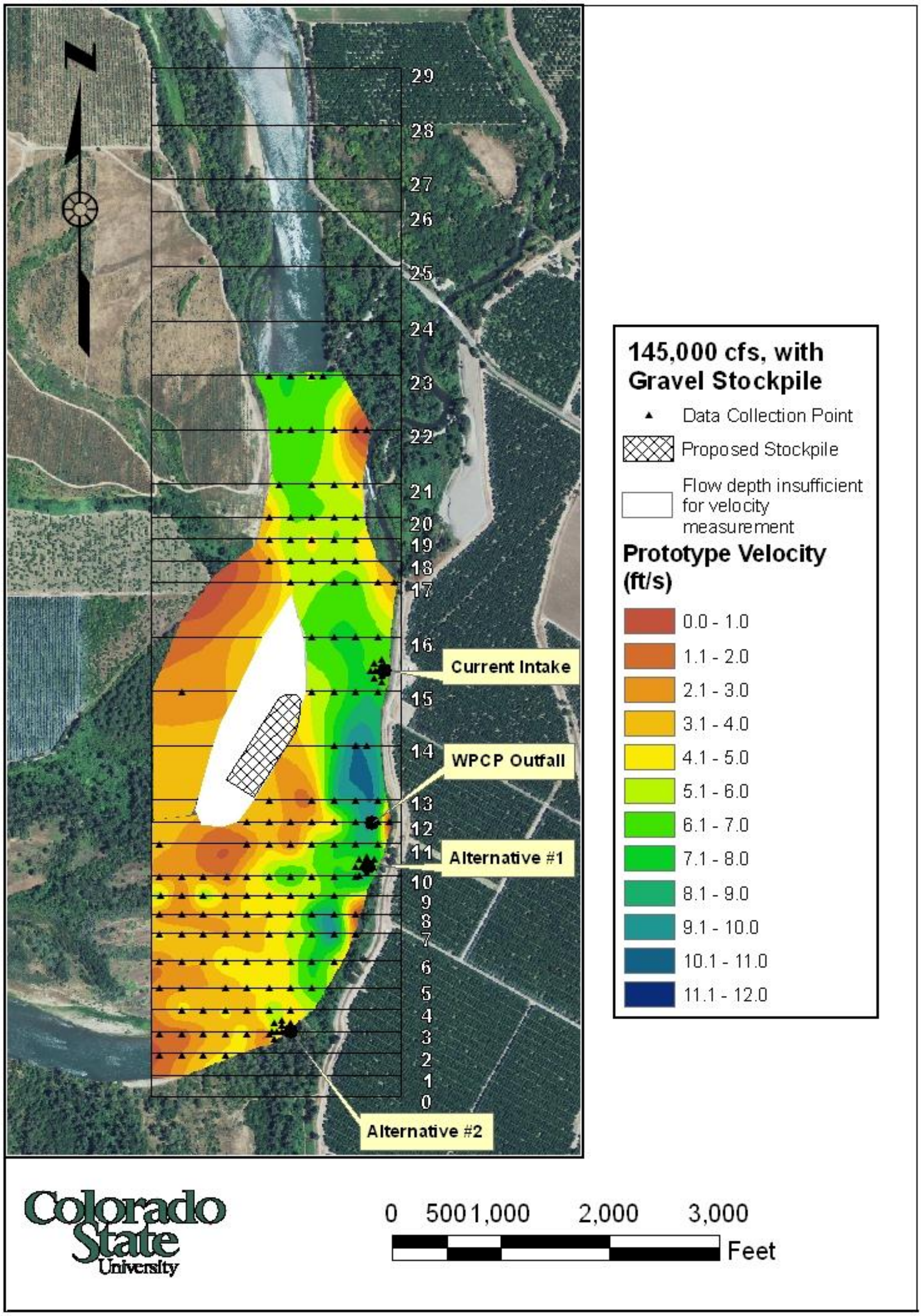

Figure 4-10: Flow-velocity distribution for 145,000-cfs Gravel-stockpile testing.

Bed elevations based on the post-145,000-cfs Gravel-stockpile configuration test measurements are displayed in Figure 4-11. Changes in bed elevations, based on bed-elevation differences between the post-145,000-cfs test and initial bed elevations set prior to the Gravel-stockpile configuration testing, are presented in Figure 4-12. Additional evidence of ripple formation is observed by the alternating colors, representing varying aggradation and degradation, in Figure 4-12. Bed-elevation differences for the 145,000-cfs Gravel-stockpile configuration testing were consistent with the differences observed after the 145,000-cfs Baseline testing. A zone of 1 to 5 ft of aggradation was observed directly upstream and to the northwest of the current pump-intake location, with a localized area of lesser aggradation of 1 to 2 ft in the immediate vicinity of the pump. Also, a degradation zone of 1 to 2 ft existed downstream of the current pump-intake location near the channel constriction. Mixed sedimentation patterns were observed near the Proposed Alternative 1 site, with aggradation zones of approximately 2 ft towards the main channel, and degradation zones of approximately 2 ft near the bank. Negligible changes in bed elevation were measured near the Proposed Alternative 2 site.

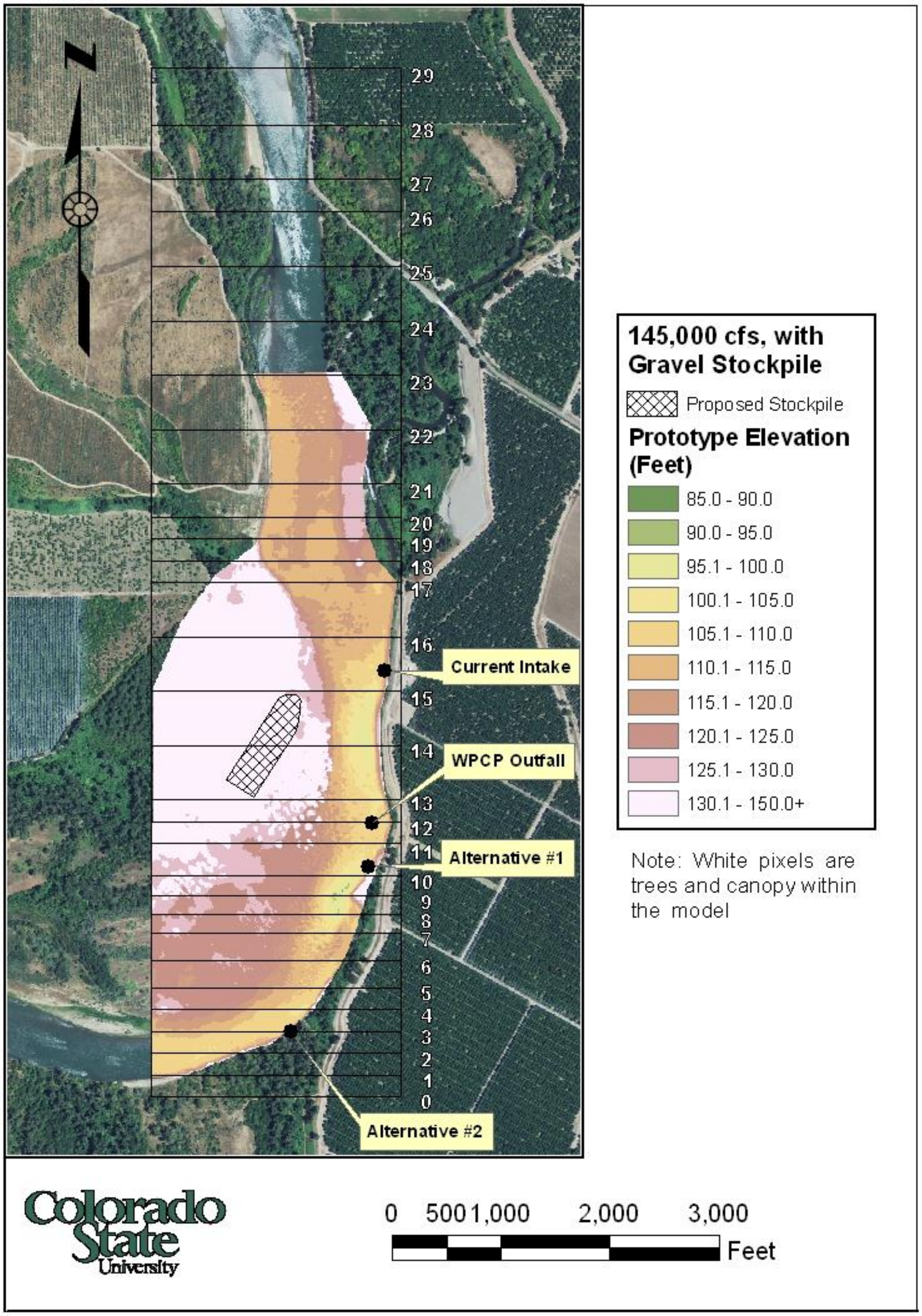

Figure 4-11: Bed elevations for post-145,000-cfs Gravel-stockpile testing.

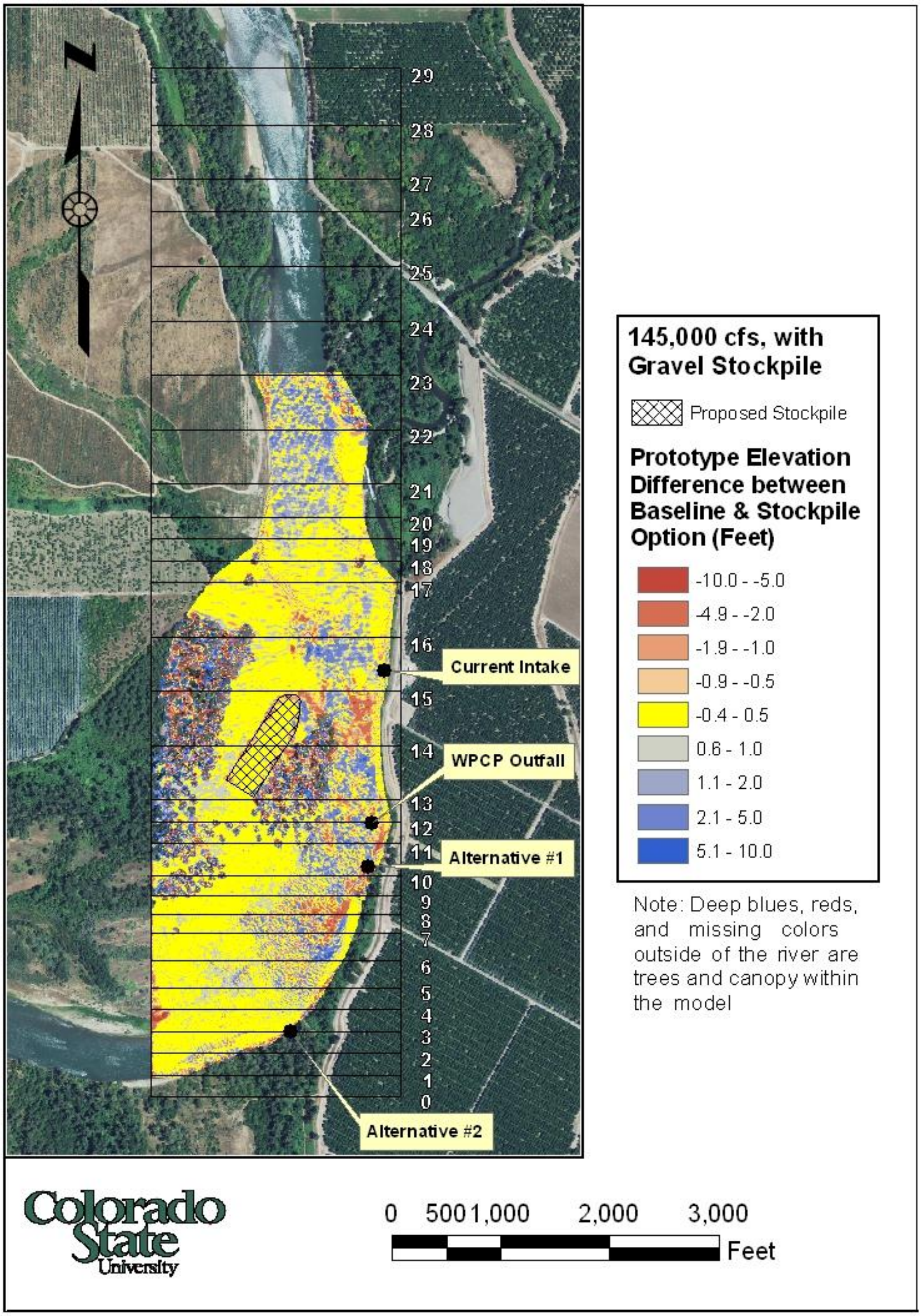

Figure 4-12: Bed-elevation differences between post-145,000-cfs with gravel stockpile and initial gravel-stockpile conditions.

4.4. REALIGNED-BANK CONFIGURATION

After the Gravel-stockpile testing, the gravel stockpile was removed and the realigned bank installed. The channel bed was re-leveled to coordinates provided by TTI for the realignment and the re-leveled channel bed served as the comparison for subsequent analyses of bed-elevation changes for the Realigned-bank configuration. Flow-velocity distributions and bed-elevation measurements were taken in accordance with operating procedures for the 10,000-cfs, 90,000-cfs, and 145,000-cfs discharges. The 10,000-cfs discharge was modeled first to observe sedimentation patterns and provide qualitative measurements regarding channel stability, as the new configuration would not be a result of natural geomorphologic processes. The 90,000-cfs discharge was subsequently tested following the conclusion of the 10,000-cfs test. Similarly, Realigned-bank configuration 145,000-cfs Test 1 followed the conclusion of the 90,000-cfs test. For clarification, the City of Chico Water Pollution Control Plant Outfall, referred to as the WPCP outfall by the City of Chico, has been included in the following figures, due to concerns regarding sedimentation potential at the outfall with the realigned-bank condition.

The flow-velocity distribution for the 10,000-cfs Realigned-bank configuration is presented in Figure 4-13. Flow-velocity distributions similar to the Baseline configuration were observed for the Realigned-bank configuration in areas upstream of the realigned bank. However, higher flow velocities were observed along the east bank in the vicinity of the realigned east bank that continued downstream along the outside of the river bend. Flow velocities of 4.2 ft/s, 2.1 ft/s, and 3.8 ft/s were observed in the vicinity of the current pump-intake location, Proposed Alternative 1 site, and Proposed Alternative 2 site, respectively.

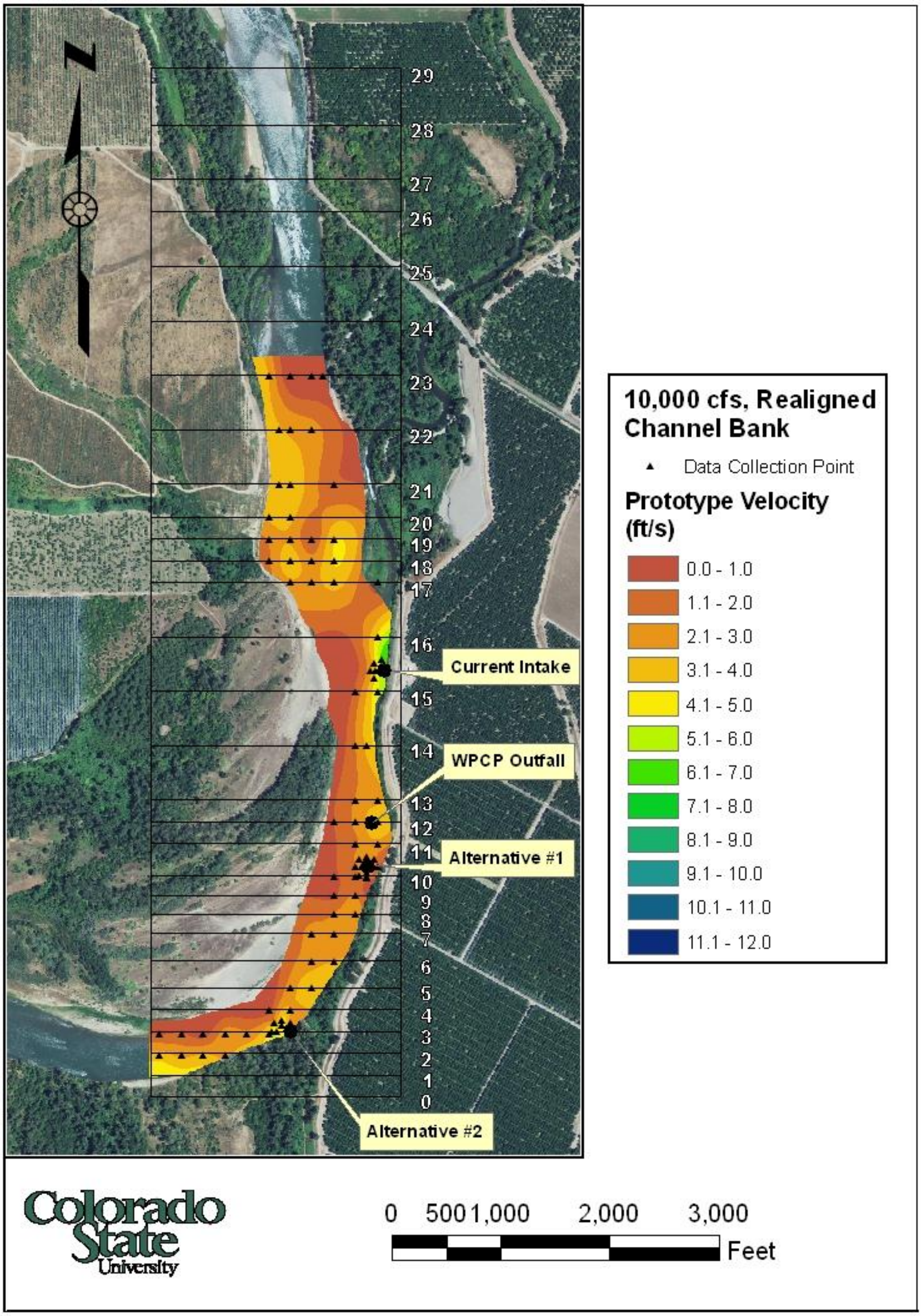

Figure 4-13: Flow-velocity distribution for 10,000-cfs Realigned-bank configuration testing.

Bed elevations based on the post-10,000-cfs Realigned-bank configuration test measurements are displayed in Figure 4-14. The realigned bank resulted in a wider and deeper main-channel cross section in the vicinity of Cross-section 9 and a relatively smooth east bank compared to the Baseline configuration, which had a nub-like extension near Cross-section 9. Changes in bed elevations, based on bed-elevation differences between the post-10,000-cfs test and the pre-10,000-cfs Realigned Bank test bed elevations set prior to the Realigned-bank configuration testing, are presented in Figure 4-15. Figure 4-15 reveals few significant changes in bed elevations after the 10,000-cfs test. Minor aggradation was observed upstream of the current pump-intake location and minor degradation of up to 1 ft was observed below the realigned bank. Additionally, minor aggradation of up to 1 ft in the vicinity of the current pump-intake location was observed which corresponded well with the Baseline configuration testing. Minor degradation, of less than 1 ft, around the Proposed Alternative 1 site was measured, and minor degradation of less than 1 ft in the vicinity of the WPCP outfall near the Proposed Alternative 1 site was observed. Negligible bed-elevation changes were observed near the Proposed Alternative 2 site.

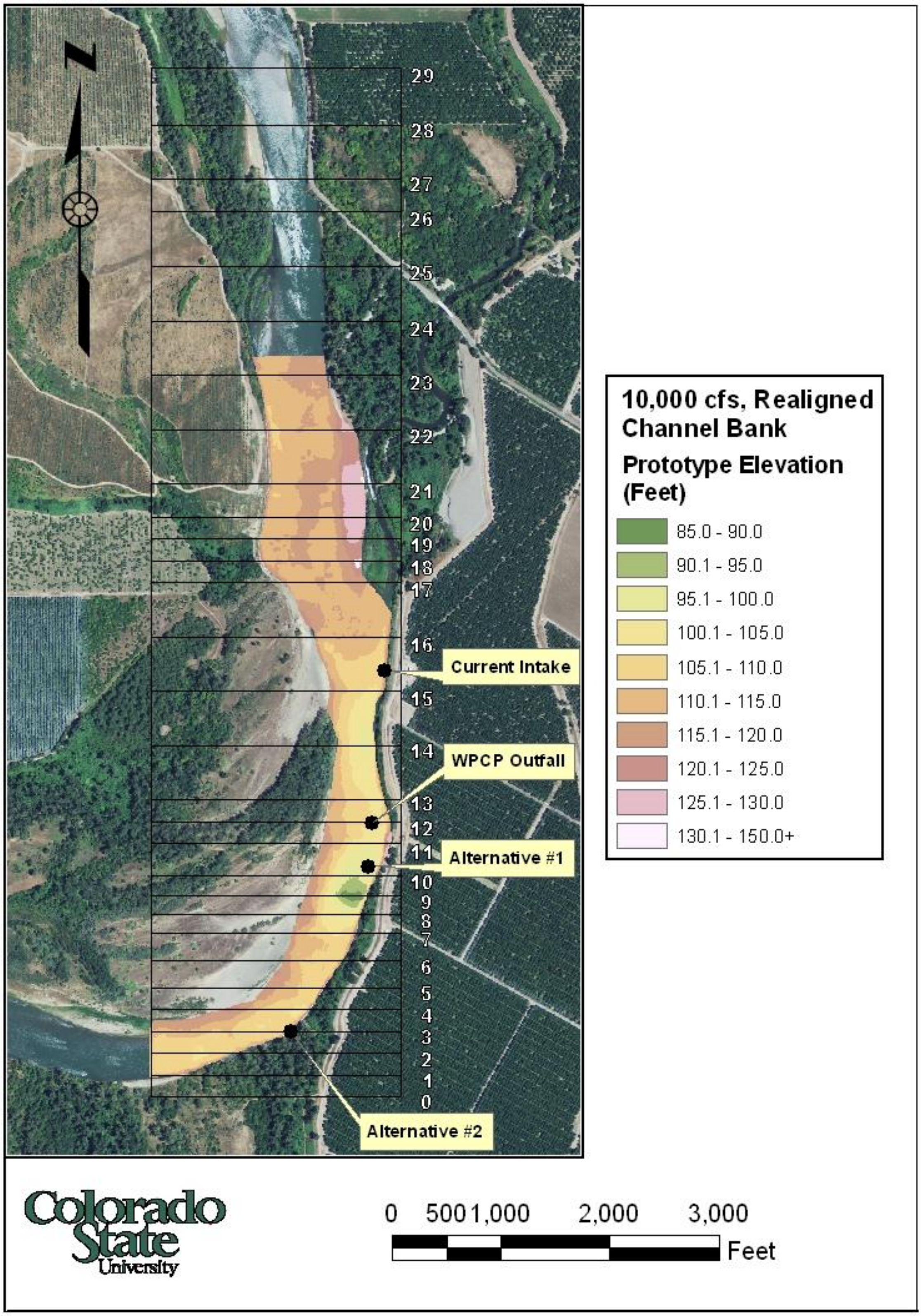

Figure 4-14: Bed elevations for post-10,000-cfs Realigned-bank configuration testing.

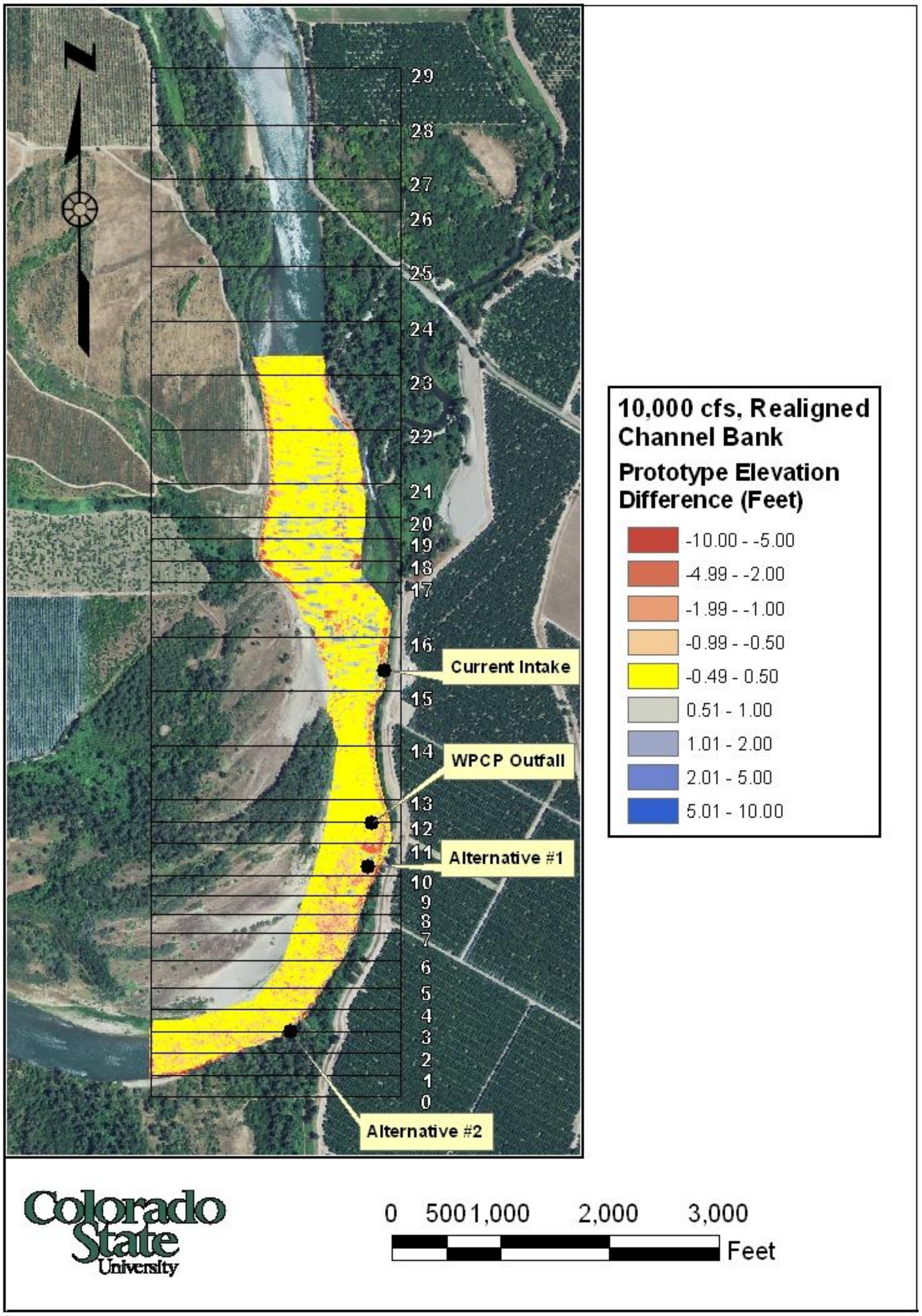

Figure 4-15: Bed-elevation differences between pre- and post-testing of realigned bank at 10,000 cfs.

The flow-velocity distribution for the 90,000-cfs Realigned-bank configuration is presented in Figure 4-16. For 90,000-cfs testing, a majority of the realigned-bank flow-velocity trends were consistent with trends witnessed in testing of the Baseline configuration; however, higher flow velocities in the main channel were measured downstream of the Proposed Alternative 1 site extending to the end of the model reach. Increased main-channel velocities were a result of more uniform main-channel flows created by straightening the east bank. Flow-velocity measurements at both the Proposed Alternative 1 site and Proposed Alternative 2 site were slightly lower than upstream and downstream measurements. Flow velocities of 3.7 ft/s, 3.0 ft/s, and 3.1 ft/s were measured immediately surrounding the current pump-intake location, Proposed Alternative 1 site, and Proposed Alternative 2 site, respectively.

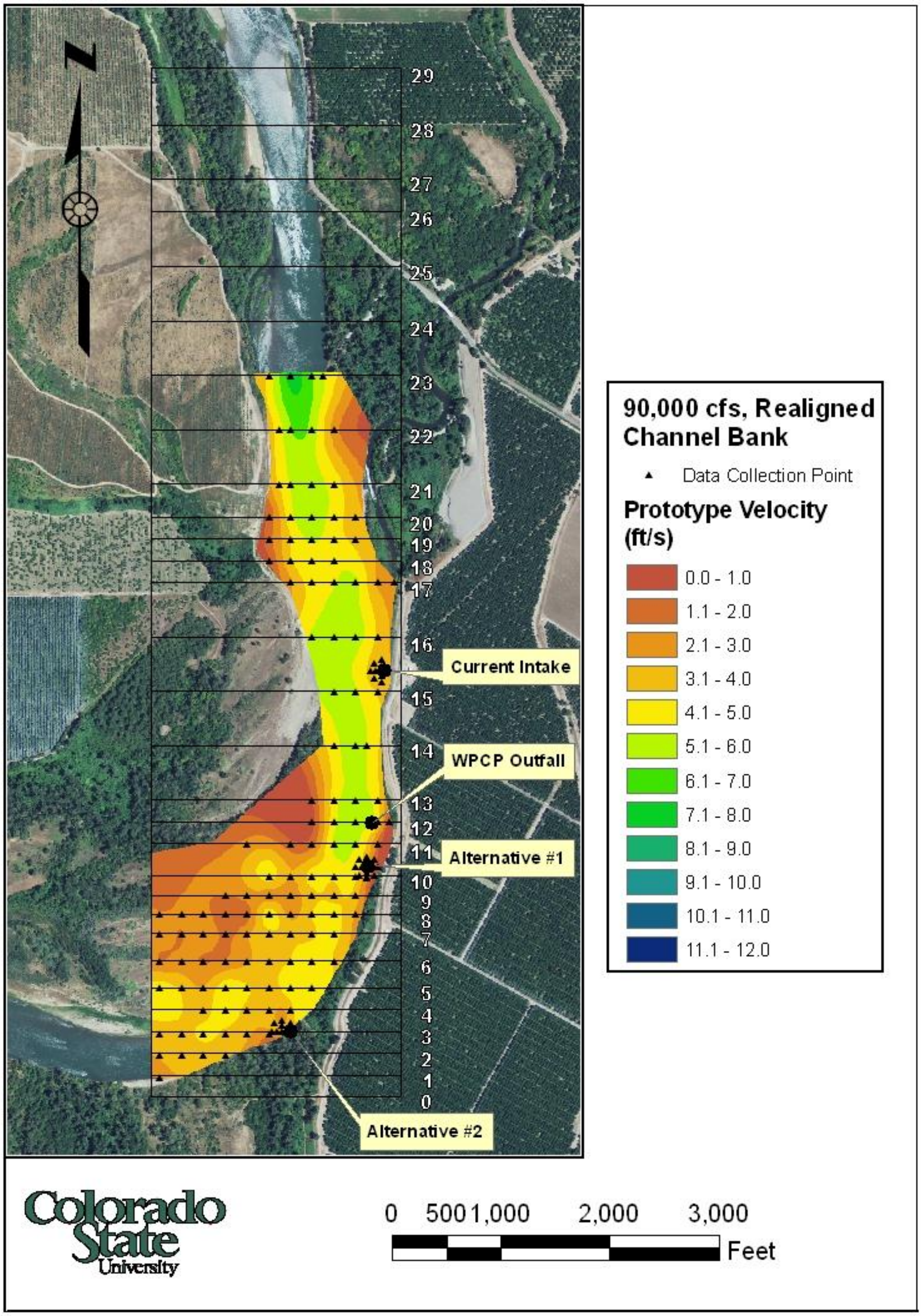

Figure 4-16: Flow-velocity distribution for the 90,000-cfs Realigned-bank configuration testing.

Bed elevations based on the post-90,000-cfs Realigned-bank configuration test measurements are displayed in Figure 4-17. Changes in bed elevations, based on bed-elevation differences between the realigned bank post-90,000-cfs test and the pre-10,000-cfs Realigned-bank test, are presented in Figure 4-18. Trends observed in bed-elevation changes following the 90,000-cfs test were primarily a continuation of the differences illustrated after the 10,000-cfs testing, as previously presented in Figure 4-15. Aggradation of up to 1 ft was measured near the current pump-intake location. Degradation of up to 2 ft was measured in the Proposed Alternative 1 site area and minor degradation of up to 1 ft was observed downstream of the Proposed Alternative 1 site. Negligible bed-elevation changes were observed in the area surrounding the Proposed Alternative 2 site.

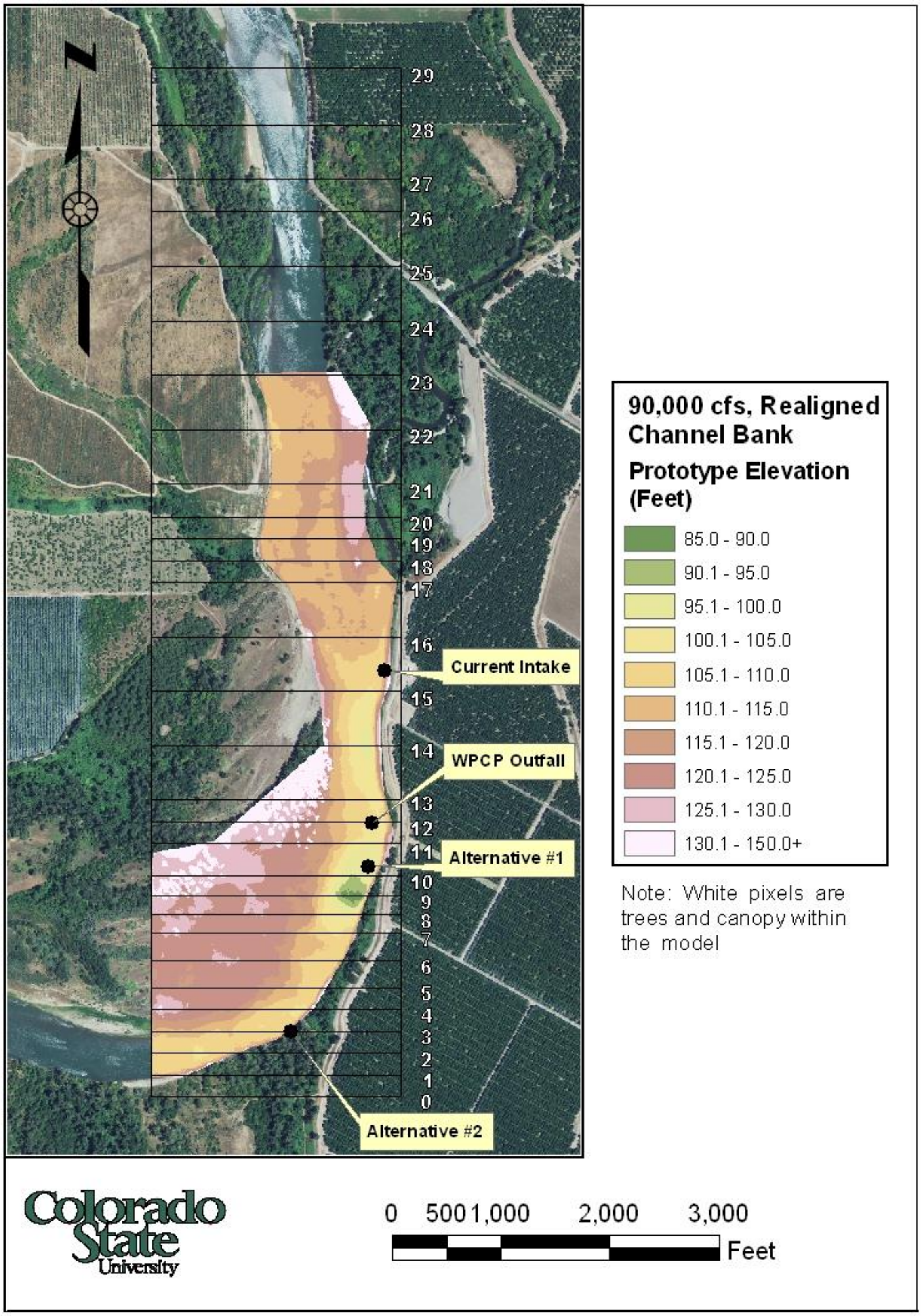

Figure 4-17: Bed elevations for post-90,000-cfs Realigned-bank testing.

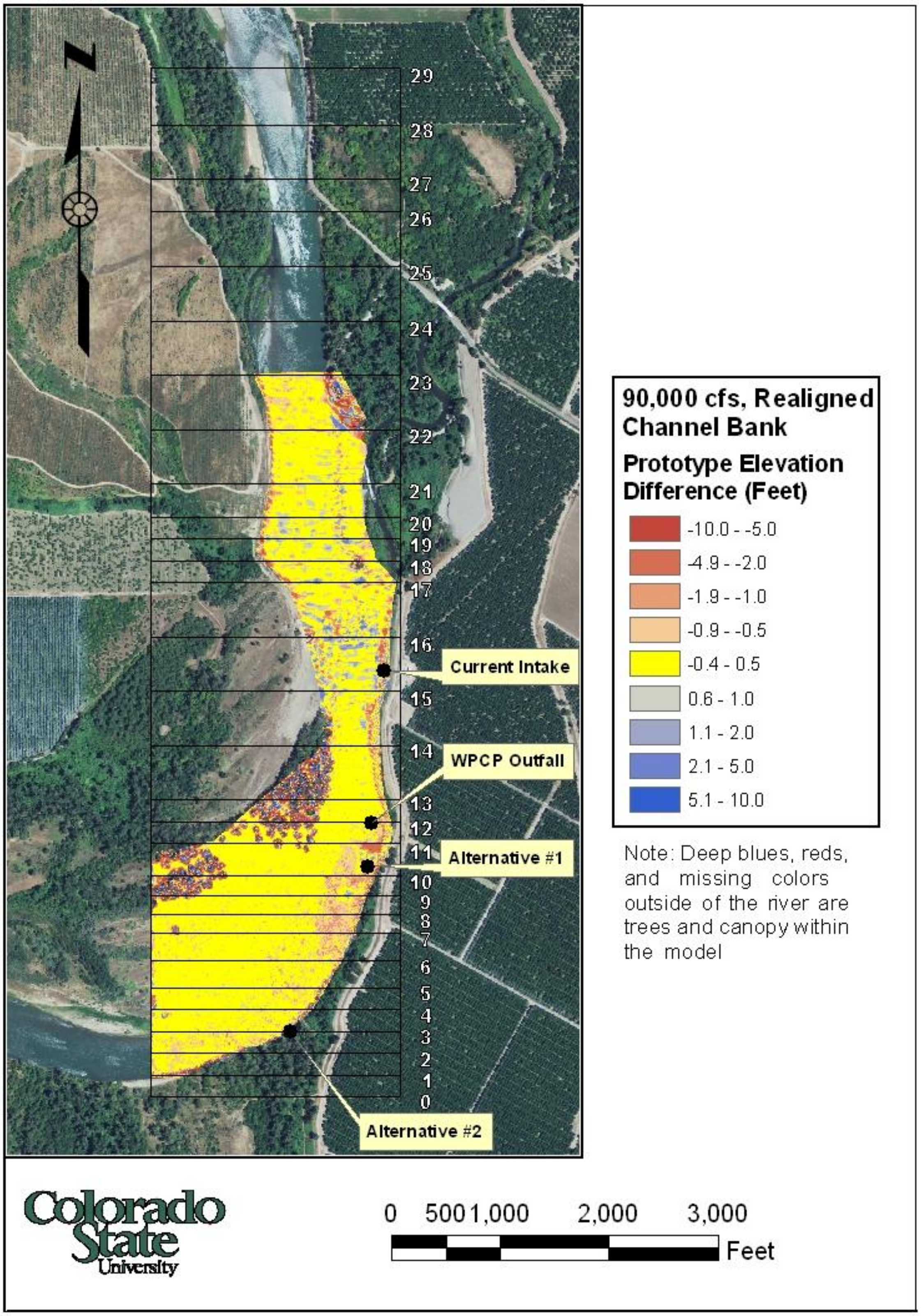

Figure 4-18: Bed-elevation differences between post-90,000-cfs test and the pre-10,000-cfs Realigned-bank test.

The flow-velocity distribution for 145,000-cfs Realigned-bank configuration Test 1 is presented in Figure 4-19. Flow-velocity trends for 145,000-cfs Realigned-bank configuration Test 1 were consistent with trends observed during the 90,000-cfs testing, including an area of decreased flow velocity near the gravel bar. Higher main-channel flow velocities, as compared to the 145,000-cfs Baseline configuration testing, were observed along the east bank downstream of the realigned portion of the bank. Flow velocities of 6.7 and 5.5 ft/s were observed near the current pump-intake location and Proposed Alternative 2 site, respectively. The measured flow velocities at the Proposed Alternative 2 site were lower than surrounding channel measurements with higher flow velocities upstream and downstream of the Proposed Alternative 2 site.

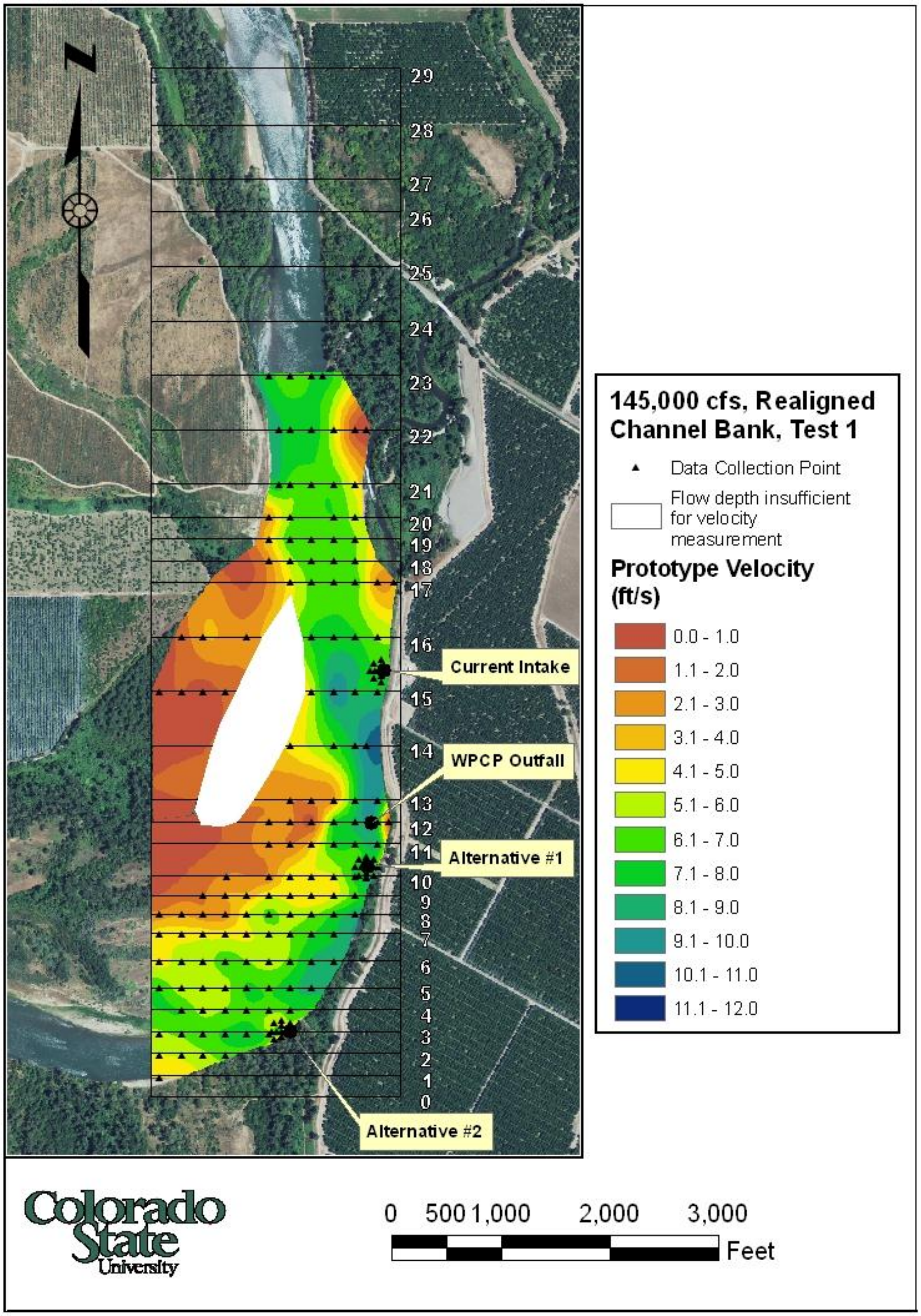

Figure 4-19: Flow-velocity distribution for 145,000-cfs Realigned-bank configuration Test 1.

Bed elevations based on post-145,000-cfs Realigned-bank configuration Test 1 measurements are displayed in Figure 4-20. Changes in bed elevations, based on bed-elevation differences between post-145,000-cfs Realigned-bank configuration Test 1 and the pre-10,000-cfs test, are presented in Figure 4-21. Aggradation and degradation trends observed following 145,000-cfs Realigned-bank configuration Test 1 deviated from the trends observed following the 90,000-cfs Realigned-bank configuration test. Namely, approximately 2 ft of aggradation was measured near the Proposed Alternative 1 site and the WPCP outfall; whereas up to 2 ft of degradation had been measured at the 90,000-cfs discharge. Additional areas of aggradation were observed at the upstream end of the model. Up to 5 ft of aggradation was measured near the current pump-intake location. Minimal bed-elevation changes were observed near the Proposed Alternative 2 site, and coloration in this area in Figure 4-21 was primarily due to ripple formation during the 145,000-cfs test.

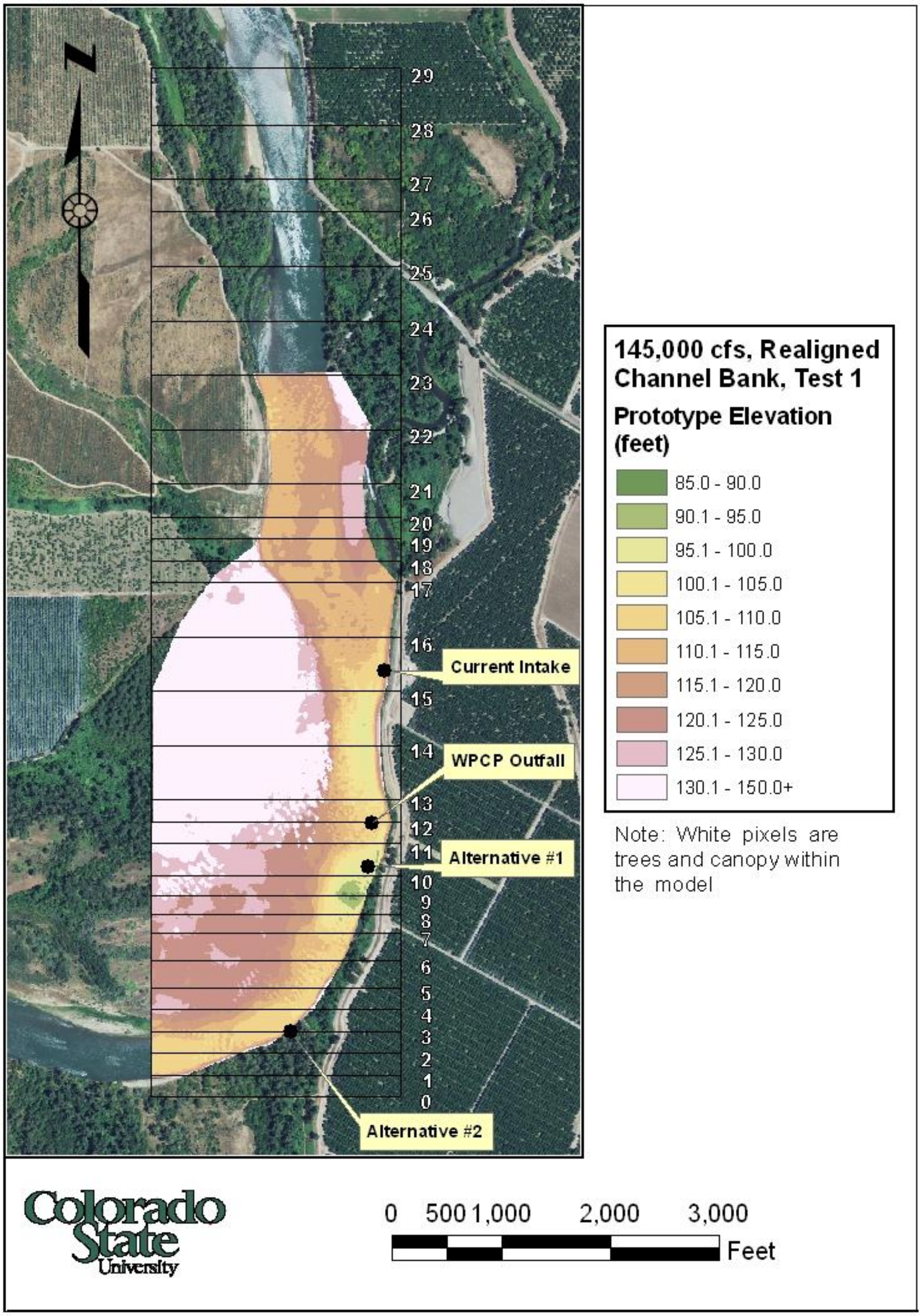

Figure 4-20: Bed elevations for post-145,000-cfs Realigned-bank configuration Test 1.

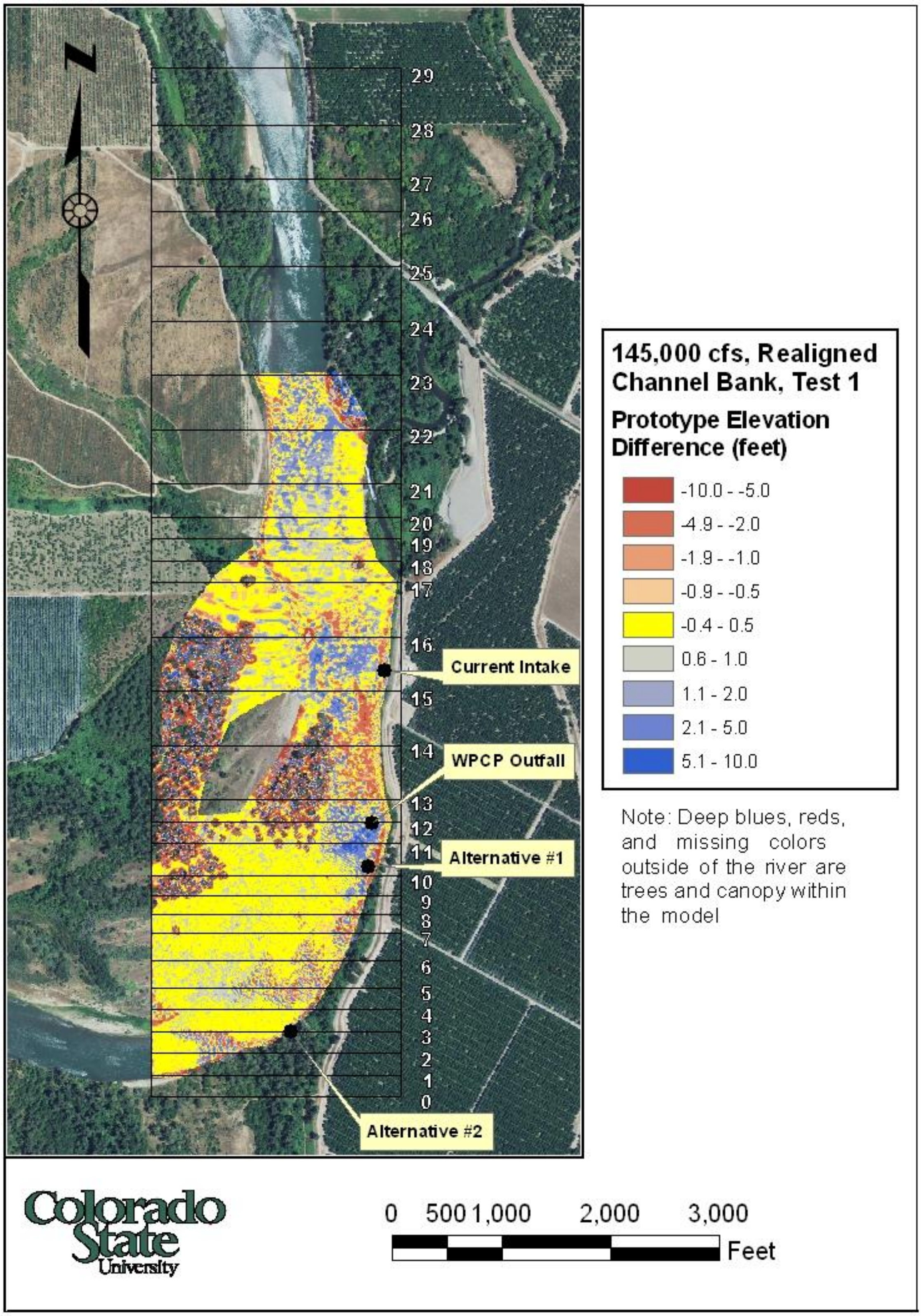

Figure 4-21: Bed-elevation differences between post-145,000-cfs Realigned-bank configuration Test 1 and pre-10,000-cfs Realigned-bank configuration testing.

4.5. ADDITIONAL REALIGNED-BANK TESTING

Additional testing of the Realigned-bank configuration was conducted to further investigate aggradation observed during the 145,000-cfs Realigned-bank configuration Test 1, near the Proposed Alternative 1 site and the WPCP outfall. Testing included two additional 8.0-hr 145,000-cfs tests, Test 2 and Test 3, to determine if the sedimentation at the WPCP outfall was a short-term readjustment to the bank realignment, or if long-term aggradation would be experienced at the outfall. The channel bed was re-leveled prior to the beginning of Test 2 but was not re-leveled between Test 2 and Test 3.

The flow-velocity distribution for 145,000-cfs Realigned-bank configuration Test 2 is presented in Figure 4-22 and largely reflects the flow-velocity trends measured during 145,000-cfs Realigned-bank configuration Test 1, as previously provided in Figure 4-19. Notable exceptions were slightly higher flow velocities near the Proposed Alternative 2 site, which illustrated better connectivity between the higher flow velocities upstream and downstream of the Proposed Alternative 2 site that were observed in the previous 145,000-cfs Realigned-bank configuration Test 1. Additionally, a slight increase in flow velocity was observed at the current pump-intake location and Proposed Alternative 2 site, with flow velocities of 7.7 ft/s and 6.2 ft/s, respectively.

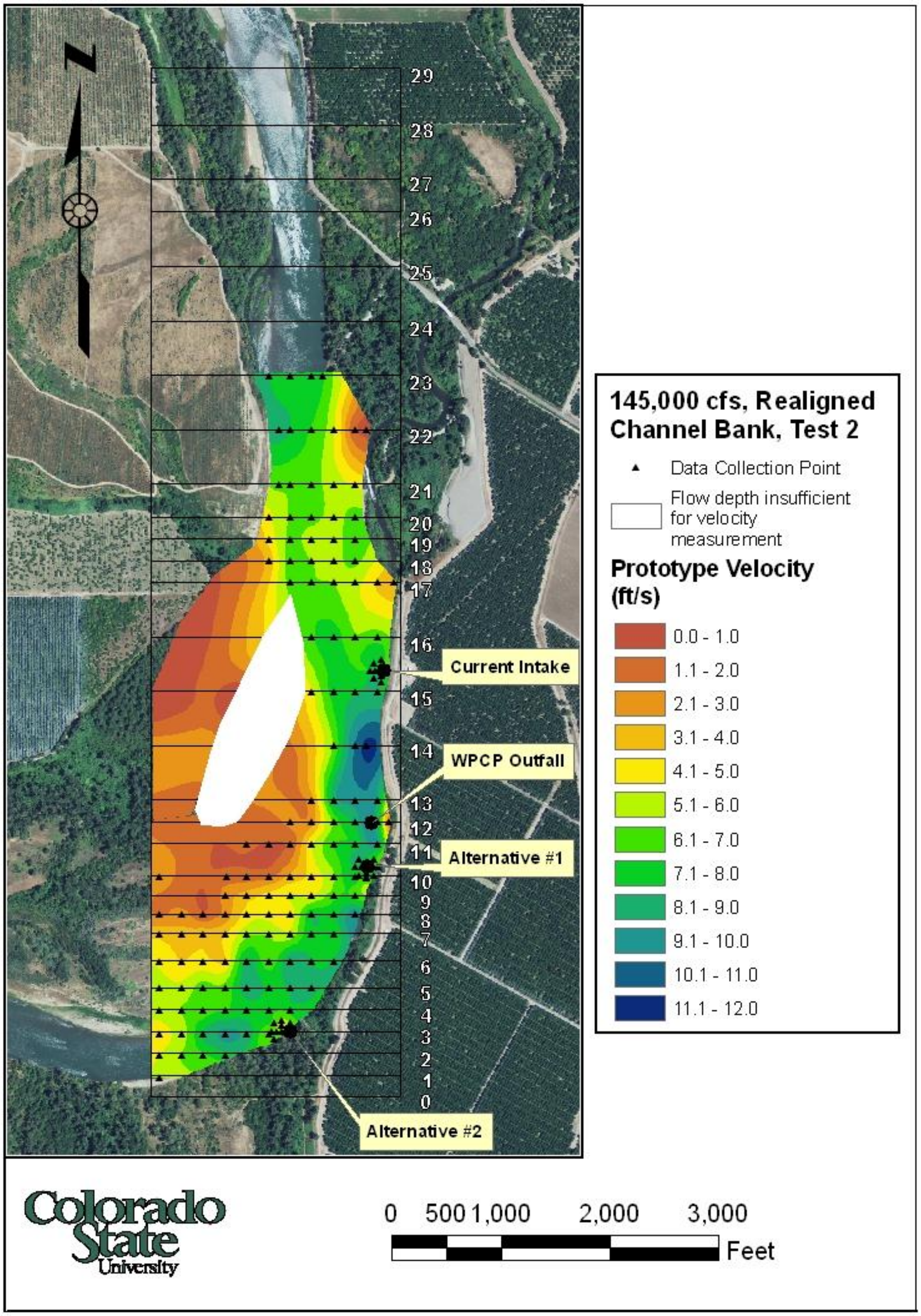

Figure 4-22: Flow-velocity distribution of 145,000-cfs Realigned-bank configuration Test 2.

Changes in bed elevation, based on bed-elevation differences between post-145,000-cfs Realigned-bank configuration Test 2 bed and pre-145,000-cfs Realigned-bank configuration Test 2 bed, are presented in Figure 4-23. Sedimentation trends for 145,000-cfs Realigned-bank configuration Test 2 were consistent with trends observed during Test 1, as previously presented in Figure 4-21.

Changes in bed elevations, based on bed-elevation differences between the post-145,000-cfs Realigned-bank configuration Test 3 bed and pre-145,000-cfs Realigned-bank configuration Test 2 bed, are presented in Figure 4-24. Sedimentation trends observed after Test 3 were a continuation of the trends observed after Test 2, as presented in Figure 4-23. Greater magnitudes of degradation and aggradation, as compared to Test 2, were measured for Test 3. Degradation, up to 2 ft, was dominant along the east bank near the current pump-intake location, with increased aggradation of up to 2 ft towards the main channel. Considerable aggradation of up to 5 ft was observed near the bank realignment (near the Proposed Alternative 1 site) and minimal bed-elevation changes were observed at the Proposed Alternative 2 site. The WPCP outfall was located on the boundary of an aggradation zone and a degradation zone, with aggradation and degradation of approximately ±2 ft in the vicinity of the outfall.

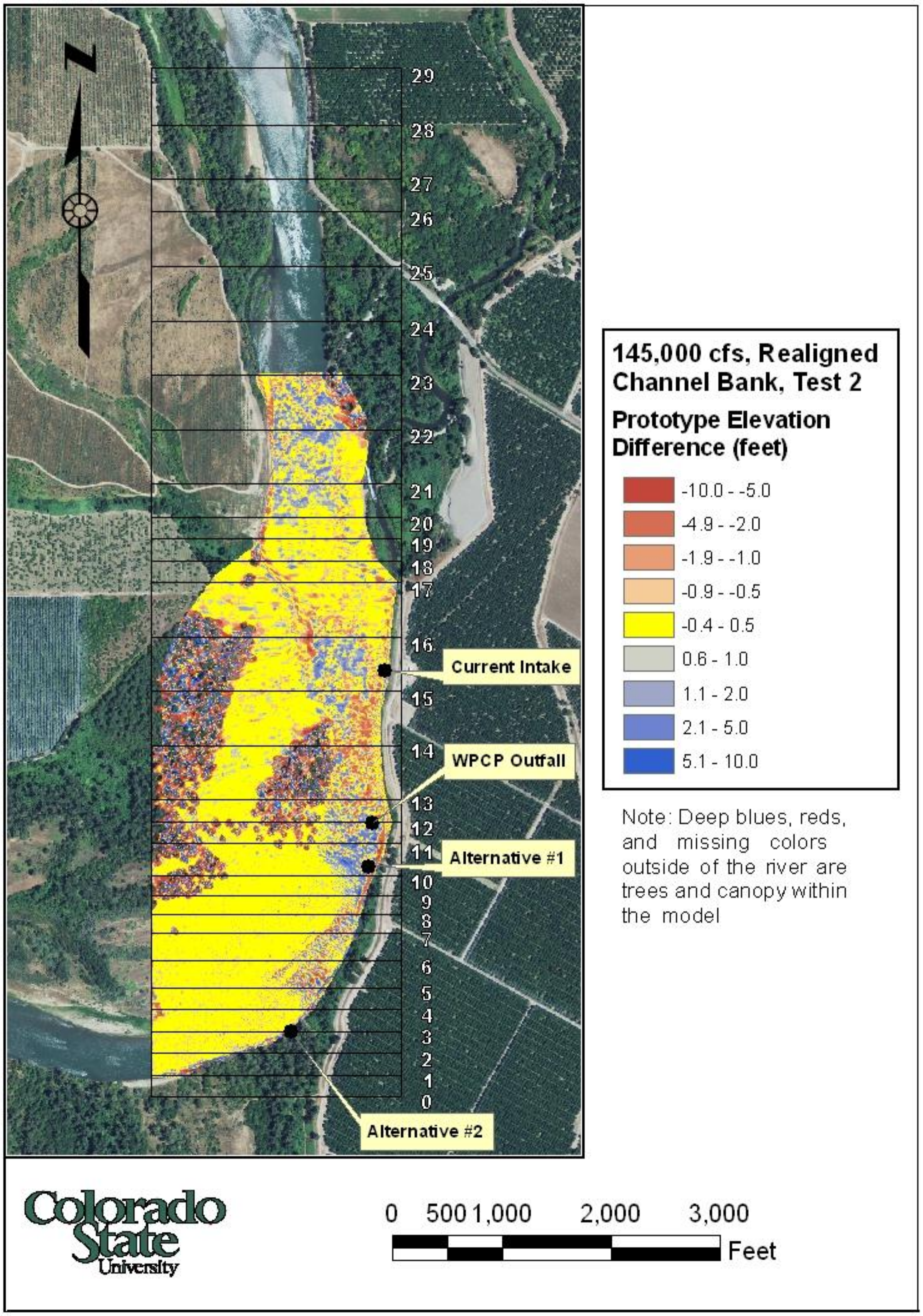

Figure 4-23: Bed-elevation differences between 145,000-cfs Realigned-bank configuration Test 2 post-realigned-bank bed and reconfigured-channel baseline conditions.

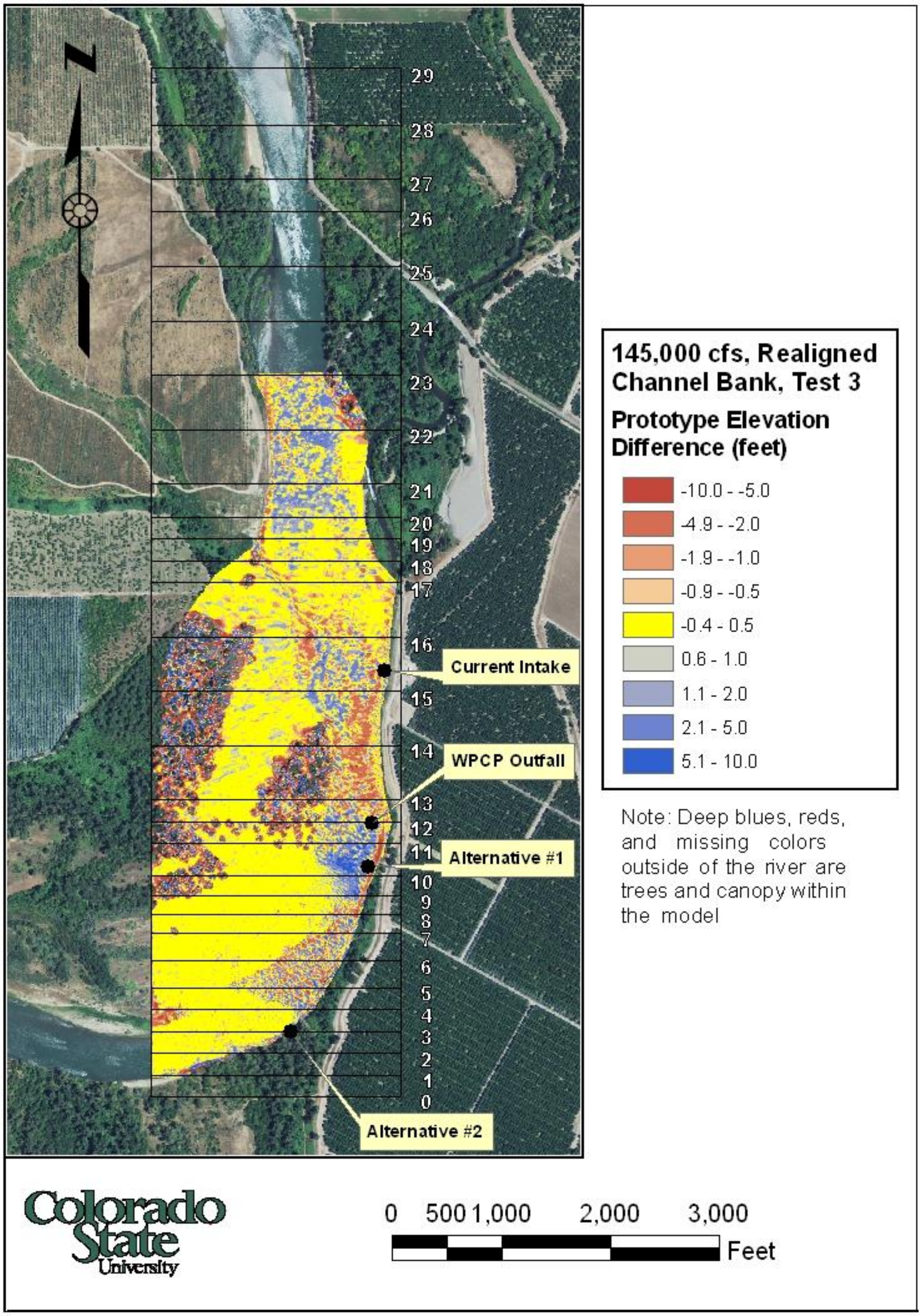

Figure 4-24: Bed-elevation differences between post-145,000-cfs Realigned-bank configuration Test 3 bed and reconfigured-channel baseline conditions.

Additional bed-elevation comparisons were made to evaluate sedimentation trends through time. Figure 4-25 illustrates the bed-elevation changes that occurred across 145,000-cfs Realigned-bank configuration Test 3 by displaying the change in bed elevations at the conclusion of Test 3 from the bed elevations at the conclusion of Test 2. As depicted in Figure 4-25, the majority of the model bed was not disturbed across Test 3, as is indicated by the yellow coloration and alternating shades of blue and red, indicating mobilization of the ripples but not areas of concentrated aggradation or degradation. An area of continued aggradation was observed during Test 3 near the location of the bank realignment and the Proposed Alternative 1 site. The WPCP outfall was located outside of the continued aggradation zone.

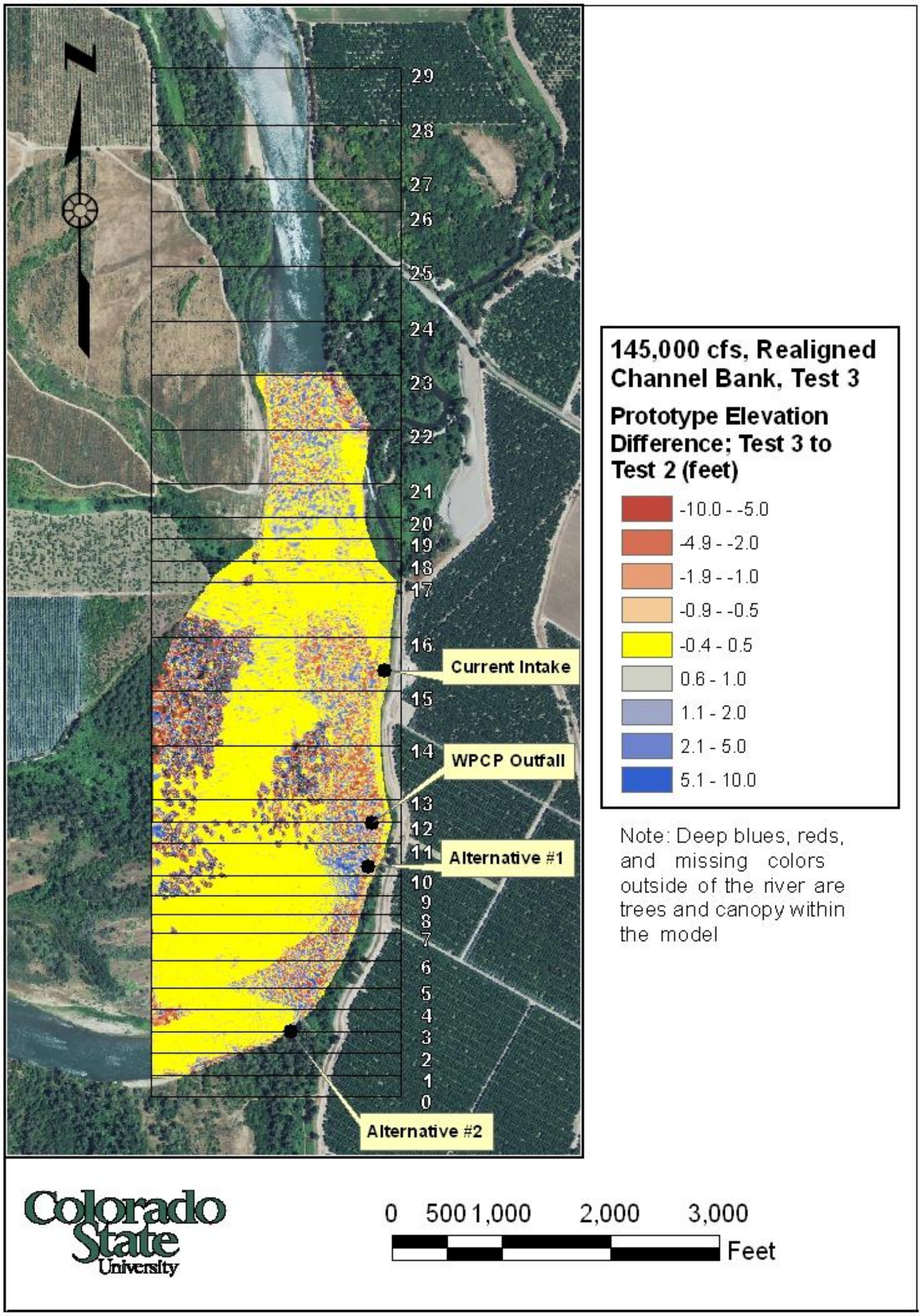

Figure 4-25: Bed-elevation differences between 145,000-cfs Realigned-bank configuration Test 3 and Test 2.

A comparison of the bed elevations following 145,000-cfs Realigned-bank configuration Test 3 to Baseline configuration bed elevations was also analyzed. Figure 4-26 depicts the bed-elevation differences between 145,000-cfs Realigned-bank configuration Test 3 to post-10,000-cfs Baseline configuration bed elevations. The intent of the comparison to the Baseline configuration was to determine if net aggradation or degradation from the existing bed conditions would exist after bank realignment. Evaluation of Figure 4-26 reveals a zone of aggradation of up to 5 ft near the realigned east bank compared to existing conditions. A zone of aggradation of up to 2 ft was also observed in the area upstream of the realignment. The WPCP outfall was on the border between aggradation and degradation zones, which were observed to range from 2 ft of degradation to 2 ft of aggradation for Test 3 as compared to existing bed conditions. The measured downstream aggradation suggests that a maximum of 2 ft of aggradation could be expected at the WPCP outfall.

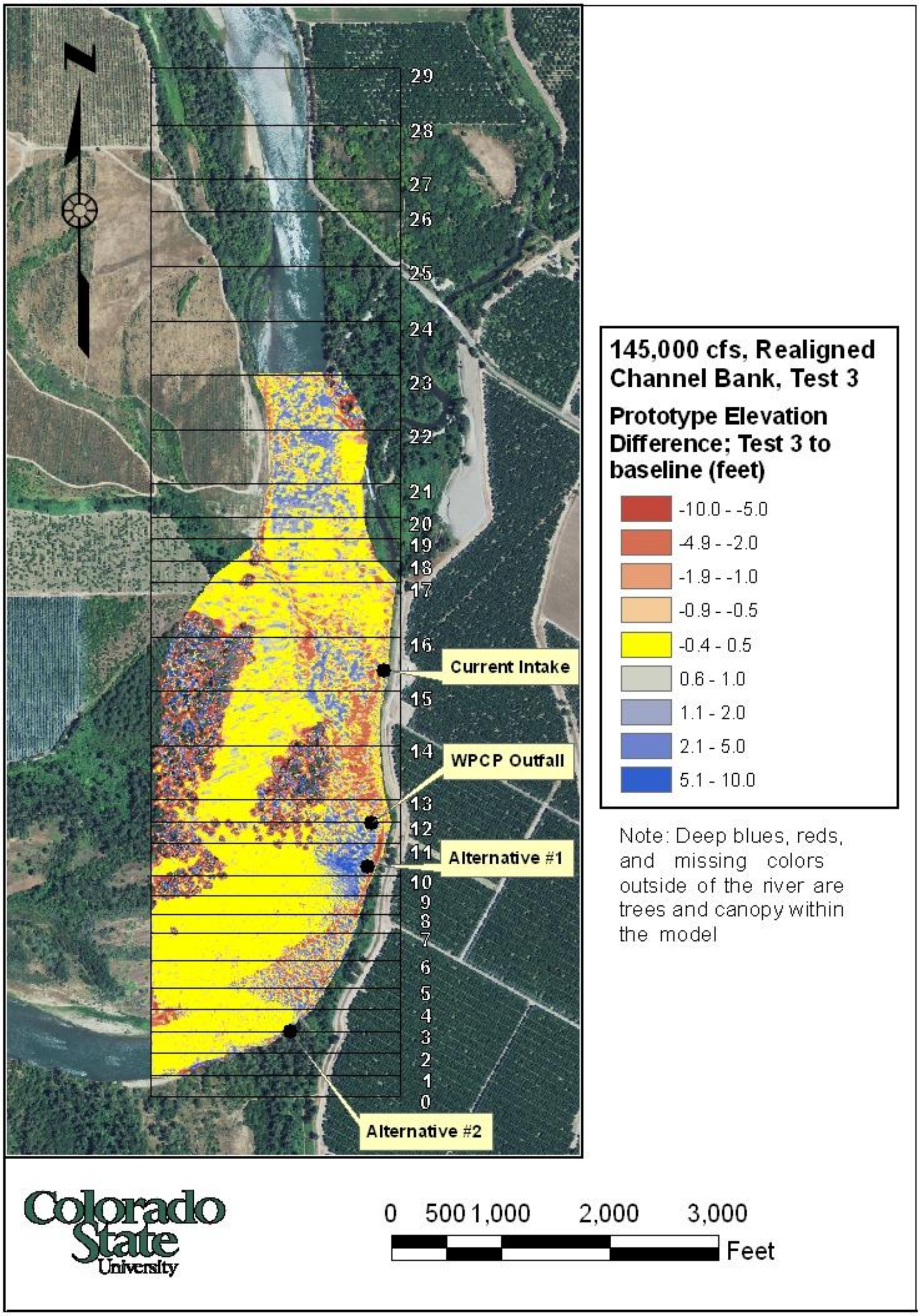

Figure 4-26: Bed-elevation differences between 145,000-cfs Realigned-bank configuration Test 3 testing and existing (Baseline) bed configuration.

5. SUMMARY AND CONCLUSIONS

5.1. SUMMARY

In order to evaluate the feasibility of two pump relocation sites and the placement of a stockpile of dredge material on the west floodplain, a 1:100-scale physical model of a 10,300-ft section of the Sacramento River was constructed at the CSU ERC. The model maintained Froude similitude and approximated sediment scaling ratios including *Shields parameter* to *critical Shields parameter* ratio, *flow velocity* to *critical flow-velocity* ratio, and Rouse number. Two types of sediment were incorporated in construction of the model. A fine sand modeled mobile-bed and floodplain material and a cohesive loam soil modeled the downstream un-reveted east bank in the prototype.

Once constructed, model testing evaluated hydraulic characteristics and sedimentation patterns at the current pump-intake location and two alternative pump relocation sites located 2,200 ft and 3,500 ft downstream of the current pump-intake location. Three channel conditions were evaluated:

1. baseline, or current, conditions;
2. inclusion of a gravel stockpile on the west floodplain; and
3. realignment of the east bank in the vicinity of the 2,200-ft pump relocation site. The Proposed Alternative 1 site, located in the area of realignment, would not be considered for this option.

Data collected for analysis included flow-velocity distributions for 10,000-cfs, 90,000-cfs, and 145,000-cfs discharges, and topographic bed-elevation data to evaluate erosion and deposition patterns. Table 5-1 provides the test matrix for the research program. The following sections summarize the hydraulic modeling and accompanying results.

Table 5-1: Summary of test matrix for project testing.

	Discharge		
Test Designation	**10,000 cfs**	**90,000 cfs**	**145,000 cfs**
Baseline configuration	x	x	x
Gravel-stockpile configuration			x
Realigned-bank configuration Test 1[a]	x	x	x
Realigned-bank configuration Test 2			x
Realigned-bank configuration Test 3			x

[a] only the 145,000-cfs test is identified as Realigned-bank configuration Test 1

5.2. TEST CONFIGURATION RESULTS

Pump relocation options and channel configurations were evaluated at the low-flow, bankfull-flow, and 10-yr recurrence flow conditions. Testing of the Baseline configuration yielded flow-velocity and sedimentation trends that agreed well with prior testing conducted at the CSU ERC in 2007, and also corresponded well to trends observed in the prototype. Table 5-2 presents a summary of measured flow-velocity data and bed-elevation changes for all tested discharges of the Baseline configuration. Additionally, the following summarizes the erosion and sedimentation trends observed from the 145,000-cfs Baseline configuration testing:

1. aggradation of up to 5 ft at the current pump-intake location;
2. aggradation of up to 5 ft in the main channel near the Proposed Alternative 1 site;
3. a strip of degradation of 2 to 5 ft along the bank near the Proposed Alternative 1 site; which continued tangentially downstream from the east-bank protrusion; and
4. negligible aggradation and degradation at the Proposed Alternative 2 site.

Table 5-2: Measured flow velocities and bed-elevation changes for the Baseline configuration.

	Average Prototype Flow Velocity (ft/s)			Aggradation/Degradation Trend[a]		
Discharge	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
10,000 cfs	2.3	3.5	4.2	N/A	N/A	N/A
90,000 cfs	3.8	3.7	2.3	+ (≈ 2 ft)	- (≈ 1 ft)	0
145,000 cfs	6.3	7.1	5.3	+ (≈ 5 ft)	- (≈ 5 ft)	± (≈ 1 ft)

[a] - = degradation, + = aggradation, N/A = not applicable

Evaluation of the Gravel-stockpile configuration revealed negligible backwater effects due to the stockpile, as flow-velocity and sedimentation trends with the gravel stockpile were similar to trends observed during testing of the Baseline configuration. Velocity measured near the current pump-intake location for the Gravel-stockpile configuration was 5% greater than that measured for the Baseline configuration; measured aggradation at the current pump-intake location was approximately 2 ft less for the Gravel-stockpile configuration than the Baseline configuration. Table 5-3 presents a summary of measured flow-velocity data and bed-elevation changes for the 145,000-cfs Gravel-stockpile configuration. Additionally, the following summarizes the erosion and sedimentation trends observed from the 145,000-cfs Gravel-stockpile configuration testing:

1. similar trends to the baseline condition;
2. aggradation of up to 2 ft near the current pump-intake location;
3. a strip of degradation up to 5 ft immediately downstream of the riprapped protrusion on the east bank near the Proposed Alternative 1 site;
4. aggradation of approximately 2 to 5 ft in the main channel near the Proposed Alternative 1 site and the protrusion on the east bank; and
5. negligible bed-elevation changes at the Proposed Alternative 2 site.

Table 5-3: Measured flow velocities and bed-elevation changes for the Gravel-stockpile configuration.

Discharge	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]		
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
10,000 cfs	N/A	N/A	N/A	N/A	N/A	N/A
90,000 cfs	N/A	N/A	N/A	N/A	N/A	N/A
145,000 cfs	6.6	7.1	4.4	+ (≈ 2 ft)	- (≈ 5 ft)	0

[a] - = degradation, + = aggradation, N/A = not applicable

Flow-velocity trends for the Realigned-bank configuration are highlighted by the shift in the thalweg due to the removal of the riprapped protrusion along the east bank. Compared to the Baseline configuration, 145,000-cfs Realigned-bank configuration Test 1 had concentrated higher flow velocities within the main channel and along the east bank, with lower flow velocities observed along the floodplain. A shift in sedimentation patterns was observed for the Realigned-bank configuration compared to the Baseline and Gravel-stockpile configurations. Sedimentation patterns upstream of the realigned-bank were consistent with trends observed from Baseline configuration testing; however, sedimentation trends in the vicinity of and downstream of the realigned bank varied from baseline testing trends. Table 5-4 presents a summary of measured flow-velocity data and bed-elevation changes for testing of the Realigned-bank configuration. Flow-velocity data and bed-elevation change data were not presented for the Proposed Alternative 1 site since the site would no longer be an option if the east bank was realigned. The following summarize the erosion and sedimentation trends observed from the 145,000-cfs Realigned-bank configuration Test 1:

1. aggradation of up to 5 ft immediately northwest of the current pump-intake location;
2. aggradation of 2 to 5 ft upstream of the Proposed Alternative 1 site in the vicinity of the WPCP outfall; and
3. negligible bed-elevation changes in the area of the Proposal Alternative 2 site.

Table 5-4: Measured flow velocities and bed-elevation changes for the Realigned-bank configuration.

Discharge	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]		
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
10,000 cfs	4.2	N/A	3.8	+ (≈ 1 ft)	N/A	0
90,000 cfs	3.7	N/A	3.1	+ (≈ 1 ft)	N/A	0
145,000 cfs	7.0	N/A	5.3	+ (≈ 5 ft)	N/A	0

[a] - = degradation, + = aggradation, N/A = not applicable

The additional 145,000-cfs Realigned-bank configuration testing included two 8-hr 145,000-cfs tests, Test 2 and Test 3, to determine if long-term aggradation caused by the bank realignment would occur at the WPCP outfall. Table 5-5 presents a summary of the measured flow-velocity data and bed-elevation changes, relative to the Baseline configuration, after completion of 145,000-cfs Realigned-bank configuration Test 3. Realigned-bank configuration Test 2 replicated results observed during 145,000-cfs Realigned-bank configuration Test 1. Realigned-bank configuration Test 3 yielded stable conditions across the majority of the model, with additional aggradation of 2 to 5 ft near the Proposed Alternative 1 site suggesting a trend of long-term aggradation at this location. The site of the WPCP outfall was not within the area of continued aggradation observed following Realigned-bank configuration Test 3. The model indicated aggradation immediately downstream of the WPCP outfall and degradation immediately upstream of the WPCP outfall with the bank realignment. The measured downstream aggradation suggests that a maximum of 2 ft of aggradation could be expected at the WPCP outfall.

Table 5-5: Measured flow velocities and bed-elevation changes (relative to the Baseline configuration) for Realigned-bank configuration Test 3.

Discharge	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]			
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	WPCP Outfall
145,000 cfs	7.7	N/A	6.2	- (≈ 1 ft)	N/A	0	± (≈ 2 ft)

[a] - = degradation, + = aggradation, N/A = not applicable

5.2.1. PUMP-INTAKE FLOW VELOCITY

A summary of the 145,000-cfs flow-velocity values recorded at the existing pump intake and proposed pump relocation alternatives are provided in Table 5-6, along with the percent differences from the flow velocity measured at the current pump-intake location for the Baseline configuration. A flow velocity of 6.3 ft/s was measured at the current pump-intake location at 145,000-cfs baseline conditions. The measured flow velocity at the current pump-intake location increased 6% and 11% during the Gravel-stockpile and Realigned-bank configurations, respectively. An increase in flow velocity of 13%, and 13% was measured at the Proposed Alternative 1 site, relative to the current pump-intake location at baseline conditions, for the Baseline and Gravel-stockpile configurations, respectively. Measured flow velocities at the Proposed Alternative 2 site were less than the flow velocity measured at the current pump-intake location at baseline conditions. For the Proposed Alternative 2 site, a decrease in measured flow velocity of -16%, -30%, and -16%, relative to the current pump-intake location at baseline conditions, was observed for the Baseline, Gravel-stockpile, and Realigned-bank configurations, respectively.

Table 5-6: 145,000-cfs flow-velocity summary for current and proposed pump locations.

Pump Location	Test Configuration	Prototype 145,000-cfs Velocity (ft/s)	% Difference from Existing Pump at Baseline Conditions
Current Pump-intake Location	Baseline	6.3	–
	Gravel-stockpile	6.6	6%
	Realigned East Bank	7.0	11%
Proposed Alternative 1 Site	Baseline	7.1	13%
	Gravel-stockpile	7.1	13%
Proposed Alternative 2 Site	Baseline	5.3	-16%
	Gravel-stockpile	4.4	-30%
	Realigned East Bank	5.3	-16%

5.2.2. RESULTS SUMMARY TABLES

Results of flow-velocity measurements and bed-elevation changes for the current pump-intake location and both proposed pump-intake locations are summarized in this section for each of the three channel configurations. Table 5-7, Table 5-8, and Table 5-9 present the summaries of measured flow velocities and bed-elevation changes of each potential pump location site for the 10,000-cfs, 90,000-cfs, and 145,000-cfs discharges, respectively. Additionally, Figure 5-1, Figure 5-2, and Figure 5-3 provide bar charts representing flow-velocity measurements of each potential pump location site for the Baseline, Gravel-stockpile, and Realigned-bank configurations, respectively. A bar chart representing bed-elevation changes observed at potential pump location sites during 145,000-cfs testing of each configuration is provided in Figure 5-4.

Table 5-7: Summary of 10,000-cfs tests.

Test Designation	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]		
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
Baseline configuration	2.3	3.5	4.2	N/A	N/A	N/A
Gravel-stockpile configuration	N/A	N/A	N/A	N/A	N/A	N/A
Realigned-bank configuration	4.2	N/A	3.8	+ (≈ 1 ft)	N/A	0

[a] - = degradation, + = aggradation, N/A = not applicable

Table 5-8: Summary of 90,000-cfs tests.

Test Designation	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]		
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
Baseline configuration	3.8	3.7	2.3	+ (≈ 2 ft)	- (≈ 1 ft)	0
Gravel-stockpile configuration	N/A	N/A	N/A	N/A	N/A	N/A
Realigned-bank configuration	3.7	N/A	3.1	+ (≈ 1 ft)	N/A	0

[a] - = degradation, + = aggradation, N/A = not applicable

Table 5-9: Summary of 145,000-cfs tests.

Test Designation	Average Prototype Flow Velocity (ft/s)[a]			Aggradation/Degradation Trend[a]		
	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site	Current Pump-intake Location	Proposed Alternative 1 Site	Proposed Alternative 2 Site
Baseline configuration	6.3	7.1	5.3	+ (≈ 5 ft)	- (≈ 5 ft)	± (≈ 1 ft)
Gravel-stockpile configuration	6.6	7.1	4.4	+ (≈ 2 ft)	- (≈ 5 ft)	0
Realigned-bank configuration Test 1	7.0	N/A	5.3	+ (≈ 5 ft)	N/A	0
Realigned-bank configuration Test 2	7.7	N/A	6.2	+ (≈ 1 ft)	N/A	0

[a] - = degradation, + = aggradation, N/A = not applicable

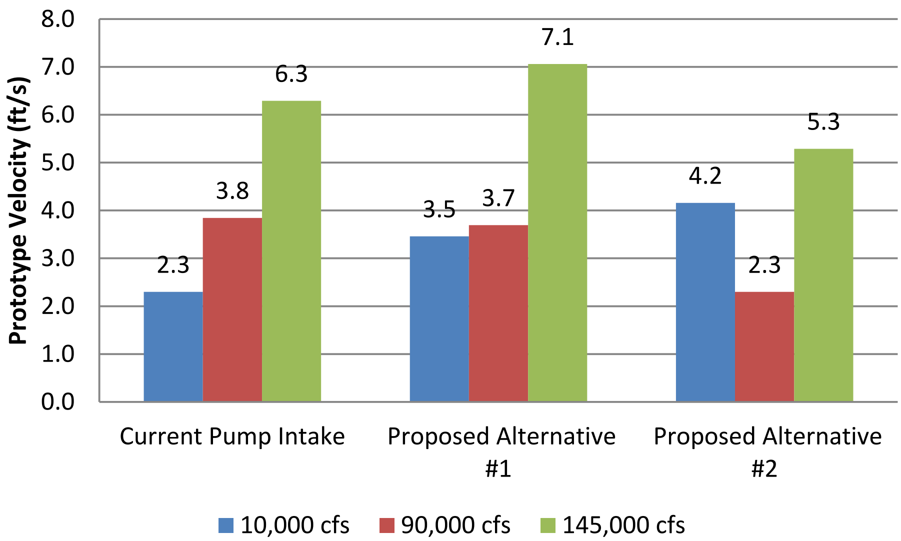

Figure 5-1: Measured flow velocity at pump locations during Baseline configuration testing.

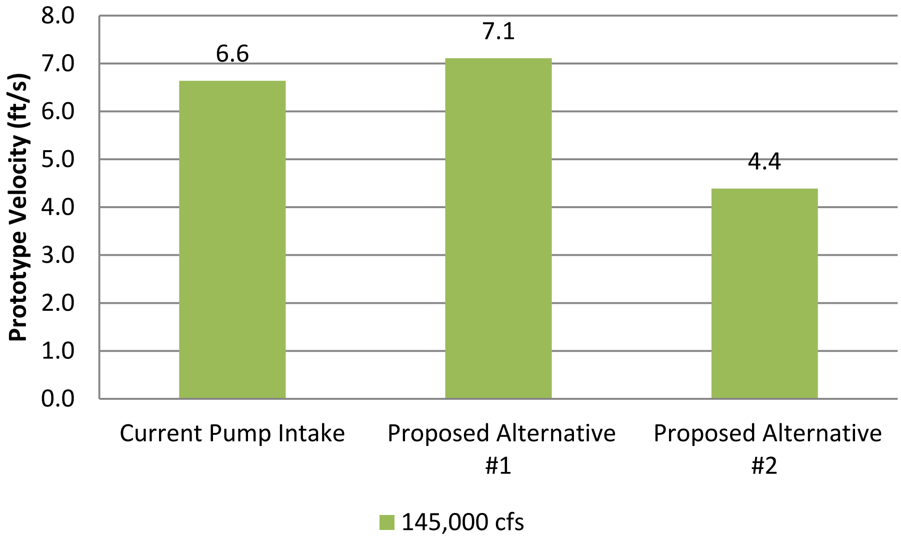

Figure 5-2: Measured flow velocity at pump locations during Gravel-stockpile configuration testing.

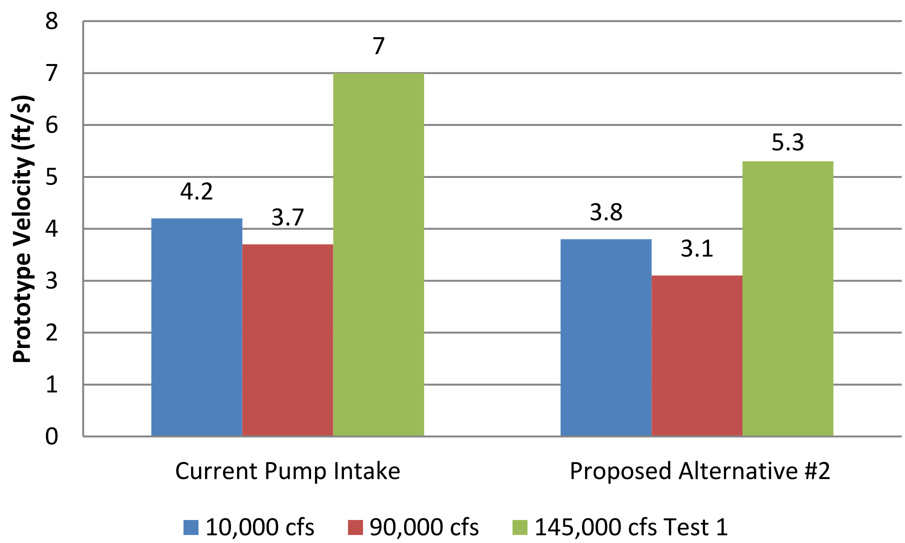

Figure 5-3: Measured flow velocity at pump locations during Realigned-bank configuration testing.

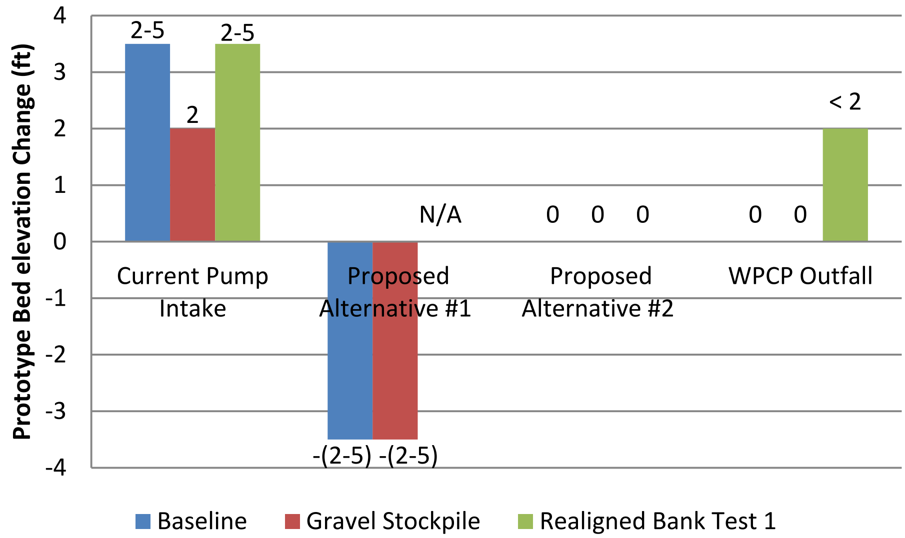

Figure 5-4: Measured aggradation and degradation during 145,000-cfs testing.

5.3. CONCLUSION

Results from the physical model study indicated continued sedimentation near the current pump-intake location, which could compromise continued pump operation without additional maintenance, such as dredging. Additionally, localized areas of low flow velocities measured in the vicinity of the current pump station indicate trends of continued bed aggradation.

The Proposed Alternative 1 site may be a promising site for pump relocation if existing conditions are maintained or the gravel stockpile constructed on the west floodplain as degradation was measured in the area of the Proposed Alternative 1 site for both configurations. Further evaluation of the site is needed to consider the long-term effects of the upstream gravel-bar migration on the Proposed Alternative 1 site. The Proposed Alternative 1 site was only considered for existing channel conditions and was not considered for the Realigned-bank configuration.

The Proposed Alternative 2 site showed the most stable bed condition with negligible bed-elevation changes measured during all channel configurations. Flow velocities were relatively consistent across all configurations, with the exception of the Realigned-bank configuration, which increased main-channel flow velocities due to the migration of the thalweg. However, further evaluation of the site is needed to consider the long-term effects of the upstream gravel-bar migration on the Proposed Alternative 2 site.

Measured aggradation and degradation near the WPCP outfall were minimal for the Baseline and Gravel-stockpile configurations. Realignment and hardening of the east bank, a possible configuration for the Proposed Alternative 2 site, slightly increased flow velocities at the WPCP outfall from baseline conditions and resulted in ripple formations. Zones of degradation and aggradation were observed upstream and downstream, respectively, of the WPCP outfall following the 145,000-cfs Realigned-bank configuration Test 3. The measured downstream aggradation suggests that a maximum of 2 ft of aggradation could be expected at the WPCP outfall for the Realigned-bank configuration.

In conclusion, continued aggradation at the current pump-intake location limits the long-term viability of operating the pump in its current location. Risks and uncertainties regarding gravel-bar migration need to be considered for all investigated relocation options, although risk associated with the gravel bar should decrease with further distance downstream. The Proposed Alternative 2 site offers the least risk in sedimentation trends and promise for long-term stability that may benefit pump operation in this location.

6. REFERENCES

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TerraServer USA (2008). 10 km W of Chico, California, United States 9/14/1998. http://terraserver-usa.com. Last accessed: 28 July 2008.

APPENDIX A. SEDIMENT GRAIN-SIZE DISTRIBUTIONS

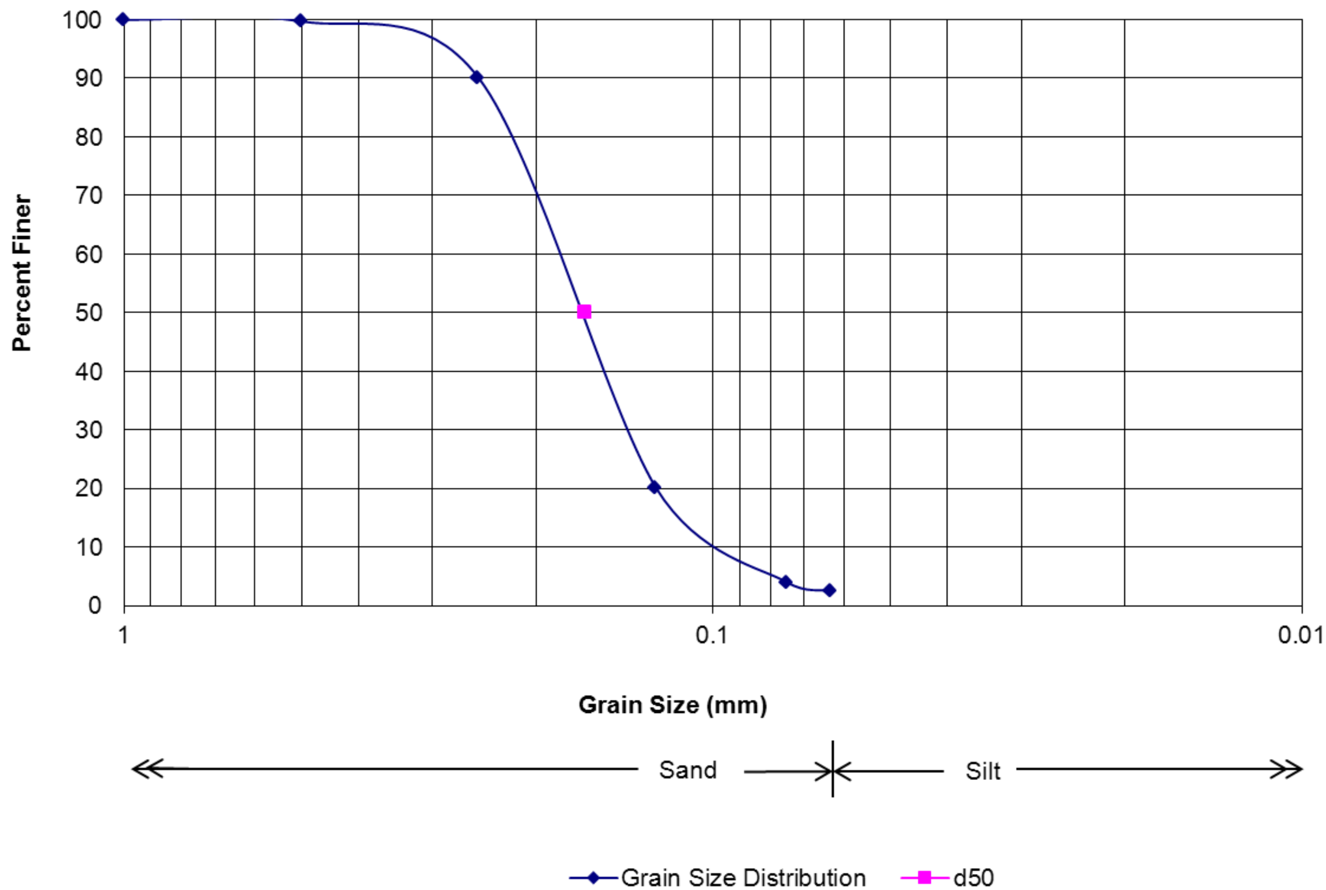

Figure A-1: Model mobile sediment grain-size distribution.

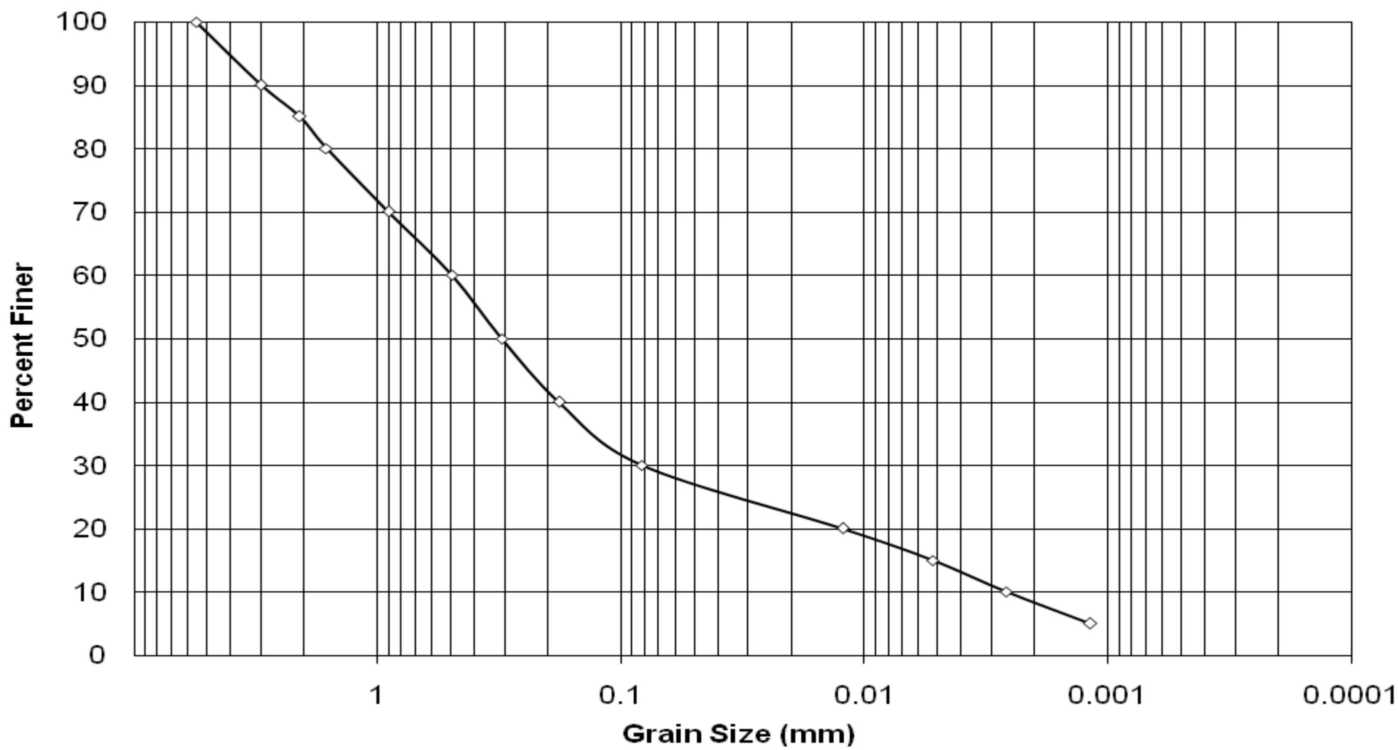

Figure A-2: Model cohesive sediment grain-size distribution.

APPENDIX B. GIS CONVERSION EQUATIONS

B.1. PROTOTYPE-TO-MODEL CONVERSION EQUATIONS

$$X_m = -\frac{(N_p - 23853025)}{100}$$ **Equation B-1**

$$Y_m = -\frac{(E_p - 65803256)}{100}$$ **Equation B-2**

$$Z_m = \left(\frac{Z_p}{100}\right) - 0.141545$$ **Equation B-3**

where:

X_m = model *X*-axis coordinates (longitudinal direction);
N_p = prototype northing coordinates;
Y_m = model *Y*-axis coordinates (lateral direction);
E_p = prototype easting coordinates;
Z_m = model *Z*-axis coordinates (elevation); and
Z_p = prototype *Z*-axis coordinates (elevation).

B.2. MODEL-TO-PROTOTYPE CONVERSION EQUATIONS

$$E_p = (-100 * Y_m) + 65803256$$ **Equation B-4**

$$N_p = (-100 * X_m) + 23853025$$ **Equation B-5**

$$Z_p = 100 * (Z_m + 0.141545)$$ **Equation B-6**

where:

E_p = prototype easting coordinates;
Y_m = model *Y*-axis coordinates (lateral direction);
N_p = prototype northing coordinates;
X_m = model *X*-axis coordinates (longitudinal direction);
Z_p = prototype *Z*-axis coordinates (elevation); and
Z_m = model *Z*-axis coordinates (elevation).

APPENDIX C. BASELINE DESIGN CROSS SECTIONS

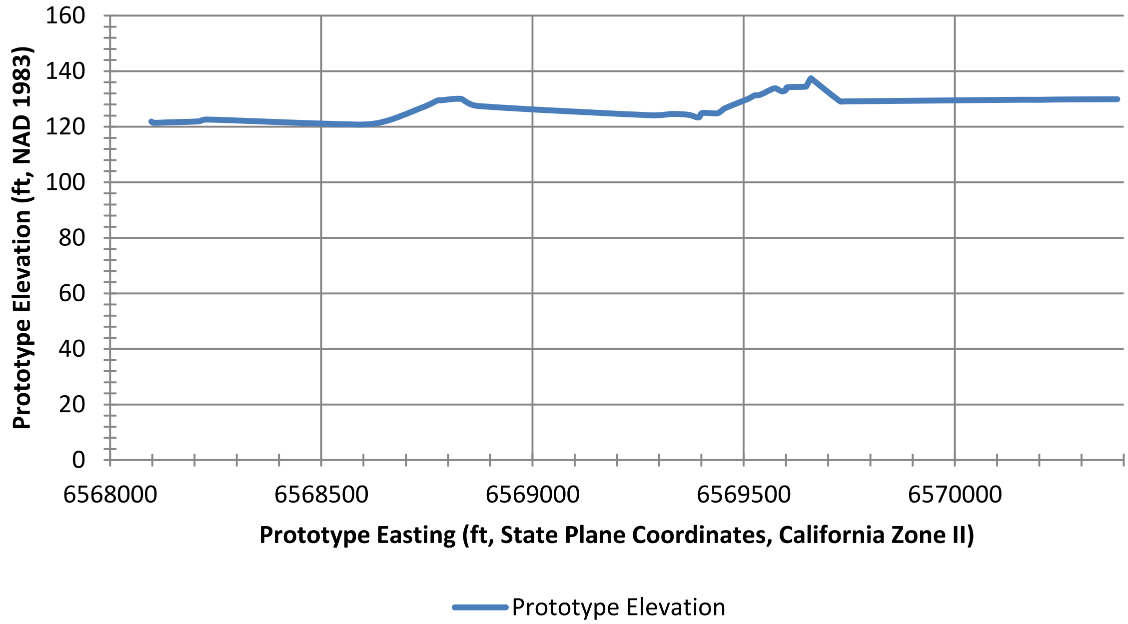

Figure C-1: Prototype Cross-section 0.

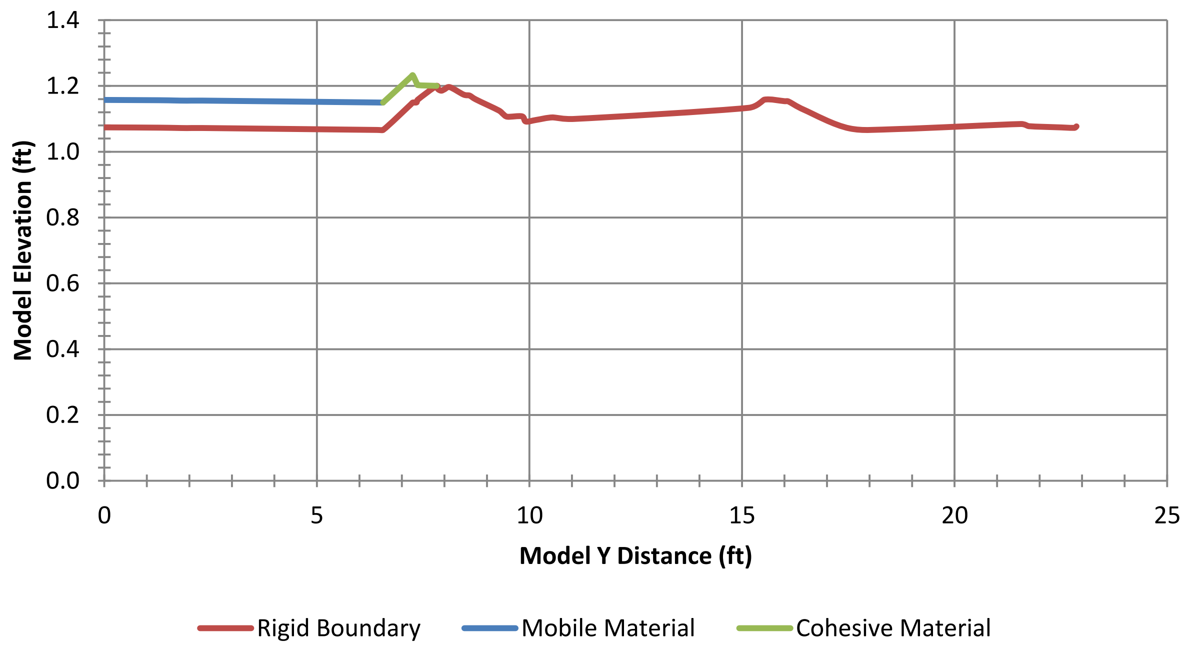

Figure C-2: Model Cross-section 0.

Table C-1: Cross-section 0 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
0	2375392	6570385	129.90	99.11	0.00	1.157
0	2375392	6570255	129.81	99.11	1.29	1.157
0	2375392	6570221	129.74	99.11	1.64	1.156
0	2375392	6570190	129.68	99.11	1.95	1.155
0	2375392	6570154	129.70	99.11	2.30	1.155
0	2375392	6569743	129.12	99.11	6.41	1.150
0	2375392	6569729	129.10	99.11	6.56	1.149
0	2375392	6569663	136.91	99.11	7.21	1.228
0	2375392	6569659	137.44	99.11	7.25	1.233
0	2375392	6569650	135.00	99.11	7.35	1.208
0	2375392	6569647	134.41	99.11	7.37	1.203
0	2375392	6569603	134.18	99.11	7.82	1.200
0	2375392	6569600	133.20	99.11	7.85	1.190
0	2375392	6569592	132.71	99.11	7.93	1.186
0	2375392	6569585	133.11	99.11	8.00	1.190
0	2375392	6569572	133.78	99.11	8.13	1.196
0	2375392	6569539	131.52	99.11	8.45	1.174
0	2375392	6569525	131.23	99.11	8.59	1.171
0	2375392	6569511	130.06	99.11	8.74	1.159
0	2375392	6569457	126.70	99.11	9.28	1.125
0	2375392	6569447	125.64	99.11	9.38	1.115
0	2375392	6569437	124.80	99.11	9.48	1.106
0	2375392	6569402	124.92	99.11	9.83	1.108
0	2375392	6569393	123.34	99.11	9.91	1.092
0	2375392	6569369	124.29	99.11	10.16	1.101
0	2375392	6569330	124.59	99.11	10.55	1.104
0	2375392	6569280	124.12	99.11	11.05	1.100
0	2375392	6568869	127.50	99.11	15.16	1.133
0	2375392	6568832	129.98	99.11	15.53	1.158
0	2375392	6568785	129.52	99.11	16.00	1.154
0	2375392	6568775	129.43	99.11	16.09	1.153
0	2375392	6568739	126.92	99.11	16.46	1.128
0	2375392	6568631	121.25	99.11	17.53	1.071
0	2375392	6568515	121.07	99.11	18.70	1.069
0	2375392	6568228	122.58	99.11	21.56	1.084
0	2375392	6568210	121.93	99.11	21.74	1.078
0	2375392	6568133	121.55	99.11	22.51	1.074
0	2375392	6568103	121.41	99.11	22.82	1.073
0	2375392	6568098	121.86	99.11	22.87	1.077

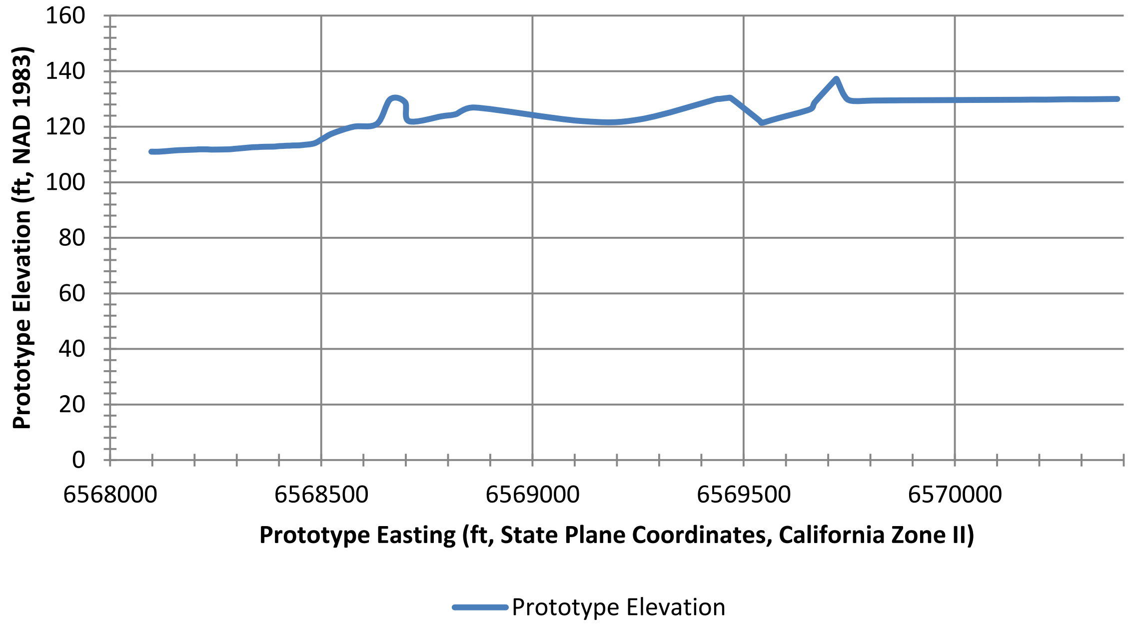

Figure C-3: Prototype Cross-section 1.

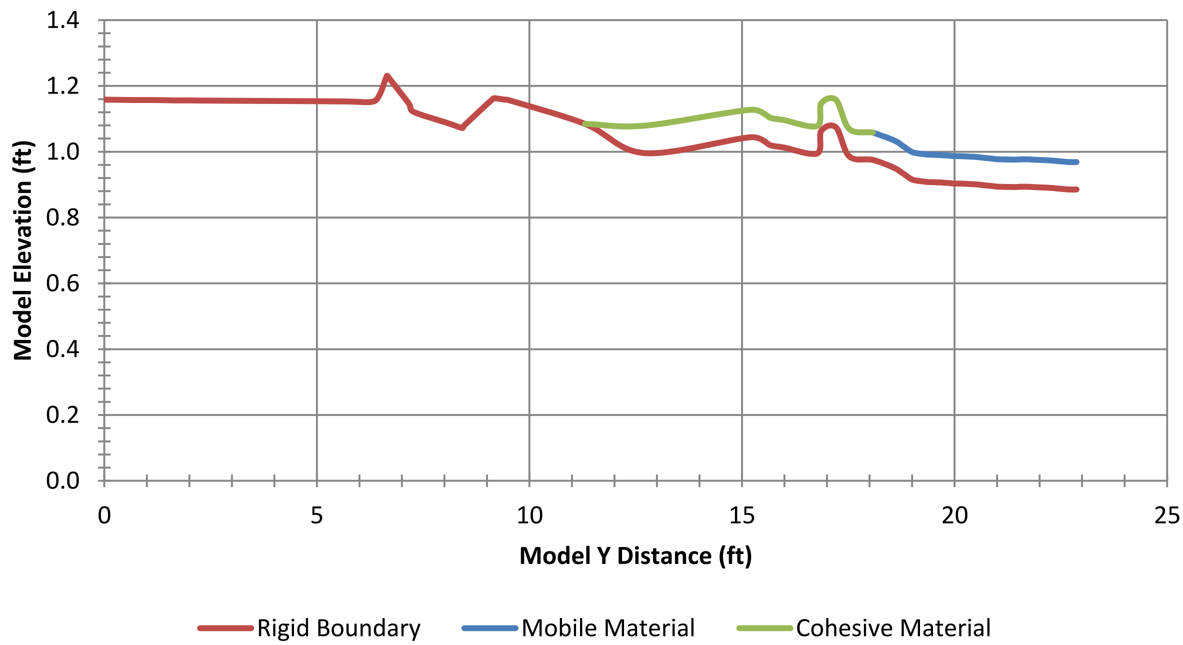

Figure C-4: Model Cross-section 1.

Table C-2: Cross-section 1 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
1	2375592	6570385	129.99	97.11	0.00	1.158
1	2375592	6570354	129.94	97.11	0.30	1.158
1	2375592	6570315	129.87	97.11	0.70	1.157
1	2375592	6570271	129.87	97.11	1.13	1.157
1	2375592	6570241	129.81	97.11	1.44	1.157
1	2375592	6570213	129.75	97.11	1.71	1.156
1	2375592	6570182	129.76	97.11	2.03	1.156
1	2375592	6570159	129.71	97.11	2.25	1.156
1	2375592	6569871	129.50	97.11	5.14	1.153
1	2375592	6569863	129.48	97.11	5.21	1.153
1	2375592	6569857	129.47	97.11	5.28	1.153
1	2375592	6569849	129.47	97.11	5.36	1.153
1	2375592	6569806	129.41	97.11	5.79	1.153
1	2375592	6569755	129.34	97.11	6.30	1.152
1	2375592	6569737	131.41	97.11	6.47	1.173
1	2375592	6569720	137.20	97.11	6.65	1.230
1	2375592	6569715	136.63	97.11	6.69	1.225
1	2375592	6569669	128.85	97.11	7.16	1.147
1	2375592	6569658	126.33	97.11	7.27	1.122
1	2375592	6569585	123.18	97.11	8.00	1.090
1	2375592	6569567	122.41	97.11	8.18	1.083
1	2375592	6569542	121.37	97.11	8.43	1.072
1	2375592	6569538	122.13	97.11	8.47	1.080
1	2375592	6569470	130.29	97.11	9.15	1.161
1	2375592	6569463	130.36	97.11	9.22	1.162
1	2375592	6569445	130.04	97.11	9.40	1.159
1	2375592	6569441	129.99	97.11	9.44	1.158
1	2375592	6569436	129.92	97.11	9.49	1.158
1	2375592	6569254	122.62	97.11	11.31	1.085
1	2375592	6569113	122.08	97.11	12.71	1.079
1	2375592	6568863	126.91	97.11	15.22	1.128
1	2375592	6568819	124.53	97.11	15.66	1.104
1	2375592	6568793	123.94	97.11	15.91	1.098
1	2375592	6568785	123.74	97.11	16.00	1.096
1	2375592	6568708	121.99	97.11	16.77	1.078
1	2375592	6568698	128.81	97.11	16.86	1.147
1	2375592	6568663	129.90	97.11	17.21	1.157
1	2375592	6568632	121.06	97.11	17.53	1.069
1	2375592	6568577	120.00	97.11	18.08	1.058
1	2375592	6568527	117.62	97.11	18.58	1.035
1	2375592	6568504	115.73	97.11	18.81	1.016
1	2375592	6568483	114.00	97.11	19.01	0.998
1	2375592	6568456	113.41	97.11	19.29	0.993
1	2375592	6568444	113.27	97.11	19.41	0.991
1	2375592	6568433	113.25	97.11	19.51	0.991
1	2375592	6568425	113.17	97.11	19.60	0.990
1	2375592	6568417	113.15	97.11	19.68	0.990
1	2375592	6568410	113.07	97.11	19.74	0.989
1	2375592	6568402	113.03	97.11	19.82	0.989
1	2375592	6568396	112.95	97.11	19.89	0.988
1	2375592	6568391	112.87	97.11	19.94	0.987
1	2375592	6568387	112.83	97.11	19.97	0.987
1	2375592	6568379	112.81	97.11	20.06	0.987
1	2375592	6568368	112.79	97.11	20.17	0.986

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
1	2375592	6568360	112.75	97.11	20.25	0.986
1	2375592	6568355	112.73	97.11	20.29	0.986
1	2375592	6568349	112.67	97.11	20.35	0.985
1	2375592	6568341	112.63	97.11	20.43	0.985
1	2375592	6568335	112.59	97.11	20.49	0.984
1	2375592	6568322	112.41	97.11	20.62	0.983
1	2375592	6568302	112.13	97.11	20.83	0.980
1	2375592	6568297	112.08	97.11	20.87	0.979
1	2375592	6568295	112.04	97.11	20.89	0.979
1	2375592	6568285	111.90	97.11	20.99	0.977
1	2375592	6568279	111.85	97.11	21.06	0.977
1	2375592	6568240	111.76	97.11	21.45	0.976
1	2375592	6568231	111.85	97.11	21.54	0.977
1	2375592	6568207	111.85	97.11	21.78	0.977
1	2375592	6568206	111.79	97.11	21.79	0.976
1	2375592	6568162	111.54	97.11	22.23	0.974
1	2375592	6568145	111.35	97.11	22.40	0.972
1	2375592	6568116	111.02	97.11	22.69	0.969
1	2375592	6568098	111.02	97.11	22.87	0.969

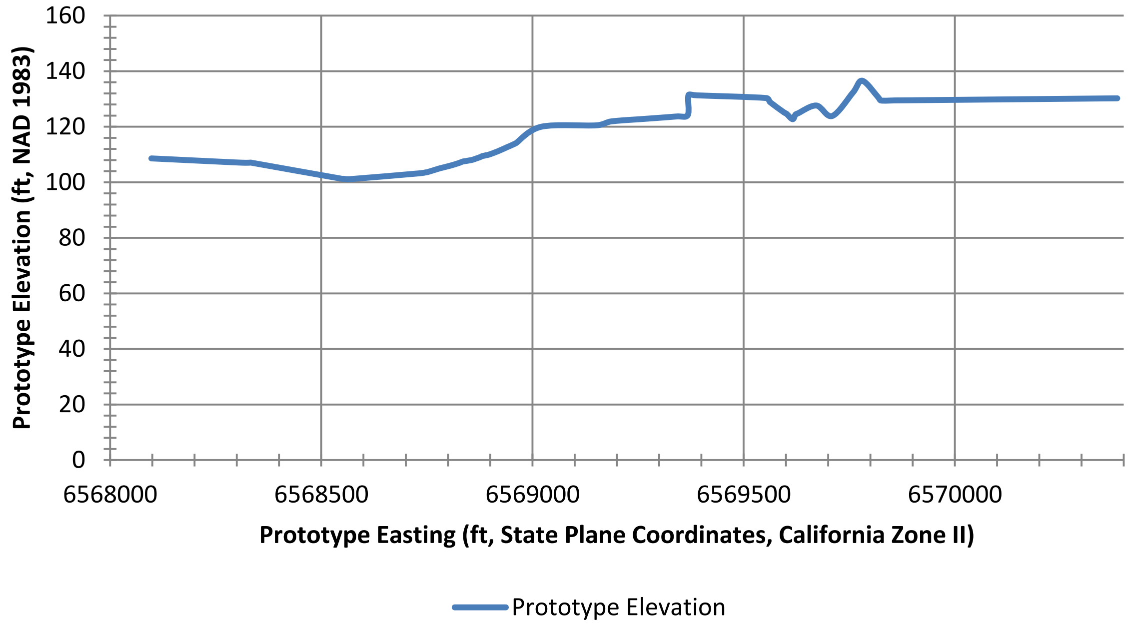

Figure C-5: Prototype Cross-section 2.

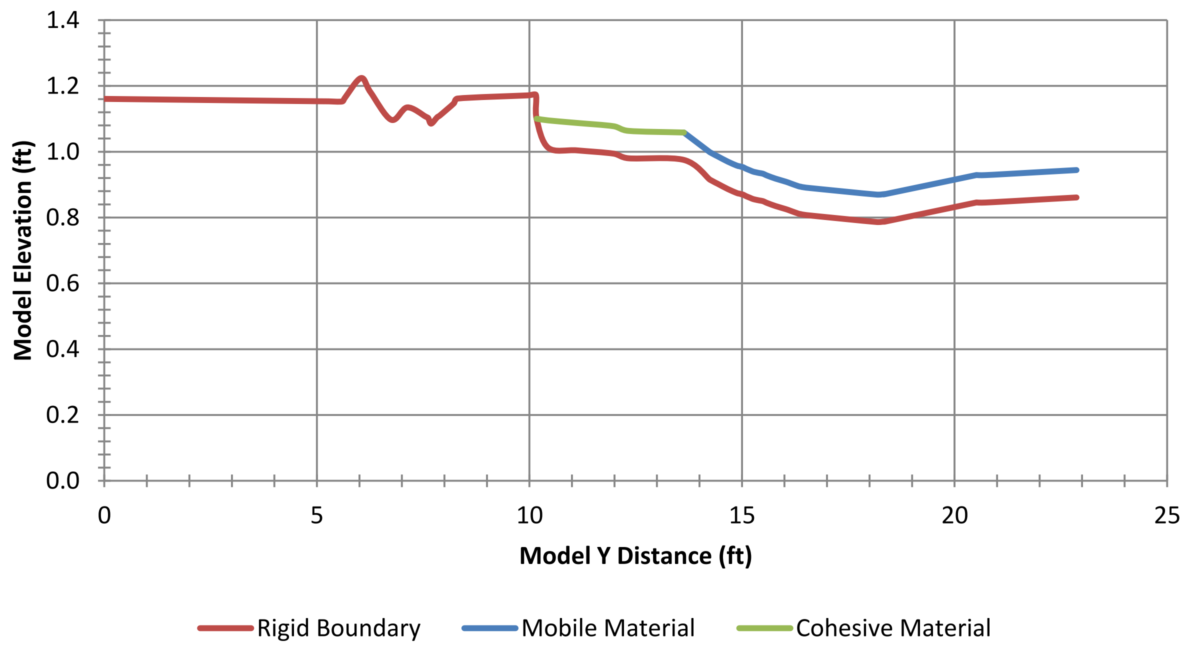

Figure C-6: Model Cross-section 2.

Table C-3: Cross-section 2 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
2	2375792	6570385	130.22	95.11	0.00	1.161
2	2375792	6569876	129.49	95.11	5.09	1.153
2	2375792	6569872	129.49	95.11	5.12	1.153
2	2375792	6569869	129.48	95.11	5.15	1.153
2	2375792	6569868	129.48	95.11	5.16	1.153
2	2375792	6569866	129.48	95.11	5.19	1.153
2	2375792	6569864	129.48	95.11	5.21	1.153
2	2375792	6569861	129.47	95.11	5.23	1.153
2	2375792	6569859	129.47	95.11	5.26	1.153
2	2375792	6569857	129.47	95.11	5.27	1.153
2	2375792	6569825	129.44	95.11	5.60	1.153
2	2375792	6569818	130.60	95.11	5.66	1.164
2	2375792	6569781	136.55	95.11	6.04	1.224
2	2375792	6569759	132.29	95.11	6.26	1.181
2	2375792	6569710	123.87	95.11	6.75	1.097
2	2375792	6569672	127.63	95.11	7.13	1.135
2	2375792	6569629	124.83	95.11	7.56	1.107
2	2375792	6569623	124.40	95.11	7.62	1.102
2	2375792	6569616	122.70	95.11	7.69	1.085
2	2375792	6569601	124.66	95.11	7.83	1.105
2	2375792	6569595	125.16	95.11	7.89	1.110
2	2375792	6569562	128.90	95.11	8.23	1.147
2	2375792	6569554	130.32	95.11	8.31	1.162
2	2375792	6569389	131.28	95.11	9.95	1.171
2	2375792	6569370	131.46	95.11	10.15	1.173
2	2375792	6569368	124.19	95.11	10.17	1.100
2	2375792	6569340	123.68	95.11	10.44	1.095
2	2375792	6569272	122.90	95.11	11.12	1.087
2	2375792	6569187	121.91	95.11	11.98	1.078
2	2375792	6569152	120.50	95.11	12.33	1.063
2	2375792	6569021	120.00	95.11	13.63	1.058
2	2375792	6568961	114.07	95.11	14.24	0.999
2	2375792	6568960	114.00	95.11	14.25	0.998
2	2375792	6568947	113.09	95.11	14.38	0.989
2	2375792	6568942	112.75	95.11	14.43	0.986
2	2375792	6568918	111.14	95.11	14.67	0.970
2	2375792	6568898	110.00	95.11	14.87	0.958
2	2375792	6568895	109.89	95.11	14.89	0.957
2	2375792	6568893	109.78	95.11	14.92	0.956
2	2375792	6568890	109.74	95.11	14.95	0.956
2	2375792	6568886	109.57	95.11	14.98	0.954
2	2375792	6568882	109.46	95.11	15.03	0.953
2	2375792	6568876	109.03	95.11	15.09	0.949
2	2375792	6568866	108.50	95.11	15.19	0.943
2	2375792	6568859	108.14	95.11	15.26	0.940
2	2375792	6568853	107.93	95.11	15.32	0.938
2	2375792	6568844	107.68	95.11	15.41	0.935
2	2375792	6568835	107.48	95.11	15.49	0.933
2	2375792	6568829	107.08	95.11	15.56	0.929
2	2375792	6568823	106.80	95.11	15.61	0.926
2	2375792	6568805	105.97	95.11	15.79	0.918
2	2375792	6568781	105.05	95.11	16.03	0.909
2	2375792	6568770	104.54	95.11	16.14	0.904
2	2375792	6568752	103.69	95.11	16.33	0.895

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
2	2375792	6568747	103.54	95.11	16.38	0.894
2	2375792	6568734	103.24	95.11	16.51	0.891
2	2375792	6568569	101.14	95.11	18.16	0.870
2	2375792	6568551	101.27	95.11	18.34	0.871
2	2375792	6568550	101.22	95.11	18.35	0.871
2	2375792	6568333	107.07	95.11	20.51	0.929
2	2375792	6568332	107.07	95.11	20.53	0.929
2	2375792	6568321	107.02	95.11	20.64	0.929
2	2375792	6568293	107.17	95.11	20.92	0.930
2	2375792	6568182	107.98	95.11	22.03	0.938
2	2375792	6568098	108.59	95.11	22.87	0.944

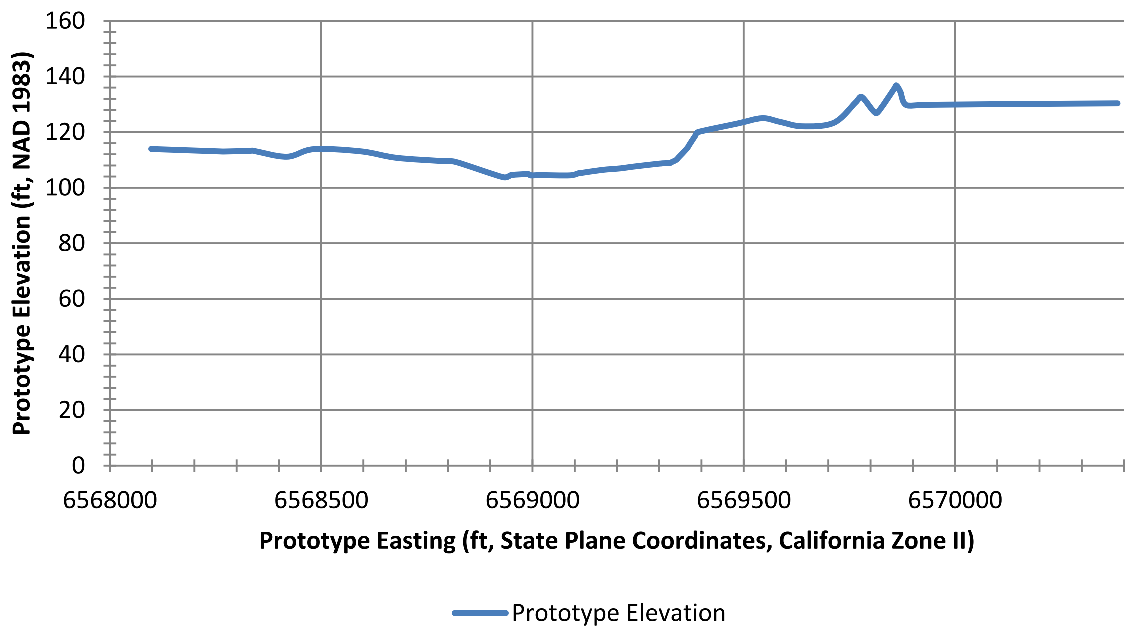

Figure C-7: Prototype Cross-section 3.

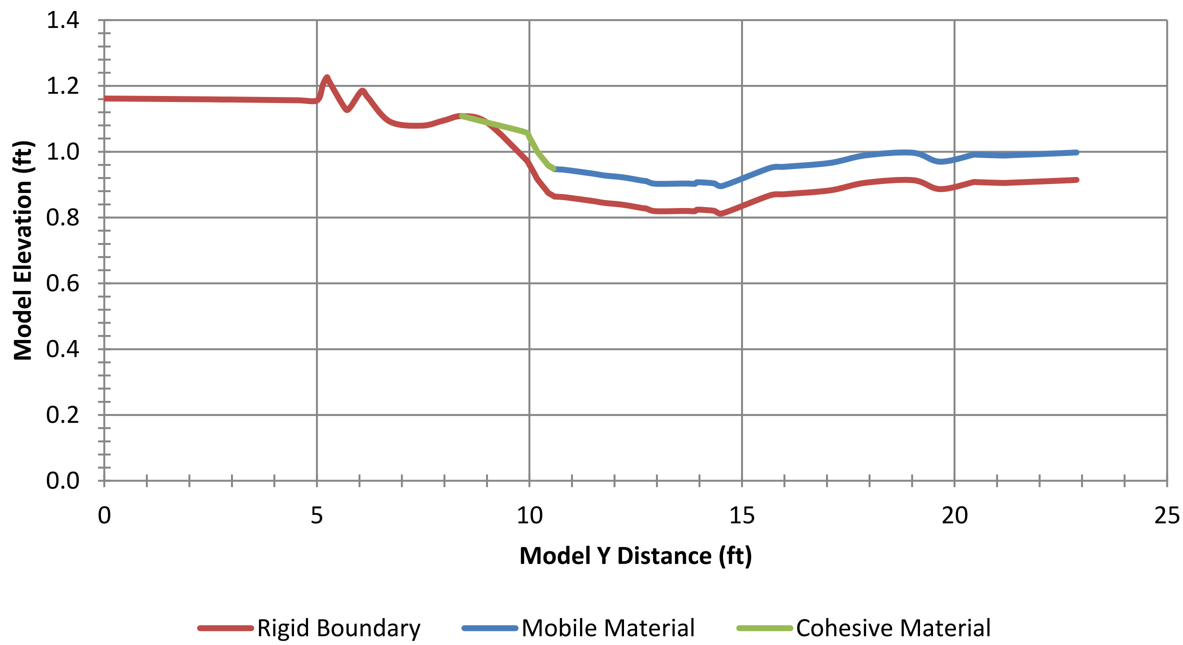

Figure C-8: Model Cross-section 3.

Table C-4: Cross-section 3 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
3	2375992	6570385	130.33	93.11	0.00	1.162
3	2375992	6570133	130.08	93.11	2.51	1.159
3	2375992	6570118	130.05	93.11	2.67	1.159
3	2375992	6570104	130.03	93.11	2.80	1.159
3	2375992	6570089	130.03	93.11	2.96	1.159
3	2375992	6570078	130.01	93.11	3.07	1.159
3	2375992	6569931	129.80	93.11	4.54	1.156
3	2375992	6569884	129.73	93.11	5.00	1.156
3	2375992	6569871	134.48	93.11	5.14	1.203
3	2375992	6569864	136.37	93.11	5.21	1.222
3	2375992	6569862	136.58	93.11	5.23	1.224
3	2375992	6569861	136.70	93.11	5.23	1.225
3	2375992	6569860	136.81	93.11	5.24	1.227
3	2375992	6569855	135.45	93.11	5.29	1.213
3	2375992	6569816	127.03	93.11	5.68	1.129
3	2375992	6569805	127.81	93.11	5.79	1.137
3	2375992	6569779	132.67	93.11	6.06	1.185
3	2375992	6569764	130.63	93.11	6.20	1.165
3	2375992	6569713	123.33	93.11	6.71	1.092
3	2375992	6569638	122.08	93.11	7.47	1.079
3	2375992	6569585	123.72	93.11	8.00	1.096
3	2375992	6569543	124.98	93.11	8.41	1.108
3	2375992	6569485	123.05	93.11	9.00	1.089
3	2375992	6569392	120.00	93.11	9.92	1.058
3	2375992	6569385	118.58	93.11	10.00	1.044
3	2375992	6569372	115.60	93.11	10.13	1.014
3	2375992	6569365	114.00	93.11	10.20	0.998
3	2375992	6569346	110.85	93.11	10.39	0.967
3	2375992	6569340	110.00	93.11	10.44	0.958
3	2375992	6569330	109.25	93.11	10.54	0.951
3	2375992	6569328	109.03	93.11	10.57	0.949
3	2375992	6569325	108.87	93.11	10.59	0.947
3	2375992	6569308	108.75	93.11	10.77	0.946
3	2375992	6569305	108.70	93.11	10.80	0.945
3	2375992	6569299	108.63	93.11	10.86	0.945
3	2375992	6569236	107.52	93.11	11.49	0.934
3	2375992	6569209	106.95	93.11	11.76	0.928
3	2375992	6569165	106.38	93.11	12.20	0.922
3	2375992	6569116	105.30	93.11	12.69	0.911
3	2375992	6569111	105.29	93.11	12.74	0.911
3	2375992	6569089	104.43	93.11	12.95	0.903
3	2375992	6569018	104.50	93.11	13.67	0.903
3	2375992	6568995	104.41	93.11	13.89	0.903
3	2375992	6568990	104.89	93.11	13.95	0.907
3	2375992	6568950	104.54	93.11	14.34	0.904
3	2375992	6568931	103.76	93.11	14.54	0.896
3	2375992	6568819	109.21	93.11	15.65	0.951
3	2375992	6568785	109.59	93.11	16.00	0.954
3	2375992	6568678	110.75	93.11	17.07	0.966
3	2375992	6568594	113.07	93.11	17.91	0.989
3	2375992	6568483	113.85	93.11	19.02	0.997
3	2375992	6568419	111.13	93.11	19.66	0.970
3	2375992	6568339	113.29	93.11	20.46	0.991
3	2375992	6568332	113.25	93.11	20.53	0.991

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
3	2375992	6568269	113.00	93.11	21.15	0.988
3	2375992	6568259	113.05	93.11	21.25	0.989
3	2375992	6568113	113.83	93.11	22.72	0.997
3	2375992	6568098	113.94	93.11	22.87	0.998

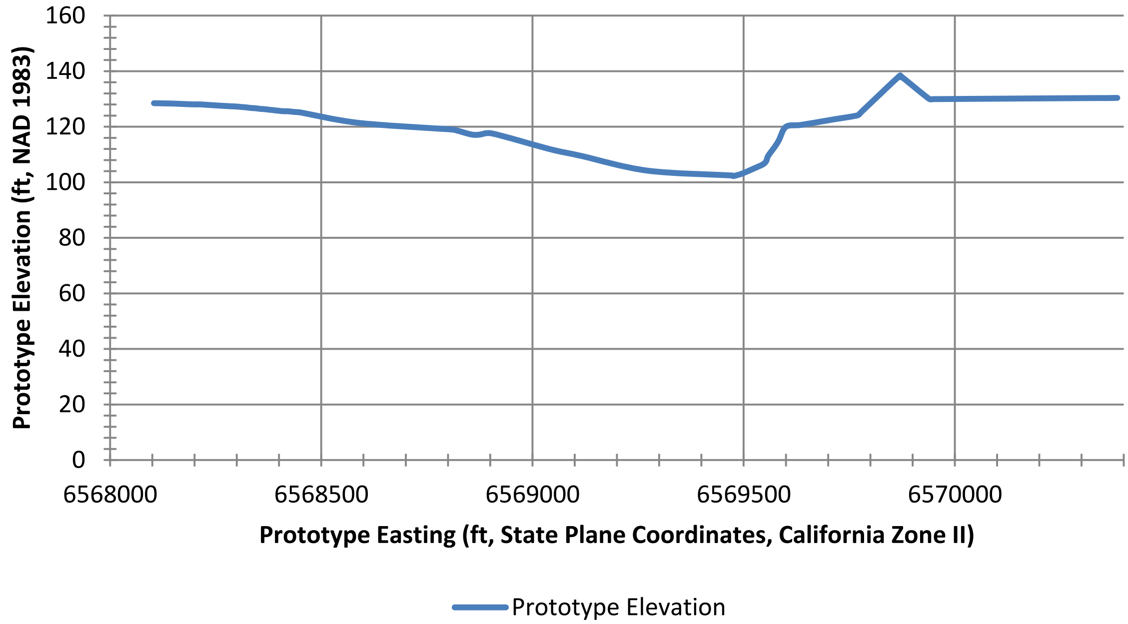

Figure C-9: Prototype Cross-section 4.

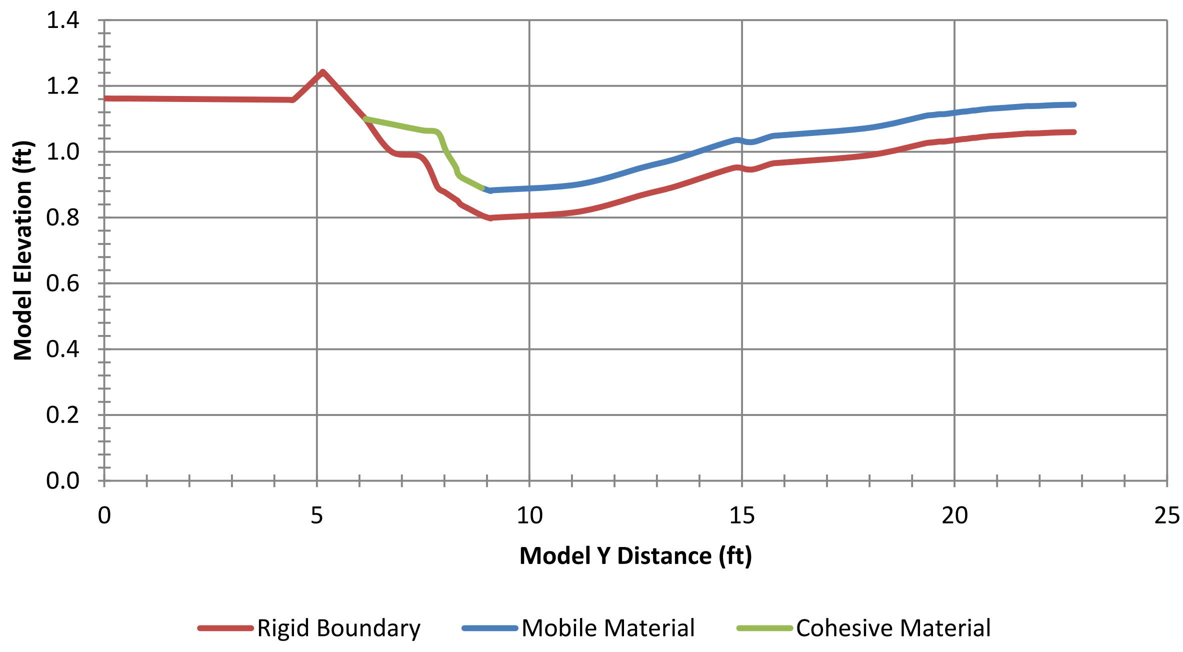

Figure C-10: Model Cross-section 4.

Table C-5: Cross-section 4 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
4	2376192	6570385	130.37	91.11	0.00	1.162
4	2376192	6570377	130.35	91.11	0.08	1.162
4	2376192	6570356	130.31	91.11	0.28	1.162
4	2376192	6570332	130.32	91.11	0.52	1.162
4	2376192	6569993	129.98	91.11	3.92	1.158
4	2376192	6569949	129.94	91.11	4.36	1.158
4	2376192	6569939	130.04	91.11	4.46	1.159
4	2376192	6569874	137.91	91.11	5.10	1.238
4	2376192	6569873	137.80	91.11	5.12	1.236
4	2376192	6569870	138.42	91.11	5.14	1.243
4	2376192	6569780	125.47	91.11	6.05	1.113
4	2376192	6569770	124.11	91.11	6.15	1.100
4	2376192	6569710	122.55	91.11	6.75	1.084
4	2376192	6569638	120.69	91.11	7.47	1.065
4	2376192	6569600	120.00	91.11	7.84	1.058
4	2376192	6569585	115.50	91.11	8.00	1.013
4	2376192	6569583	115.00	91.11	8.02	1.008
4	2376192	6569579	114.00	91.11	8.05	0.998
4	2376192	6569576	113.29	91.11	8.09	0.991
4	2376192	6569573	112.63	91.11	8.12	0.985
4	2376192	6569560	110.00	91.11	8.24	0.958
4	2376192	6569559	109.57	91.11	8.26	0.954
4	2376192	6569557	109.16	91.11	8.28	0.950
4	2376192	6569553	107.53	91.11	8.32	0.934
4	2376192	6569545	106.42	91.11	8.39	0.923
4	2376192	6569526	105.05	91.11	8.59	0.909
4	2376192	6569497	103.13	91.11	8.88	0.890
4	2376192	6569479	102.33	91.11	9.06	0.882
4	2376192	6569475	102.22	91.11	9.09	0.881
4	2376192	6569473	102.44	91.11	9.12	0.883
4	2376192	6569273	104.17	91.11	11.12	0.900
4	2376192	6569120	109.34	91.11	12.65	0.952
4	2376192	6569096	110.12	91.11	12.88	0.960
4	2376192	6569040	111.98	91.11	13.45	0.978
4	2376192	6568904	117.59	91.11	14.81	1.034
4	2376192	6568875	117.14	91.11	15.10	1.030
4	2376192	6568855	117.22	91.11	15.30	1.031
4	2376192	6568813	118.93	91.11	15.72	1.048
4	2376192	6568785	119.24	91.11	16.00	1.051
4	2376192	6568587	121.40	91.11	17.98	1.072
4	2376192	6568452	125.09	91.11	19.32	1.109
4	2376192	6568445	125.23	91.11	19.39	1.111
4	2376192	6568434	125.35	91.11	19.51	1.112
4	2376192	6568426	125.49	91.11	19.59	1.113
4	2376192	6568418	125.58	91.11	19.67	1.114
4	2376192	6568408	125.60	91.11	19.77	1.114
4	2376192	6568366	126.32	91.11	20.19	1.122
4	2376192	6568357	126.40	91.11	20.28	1.122
4	2376192	6568342	126.68	91.11	20.43	1.125
4	2376192	6568336	126.71	91.11	20.49	1.126
4	2376192	6568322	126.96	91.11	20.63	1.128
4	2376192	6568310	127.10	91.11	20.74	1.129
4	2376192	6568303	127.22	91.11	20.81	1.131
4	2376192	6568294	127.30	91.11	20.91	1.131

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
4	2376192	6568264	127.54	91.11	21.21	1.134
4	2376192	6568213	128.04	91.11	21.72	1.139
4	2376192	6568208	128.02	91.11	21.76	1.139
4	2376192	6568186	128.09	91.11	21.99	1.139
4	2376192	6568150	128.32	91.11	22.34	1.142
4	2376192	6568104	128.46	91.11	22.81	1.143

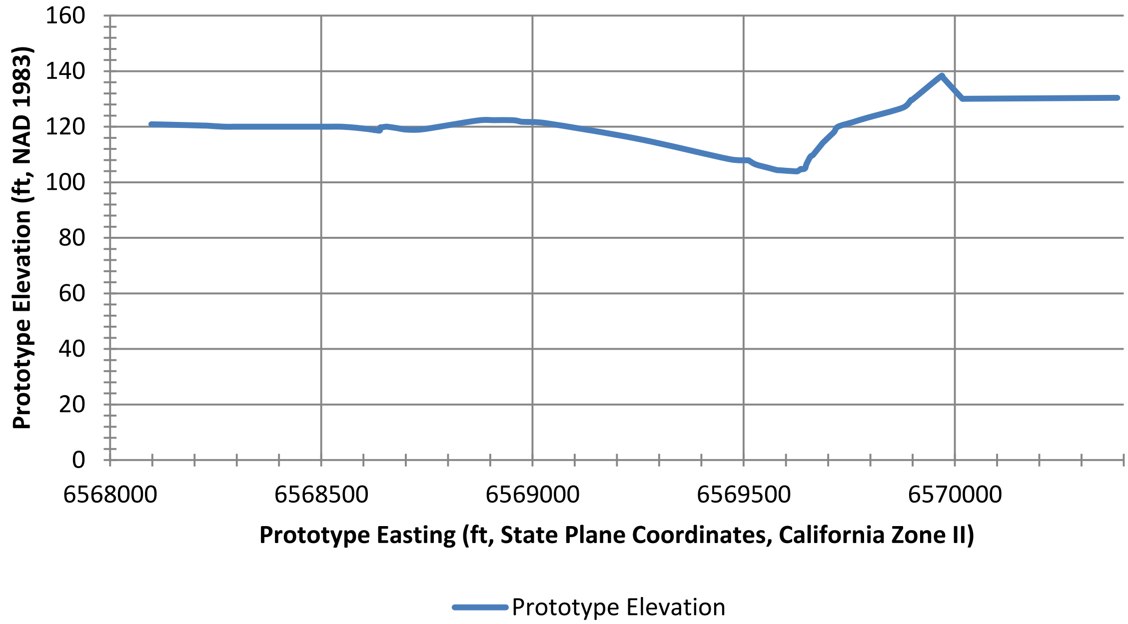

Figure C-11: Prototype Cross-section 5.

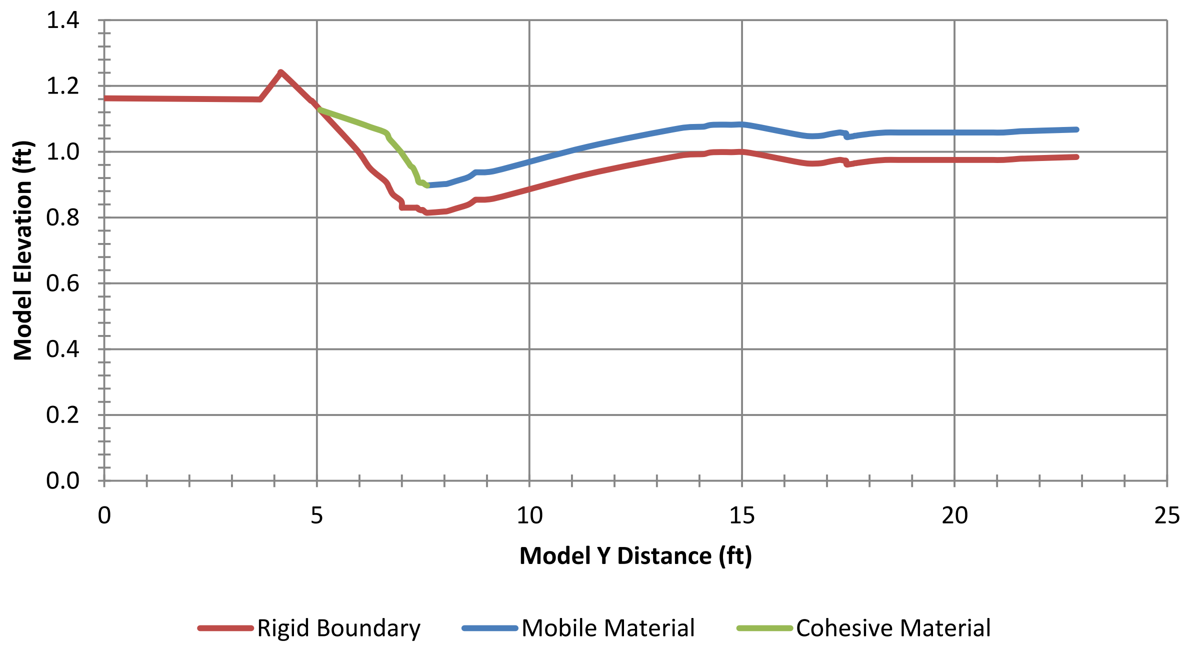

Figure C-12: Model Cross-section 5.

Table C-6: Cross-section 5 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
5	2376392	6570385	130.40	89.91	0.00	1.162
5	2376392	6570056	130.09	89.91	3.29	1.159
5	2376392	6570034	130.07	89.91	3.50	1.159
5	2376392	6570034	130.07	89.91	3.51	1.159
5	2376392	6570033	130.06	89.91	3.52	1.159
5	2376392	6570032	130.06	89.91	3.52	1.159
5	2376392	6570020	130.05	89.91	3.65	1.159
5	2376392	6570018	130.07	89.91	3.67	1.159
5	2376392	6569972	137.66	89.91	4.13	1.235
5	2376392	6569969	138.32	89.91	4.16	1.242
5	2376392	6569899	129.65	89.91	4.86	1.155
5	2376392	6569897	129.65	89.91	4.88	1.155
5	2376392	6569877	126.86	89.91	5.08	1.127
5	2376392	6569791	123.17	89.91	5.93	1.090
5	2376392	6569760	121.69	89.91	6.25	1.075
5	2376392	6569723	120.00	89.91	6.61	1.058
5	2376392	6569714	118.13	89.91	6.70	1.040
5	2376392	6569705	116.84	89.91	6.79	1.027
5	2376392	6569686	114.00	89.91	6.98	0.998
5	2376392	6569685	113.68	89.91	7.00	0.995
5	2376392	6569683	113.41	89.91	7.01	0.993
5	2376392	6569668	110.53	89.91	7.17	0.964
5	2376392	6569665	110.00	89.91	7.19	0.958
5	2376392	6569663	109.69	89.91	7.22	0.955
5	2376392	6569658	109.25	89.91	7.26	0.951
5	2376392	6569653	107.95	89.91	7.31	0.938
5	2376392	6569648	106.44	89.91	7.36	0.923
5	2376392	6569645	105.01	89.91	7.39	0.909
5	2376392	6569639	104.69	89.91	7.46	0.905
5	2376392	6569635	104.79	89.91	7.49	0.906
5	2376392	6569630	104.16	89.91	7.55	0.900
5	2376392	6569625	103.92	89.91	7.59	0.898
5	2376392	6569585	104.33	89.91	8.00	0.902
5	2376392	6569579	104.39	89.91	8.06	0.902
5	2376392	6569558	105.21	89.91	8.26	0.911
5	2376392	6569529	106.41	89.91	8.56	0.923
5	2376392	6569513	107.77	89.91	8.72	0.936
5	2376392	6569511	107.92	89.91	8.73	0.938
5	2376392	6569467	108.30	89.91	9.18	0.941
5	2376392	6569249	115.65	89.91	11.36	1.015
5	2376392	6569031	121.29	89.91	13.53	1.071
5	2376392	6568983	121.73	89.91	14.02	1.076
5	2376392	6568974	121.79	89.91	14.11	1.076
5	2376392	6568958	122.29	89.91	14.27	1.081
5	2376392	6568930	122.39	89.91	14.54	1.082
5	2376392	6568910	122.35	89.91	14.75	1.082
5	2376392	6568874	122.30	89.91	15.11	1.081
5	2376392	6568785	120.13	89.91	16.00	1.060
5	2376392	6568749	119.25	89.91	16.36	1.051
5	2376392	6568726	118.89	89.91	16.59	1.047
5	2376392	6568699	119.00	89.91	16.86	1.048
5	2376392	6568677	119.56	89.91	17.08	1.054
5	2376392	6568656	120.00	89.91	17.28	1.058
5	2376392	6568652	119.99	89.91	17.33	1.058

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
5	2376392	6568645	119.82	89.91	17.40	1.057
5	2376392	6568640	119.71	89.91	17.45	1.056
5	2376392	6568639	118.65	89.91	17.46	1.045
5	2376392	6568632	118.69	89.91	17.53	1.045
5	2376392	6568626	118.81	89.91	17.59	1.047
5	2376392	6568623	118.86	89.91	17.62	1.047
5	2376392	6568620	119.00	89.91	17.65	1.048
5	2376392	6568616	119.01	89.91	17.68	1.049
5	2376392	6568612	119.12	89.91	17.72	1.050
5	2376392	6568590	119.50	89.91	17.95	1.053
5	2376392	6568581	119.65	89.91	18.04	1.055
5	2376392	6568548	120.00	89.91	18.37	1.058
5	2376392	6568517	120.00	89.91	18.68	1.058
5	2376392	6568436	120.00	89.91	19.48	1.058
5	2376392	6568435	120.00	89.91	19.49	1.058
5	2376392	6568435	120.00	89.91	19.50	1.058
5	2376392	6568434	120.00	89.91	19.50	1.058
5	2376392	6568414	120.00	89.91	19.71	1.058
5	2376392	6568374	120.00	89.91	20.11	1.058
5	2376392	6568338	120.00	89.91	20.47	1.058
5	2376392	6568330	120.00	89.91	20.55	1.058
5	2376392	6568320	120.00	89.91	20.65	1.058
5	2376392	6568300	120.00	89.91	20.84	1.058
5	2376392	6568294	120.00	89.91	20.91	1.058
5	2376392	6568269	120.00	89.91	21.15	1.058
5	2376392	6568231	120.37	89.91	21.54	1.062
5	2376392	6568221	120.41	89.91	21.64	1.063
5	2376392	6568203	120.48	89.91	21.82	1.063
5	2376392	6568179	120.58	89.91	22.06	1.064
5	2376392	6568137	120.74	89.91	22.48	1.066
5	2376392	6568127	120.78	89.91	22.57	1.066
5	2376392	6568100	120.88	89.91	22.85	1.067
5	2376392	6568098	120.89	89.91	22.87	1.067

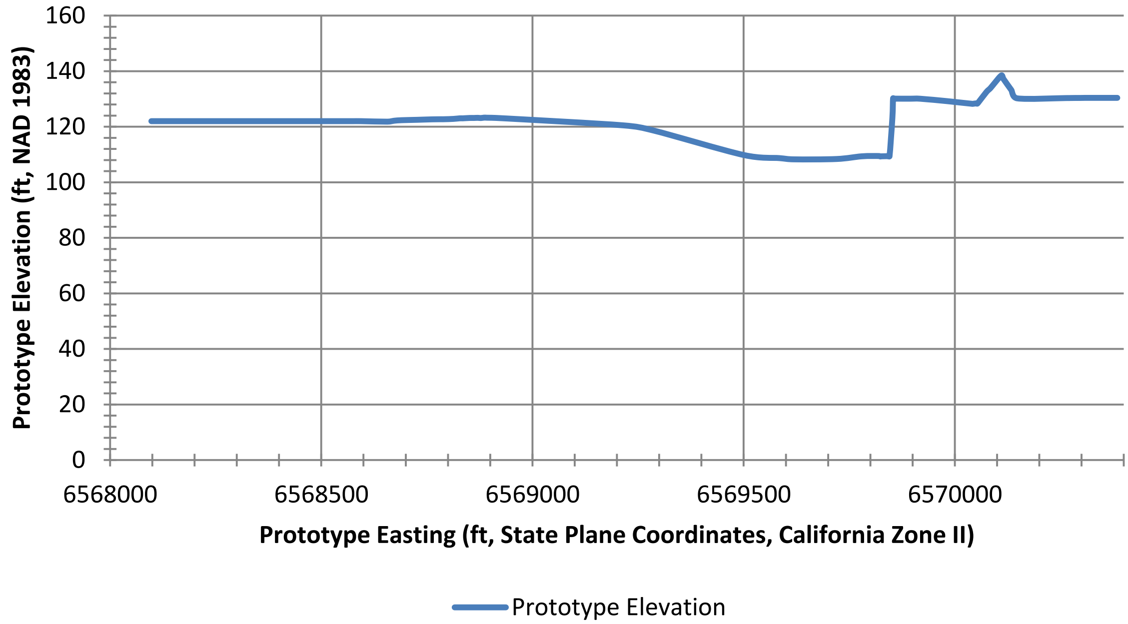

Figure C-13: Prototype Cross-section 6.

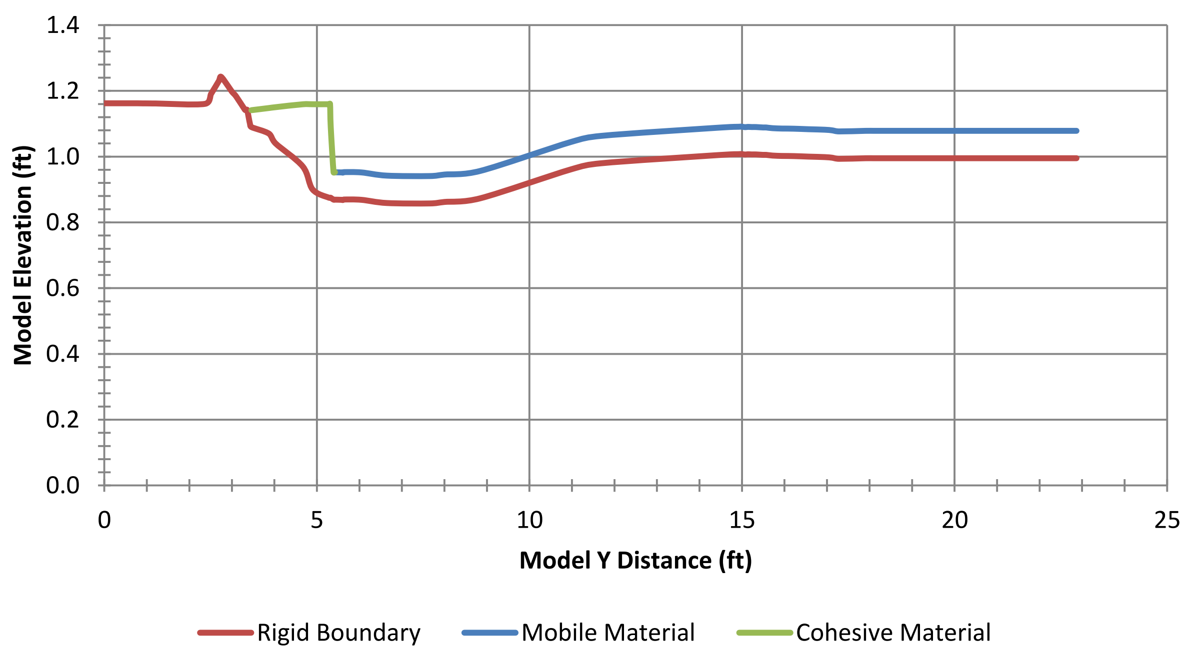

Figure C-14: Model Cross-section 6.

Table C-7: Cross-section 6 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
6	2376642	6570385	130.38	86.61	0.00	1.162
6	2376642	6570318	130.38	86.61	0.67	1.162
6	2376642	6570307	130.38	86.61	0.77	1.162
6	2376642	6570300	130.36	86.61	0.84	1.162
6	2376642	6570293	130.35	86.61	0.91	1.162
6	2376642	6570286	130.35	86.61	0.99	1.162
6	2376642	6570280	130.34	86.61	1.05	1.162
6	2376642	6570275	130.33	86.61	1.10	1.162
6	2376642	6570270	130.32	86.61	1.15	1.162
6	2376642	6570264	130.32	86.61	1.21	1.162
6	2376642	6570148	130.21	86.61	2.37	1.161
6	2376642	6570134	133.24	86.61	2.51	1.191
6	2376642	6570115	137.14	86.61	2.69	1.230
6	2376642	6570110	138.47	86.61	2.74	1.243
6	2376642	6570094	135.71	86.61	2.91	1.216
6	2376642	6570084	133.89	86.61	3.00	1.197
6	2376642	6570075	132.46	86.61	3.10	1.183
6	2376642	6570054	128.36	86.61	3.31	1.142
6	2376642	6570052	128.30	86.61	3.33	1.141
6	2376642	6570049	128.38	86.61	3.36	1.142
6	2376642	6570042	128.22	86.61	3.43	1.141
6	2376642	6570039	128.28	86.61	3.46	1.141
6	2376642	6569997	128.94	86.61	3.87	1.148
6	2376642	6569982	129.20	86.61	4.03	1.150
6	2376642	6569918	130.08	86.61	4.67	1.159
6	2376642	6569895	130.09	86.61	4.90	1.159
6	2376642	6569856	130.10	86.61	5.28	1.159
6	2376642	6569854	130.21	86.61	5.31	1.161
6	2376642	6569852	123.20	86.61	5.33	1.090
6	2376642	6569845	109.38	86.61	5.39	0.952
6	2376642	6569842	109.40	86.61	5.43	0.952
6	2376642	6569829	109.36	86.61	5.56	0.952
6	2376642	6569825	109.34	86.61	5.59	0.952
6	2376642	6569824	109.28	86.61	5.61	0.951
6	2376642	6569821	109.44	86.61	5.64	0.953
6	2376642	6569780	109.35	86.61	6.05	0.952
6	2376642	6569720	108.38	86.61	6.64	0.942
6	2376642	6569619	108.25	86.61	7.66	0.941
6	2376642	6569585	108.70	86.61	8.00	0.945
6	2376642	6569501	109.80	86.61	8.84	0.956
6	2376642	6569287	118.62	86.61	10.98	1.045
6	2376642	6569215	120.48	86.61	11.70	1.063
6	2376642	6568939	122.97	86.61	14.46	1.088
6	2376642	6568903	123.22	86.61	14.82	1.091
6	2376642	6568901	123.22	86.61	14.84	1.091
6	2376642	6568892	123.24	86.61	14.93	1.091
6	2376642	6568885	123.27	86.61	14.99	1.091
6	2376642	6568878	123.12	86.61	15.07	1.090
6	2376642	6568871	123.20	86.61	15.14	1.090
6	2376642	6568861	123.15	86.61	15.23	1.090
6	2376642	6568852	123.15	86.61	15.33	1.090
6	2376642	6568835	123.02	86.61	15.50	1.089
6	2376642	6568828	123.02	86.61	15.57	1.089
6	2376642	6568813	122.81	86.61	15.72	1.087

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
6	2376642	6568792	122.70	86.61	15.93	1.085
6	2376642	6568785	122.69	86.61	16.00	1.085
6	2376642	6568762	122.65	86.61	16.22	1.085
6	2376642	6568727	122.49	86.61	16.57	1.083
6	2376642	6568690	122.34	86.61	16.95	1.082
6	2376642	6568673	122.15	86.61	17.12	1.080
6	2376642	6568656	121.82	86.61	17.28	1.077
6	2376642	6568594	122.00	86.61	17.91	1.078
6	2376642	6568576	122.00	86.61	18.08	1.078
6	2376642	6568566	122.00	86.61	18.19	1.078
6	2376642	6568511	122.00	86.61	18.74	1.078
6	2376642	6568501	122.00	86.61	18.83	1.078
6	2376642	6568465	122.00	86.61	19.19	1.078
6	2376642	6568396	122.00	86.61	19.88	1.078
6	2376642	6568377	122.00	86.61	20.08	1.078
6	2376642	6568307	122.00	86.61	20.77	1.078
6	2376642	6568300	122.00	86.61	20.84	1.078
6	2376642	6568293	122.00	86.61	20.91	1.078
6	2376642	6568246	122.00	86.61	21.38	1.078
6	2376642	6568212	122.00	86.61	21.73	1.078
6	2376642	6568205	122.00	86.61	21.79	1.078
6	2376642	6568124	122.00	86.61	22.61	1.078
6	2376642	6568124	122.00	86.61	22.61	1.078
6	2376642	6568121	122.00	86.61	22.63	1.078
6	2376642	6568098	122.00	86.61	22.87	1.078

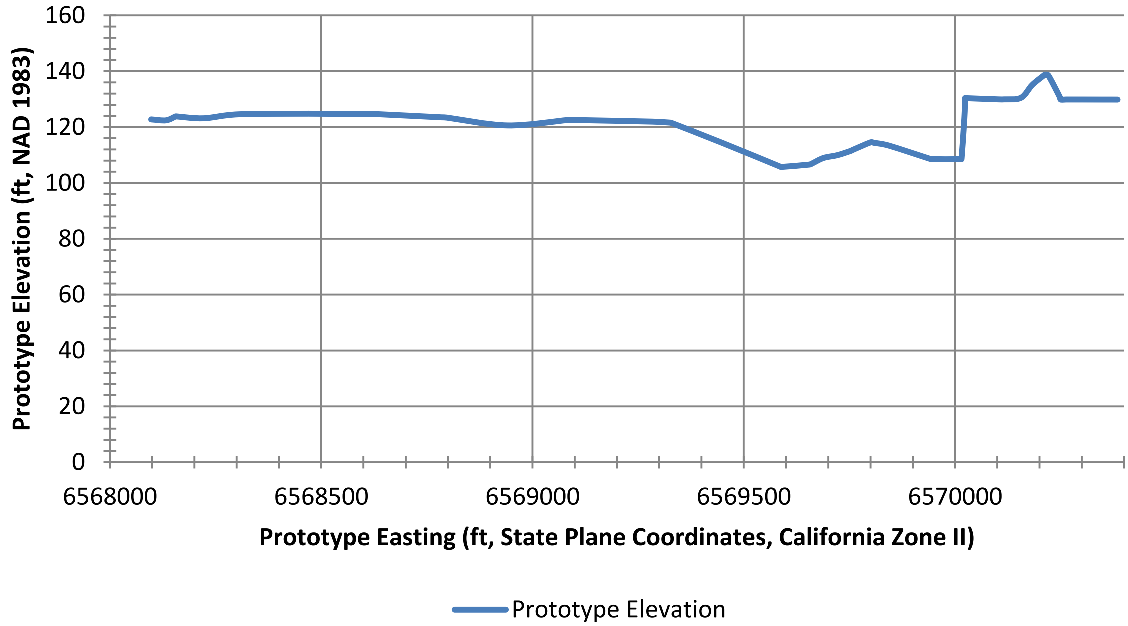

Figure C-15: Prototype Cross-section 7.

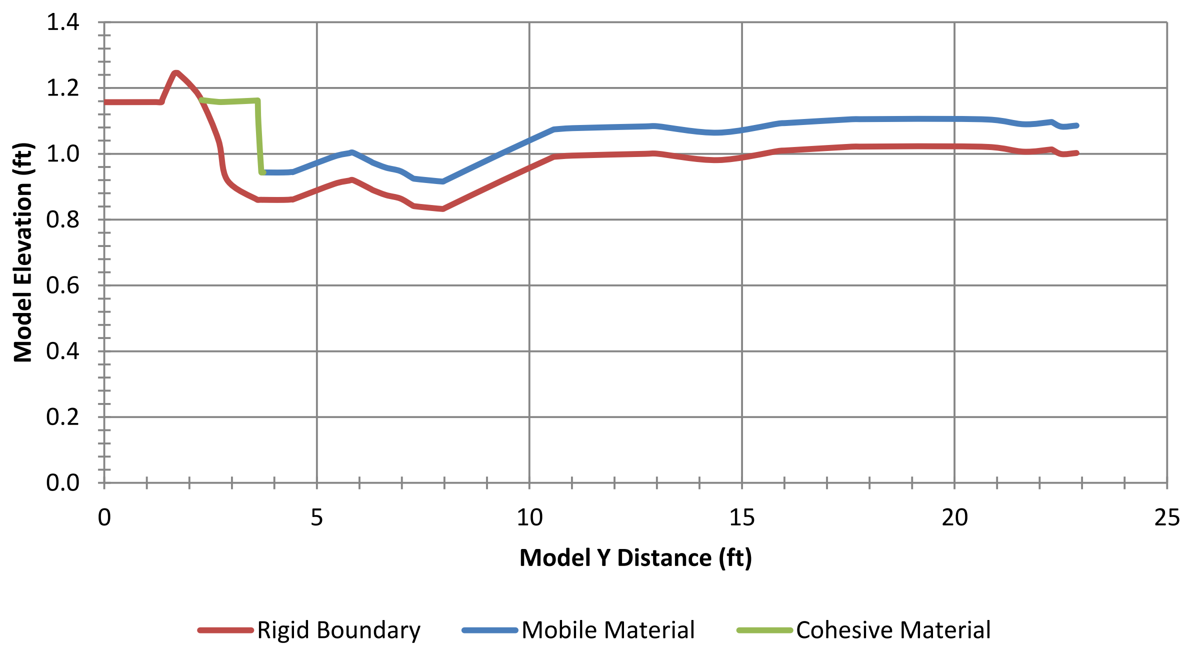

Figure C-16: Model Cross-section 7.

Table C-8: Cross-section 7 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
7	2376892	6570385	129.85	84.41	0.00	1.157
7	2376892	6570349	129.86	84.41	0.36	1.157
7	2376892	6570263	129.88	84.41	1.21	1.157
7	2376892	6570263	129.88	84.41	1.22	1.157
7	2376892	6570250	129.88	84.41	1.35	1.157
7	2376892	6570248	130.85	84.41	1.37	1.167
7	2376892	6570221	138.46	84.41	1.64	1.243
7	2376892	6570212	138.73	84.41	1.73	1.246
7	2376892	6570211	138.66	84.41	1.73	1.245
7	2376892	6570183	135.13	84.41	2.02	1.210
7	2376892	6570156	130.49	84.41	2.29	1.163
7	2376892	6570116	129.92	84.41	2.69	1.158
7	2376892	6570095	129.96	84.41	2.89	1.158
7	2376892	6570024	130.36	84.41	3.60	1.162
7	2376892	6570024	130.38	84.41	3.61	1.162
7	2376892	6570022	123.21	84.41	3.63	1.091
7	2376892	6570015	108.53	84.41	3.69	0.944
7	2376892	6570014	108.50	84.41	3.71	0.943
7	2376892	6570010	108.51	84.41	3.74	0.944
7	2376892	6569977	108.47	84.41	4.07	0.943
7	2376892	6569952	108.53	84.41	4.32	0.944
7	2376892	6569945	108.62	84.41	4.39	0.945
7	2376892	6569943	108.60	84.41	4.42	0.944
7	2376892	6569942	108.59	84.41	4.43	0.944
7	2376892	6569843	113.38	84.41	5.42	0.992
7	2376892	6569809	114.35	84.41	5.76	1.002
7	2376892	6569800	114.51	84.41	5.85	1.004
7	2376892	6569757	111.78	84.41	6.27	0.976
7	2376892	6569754	111.49	84.41	6.31	0.973
7	2376892	6569722	109.96	84.41	6.62	0.958
7	2376892	6569689	108.94	84.41	6.96	0.948
7	2376892	6569662	106.99	84.41	7.22	0.928
7	2376892	6569655	106.58	84.41	7.29	0.924
7	2376892	6569588	105.72	84.41	7.97	0.916
7	2376892	6569585	105.94	84.41	8.00	0.918
7	2376892	6569448	114.41	84.41	9.37	1.003
7	2376892	6569328	121.53	84.41	10.56	1.074
7	2376892	6569327	121.58	84.41	10.58	1.074
7	2376892	6569284	121.95	84.41	11.01	1.078
7	2376892	6569112	122.49	84.41	12.72	1.083
7	2376892	6569085	122.54	84.41	13.00	1.084
7	2376892	6568941	120.58	84.41	14.43	1.064
7	2376892	6568797	123.39	84.41	15.87	1.092
7	2376892	6568785	123.48	84.41	16.00	1.093
7	2376892	6568626	124.67	84.41	17.58	1.105
7	2376892	6568608	124.68	84.41	17.77	1.105
7	2376892	6568472	124.79	84.41	19.13	1.106
7	2376892	6568469	124.79	84.41	19.16	1.106
7	2376892	6568304	124.57	84.41	20.80	1.104
7	2376892	6568221	123.14	84.41	21.63	1.090
7	2376892	6568157	123.82	84.41	22.28	1.097
7	2376892	6568155	123.80	84.41	22.29	1.096
7	2376892	6568133	122.41	84.41	22.52	1.083
7	2376892	6568098	122.74	84.41	22.87	1.086

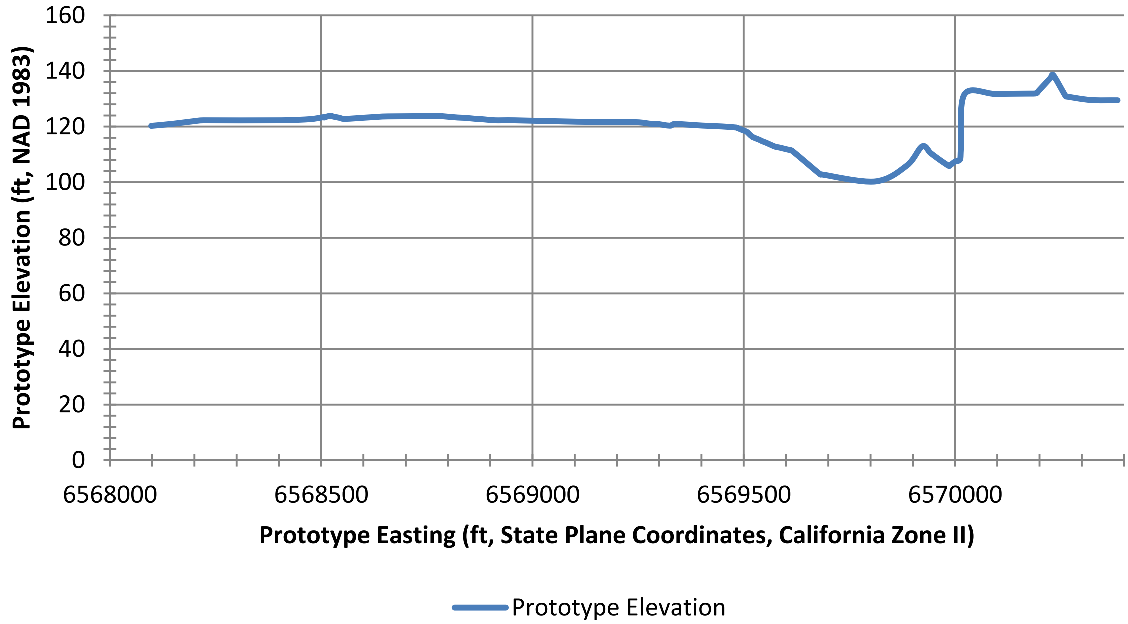

Figure C-17: Prototype Cross-section 8.

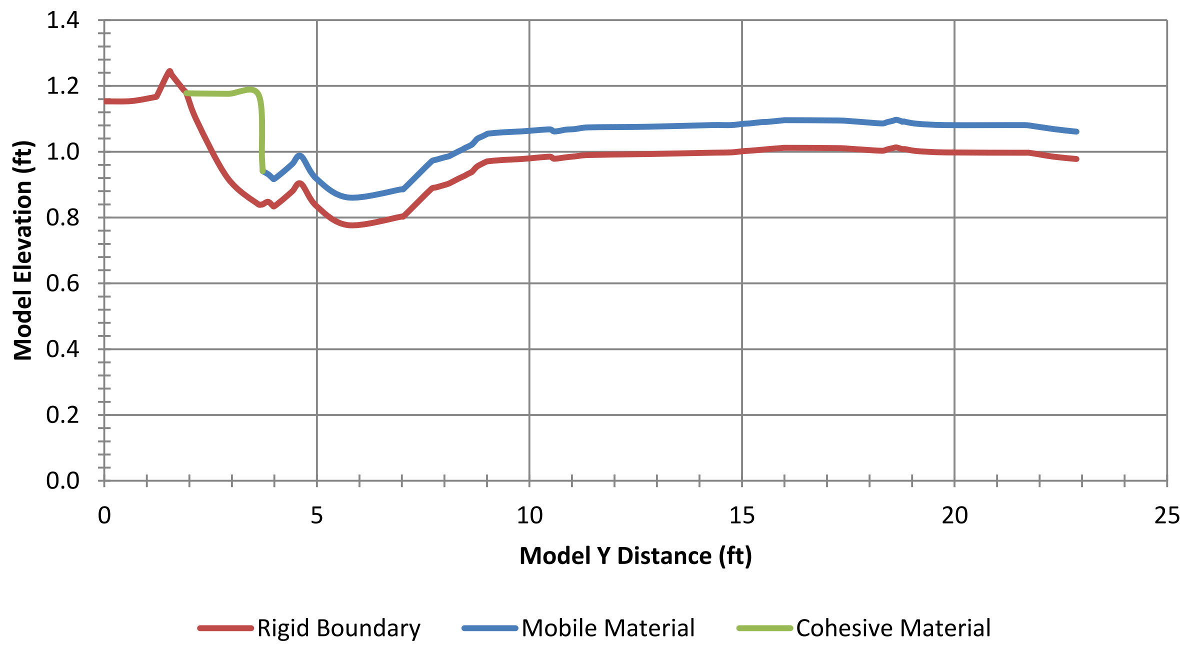

Figure C-18: Model Cross-section 8.

Table C-9: Cross-section 8 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
8	2377067	6570385	129.45	82.36	0.00	1.153
8	2377067	6570321	129.55	82.36	0.63	1.154
8	2377067	6570266	130.75	82.36	1.19	1.166
8	2377067	6570262	130.85	82.36	1.23	1.167
8	2377067	6570257	132.15	82.36	1.28	1.180
8	2377067	6570232	138.55	82.36	1.53	1.244
8	2377067	6570226	137.45	82.36	1.59	1.233
8	2377067	6570199	133.05	82.36	1.86	1.189
8	2377067	6570192	131.95	82.36	1.93	1.178
8	2377067	6570167	131.85	82.36	2.18	1.177
8	2377067	6570095	131.75	82.36	2.90	1.176
8	2377067	6570022	131.55	82.36	3.63	1.174
8	2377067	6570014	112.15	82.36	3.71	0.980
8	2377067	6570012	108.25	82.36	3.73	0.941
8	2377067	6570000	107.35	82.36	3.85	0.932
8	2377067	6569989	106.15	82.36	3.96	0.920
8	2377067	6569985	105.85	82.36	3.99	0.917
8	2377067	6569965	107.95	82.36	4.20	0.938
8	2377067	6569942	110.45	82.36	4.42	0.963
8	2377067	6569922	112.85	82.36	4.63	0.987
8	2377067	6569886	105.95	82.36	4.99	0.918
8	2377067	6569811	100.25	82.36	5.73	0.861
8	2377067	6569685	102.75	82.36	7.00	0.886
8	2377067	6569681	102.75	82.36	7.03	0.886
8	2377067	6569615	111.25	82.36	7.70	0.971
8	2377067	6569606	111.65	82.36	7.78	0.975
8	2377067	6569601	111.85	82.36	7.84	0.977
8	2377067	6569585	112.45	82.36	8.00	0.983
8	2377067	6569575	112.75	82.36	8.10	0.986
8	2377067	6569567	113.25	82.36	8.18	0.991
8	2377067	6569555	114.05	82.36	8.30	0.999
8	2377067	6569549	114.45	82.36	8.36	1.003
8	2377067	6569542	114.85	82.36	8.43	1.007
8	2377067	6569537	115.25	82.36	8.48	1.011
8	2377067	6569530	115.65	82.36	8.55	1.015
8	2377067	6569521	116.25	82.36	8.64	1.021
8	2377067	6569520	116.35	82.36	8.64	1.022
8	2377067	6569517	116.75	82.36	8.68	1.026
8	2377067	6569513	117.35	82.36	8.72	1.032
8	2377067	6569507	118.15	82.36	8.78	1.040
8	2377067	6569497	118.75	82.36	8.88	1.046
8	2377067	6569486	119.45	82.36	8.99	1.053
8	2377067	6569483	119.65	82.36	9.02	1.055
8	2377067	6569448	120.05	82.36	9.37	1.059
8	2377067	6569402	120.35	82.36	9.83	1.062
8	2377067	6569336	120.95	82.36	10.48	1.068
8	2377067	6569328	120.35	82.36	10.56	1.062
8	2377067	6569316	120.45	82.36	10.69	1.063
8	2377067	6569300	120.85	82.36	10.85	1.067
8	2377067	6569277	121.05	82.36	11.08	1.069
8	2377067	6569247	121.55	82.36	11.38	1.074
8	2377067	6569105	121.75	82.36	12.79	1.076
8	2377067	6568958	122.25	82.36	14.27	1.081
8	2377067	6568912	122.25	82.36	14.73	1.081

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
8	2377067	6568880	122.65	82.36	15.04	1.085
8	2377067	6568867	122.75	82.36	15.17	1.086
8	2377067	6568839	123.15	82.36	15.45	1.090
8	2377067	6568823	123.25	82.36	15.62	1.091
8	2377067	6568785	123.75	82.36	16.00	1.096
8	2377067	6568785	123.75	82.36	16.00	1.096
8	2377067	6568658	123.65	82.36	17.27	1.095
8	2377067	6568619	123.35	82.36	17.66	1.092
8	2377067	6568555	122.75	82.36	18.30	1.086
8	2377067	6568543	123.15	82.36	18.41	1.090
8	2377067	6568530	123.55	82.36	18.55	1.094
8	2377067	6568521	123.85	82.36	18.63	1.097
8	2377067	6568508	123.35	82.36	18.76	1.092
8	2377067	6568508	123.25	82.36	18.77	1.091
8	2377067	6568503	123.35	82.36	18.82	1.092
8	2377067	6568501	123.25	82.36	18.84	1.091
8	2377067	6568472	122.65	82.36	19.13	1.085
8	2377067	6568406	122.25	82.36	19.79	1.081
8	2377067	6568221	122.25	82.36	21.63	1.081
8	2377067	6568210	122.15	82.36	21.75	1.080
8	2377067	6568152	121.05	82.36	22.33	1.069
8	2377067	6568098	120.25	82.36	22.87	1.061

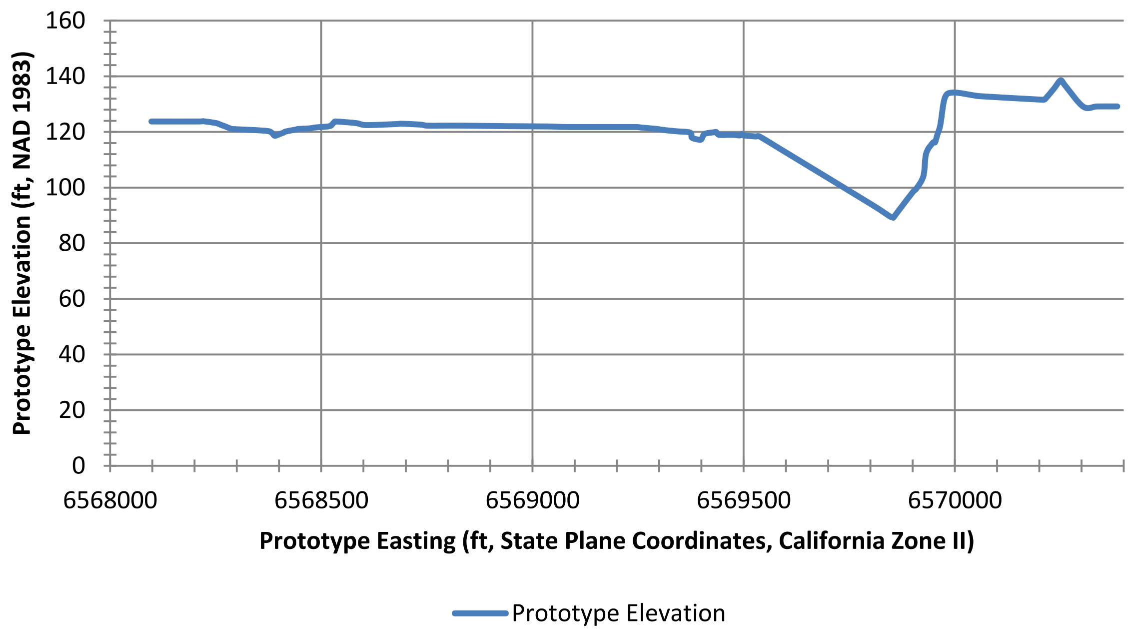

Figure C-19: Prototype Cross-section 9.

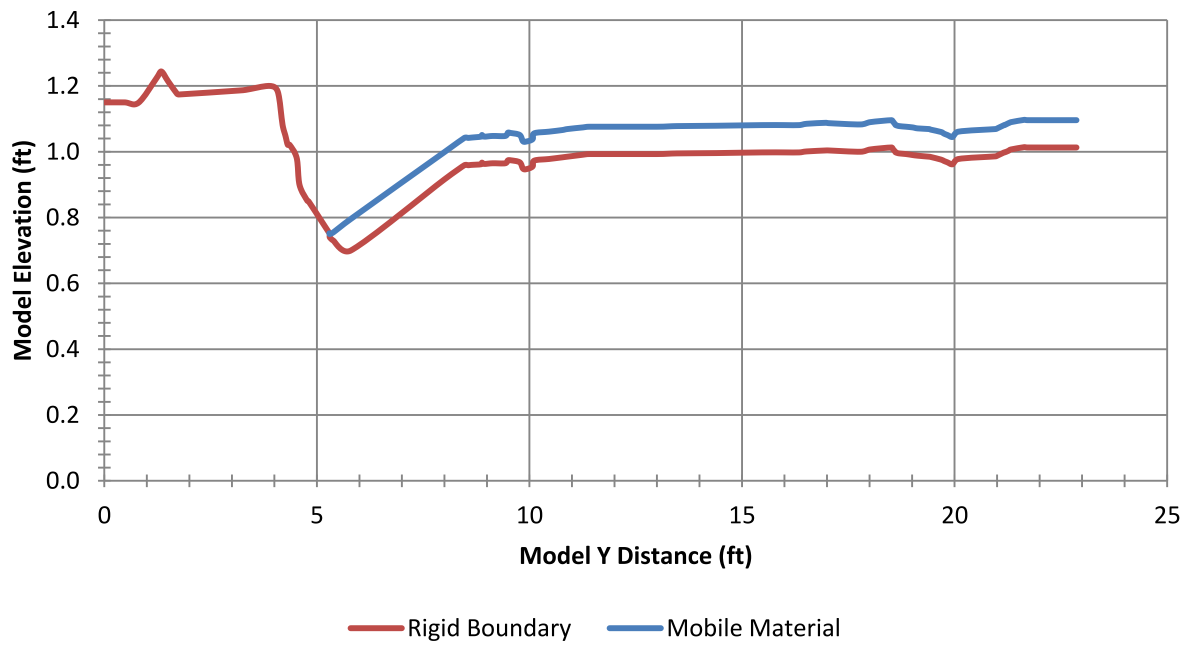

Figure C-20: Model Cross-section 9.

Table C-10: Cross-section 9 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
9	2377242	6570385	129.15	80.61	0.00	1.150
9	2377242	6570337	129.15	80.61	0.47	1.150
9	2377242	6570304	129.05	80.61	0.80	1.149
9	2377242	6570262	136.55	80.61	1.23	1.224
9	2377242	6570251	138.55	80.61	1.34	1.244
9	2377242	6570235	135.55	80.61	1.50	1.214
9	2377242	6570214	131.75	80.61	1.71	1.176
9	2377242	6570209	131.55	80.61	1.75	1.174
9	2377242	6570069	132.75	80.61	3.16	1.186
9	2377242	6570052	132.95	80.61	3.33	1.188
9	2377242	6569996	134.15	80.61	3.89	1.200
9	2377242	6569977	132.35	80.61	4.08	1.182
9	2377242	6569965	122.35	80.61	4.19	1.082
9	2377242	6569959	119.05	80.61	4.26	1.049
9	2377242	6569953	116.25	80.61	4.31	1.021
9	2377242	6569949	116.25	80.61	4.36	1.021
9	2377242	6569932	112.25	80.61	4.53	0.981
9	2377242	6569925	104.05	80.61	4.59	0.899
9	2377242	6569907	99.25	80.61	4.78	0.851
9	2377242	6569904	99.05	80.61	4.81	0.849
9	2377242	6569869	92.05	80.61	5.16	0.779
9	2377242	6569855	89.35	80.61	5.29	0.752
9	2377242	6569854	89.15	80.61	5.30	0.750
9	2377242	6569846	89.65	80.61	5.39	0.755
9	2377242	6569805	93.75	80.61	5.80	0.796
9	2377242	6569585	114.05	80.61	8.00	0.999
9	2377242	6569538	118.35	80.61	8.47	1.042
9	2377242	6569529	118.35	80.61	8.56	1.042
9	2377242	6569522	118.45	80.61	8.63	1.043
9	2377242	6569498	118.75	80.61	8.86	1.046
9	2377242	6569496	119.25	80.61	8.88	1.051
9	2377242	6569491	118.75	80.61	8.93	1.046
9	2377242	6569471	118.95	80.61	9.13	1.048
9	2377242	6569441	118.95	80.61	9.43	1.048
9	2377242	6569435	119.95	80.61	9.49	1.058
9	2377242	6569428	119.85	80.61	9.56	1.057
9	2377242	6569408	119.25	80.61	9.77	1.051
9	2377242	6569400	117.35	80.61	9.85	1.032
9	2377242	6569392	117.25	80.61	9.92	1.031
9	2377242	6569377	117.95	80.61	10.07	1.038
9	2377242	6569373	119.75	80.61	10.11	1.056
9	2377242	6569339	120.25	80.61	10.46	1.061
9	2377242	6569307	120.75	80.61	10.77	1.066
9	2377242	6569295	121.05	80.61	10.89	1.069
9	2377242	6569259	121.55	80.61	11.26	1.074
9	2377242	6569244	121.75	80.61	11.41	1.076
9	2377242	6569085	121.75	80.61	12.99	1.076
9	2377242	6569038	121.95	80.61	13.47	1.078
9	2377242	6568944	122.05	80.61	14.40	1.079
9	2377242	6568838	122.25	80.61	15.47	1.081
9	2377242	6568785	122.25	80.61	16.00	1.081
9	2377242	6568750	122.25	80.61	16.34	1.081
9	2377242	6568732	122.65	80.61	16.52	1.085
9	2377242	6568687	122.95	80.61	16.98	1.088

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
9	2377242	6568682	122.85	80.61	17.03	1.087
9	2377242	6568606	122.45	80.61	17.79	1.083
9	2377242	6568583	123.15	80.61	18.02	1.090
9	2377242	6568533	123.75	80.61	18.52	1.096
9	2377242	6568530	123.35	80.61	18.55	1.092
9	2377242	6568526	122.75	80.61	18.59	1.086
9	2377242	6568525	122.55	80.61	18.60	1.084
9	2377242	6568523	122.25	80.61	18.62	1.081
9	2377242	6568515	121.95	80.61	18.70	1.078
9	2377242	6568499	121.75	80.61	18.86	1.076
9	2377242	6568483	121.55	80.61	19.01	1.074
9	2377242	6568471	121.25	80.61	19.13	1.071
9	2377242	6568445	121.05	80.61	19.40	1.069
9	2377242	6568440	120.85	80.61	19.45	1.067
9	2377242	6568416	120.15	80.61	19.69	1.060
9	2377242	6568409	119.65	80.61	19.75	1.055
9	2377242	6568402	119.25	80.61	19.83	1.051
9	2377242	6568389	118.65	80.61	19.96	1.045
9	2377242	6568376	120.25	80.61	20.09	1.061
9	2377242	6568288	121.05	80.61	20.96	1.069
9	2377242	6568284	121.25	80.61	21.01	1.071
9	2377242	6568268	122.25	80.61	21.17	1.081
9	2377242	6568267	122.25	80.61	21.18	1.081
9	2377242	6568258	122.85	80.61	21.27	1.087
9	2377242	6568255	122.95	80.61	21.29	1.088
9	2377242	6568252	123.15	80.61	21.33	1.090
9	2377242	6568220	123.85	80.61	21.64	1.097
9	2377242	6568213	123.75	80.61	21.72	1.096
9	2377242	6568098	123.75	80.61	22.87	1.096

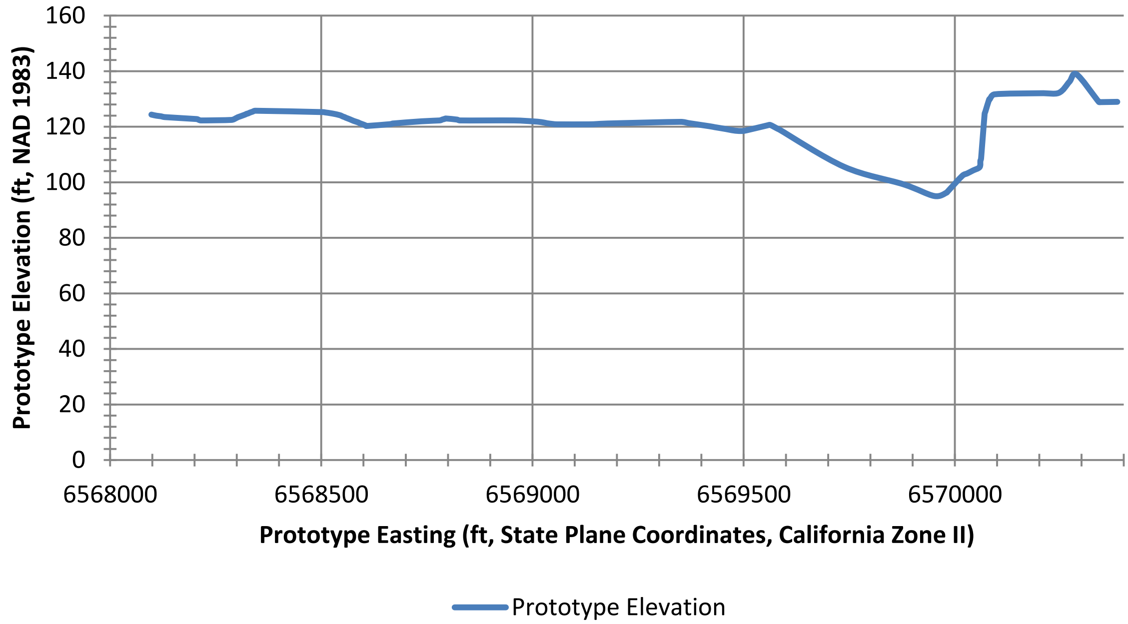

Figure C-21: Prototype Cross-section 10.

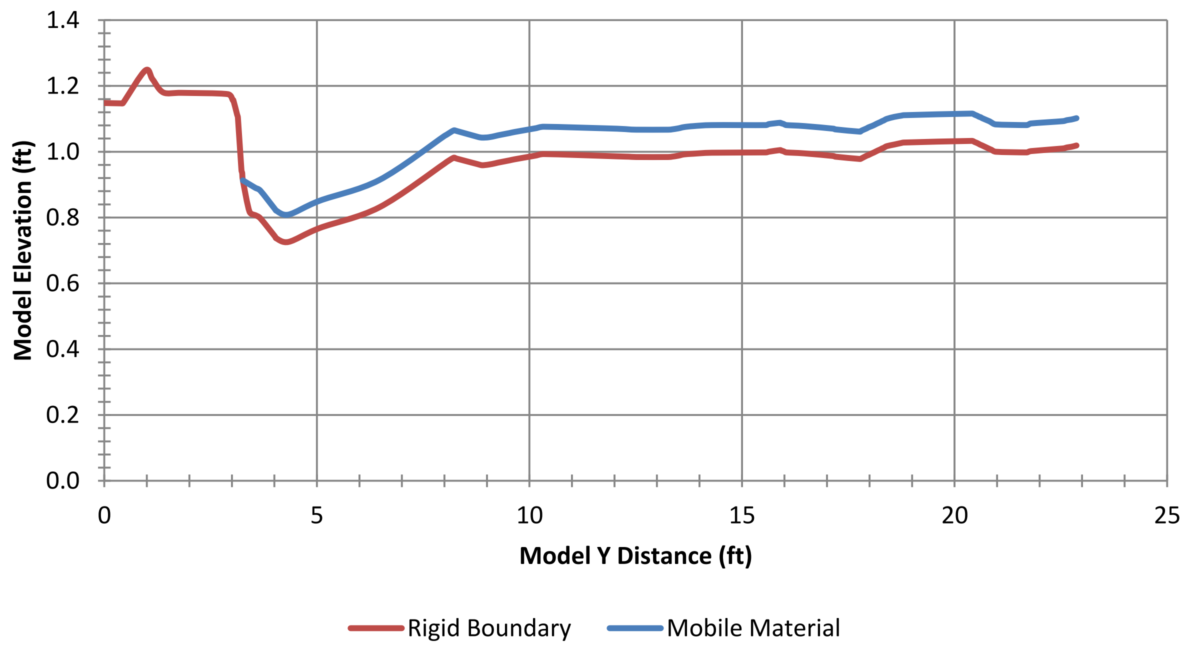

Figure C-22: Model Cross-section 10.

Table C-11: Cross-section 10 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
10	2377417	6570385	128.95	78.86	0.00	1.148
10	2377417	6570346	128.85	78.86	0.39	1.147
10	2377417	6570341	128.85	78.86	0.43	1.147
10	2377417	6570337	129.65	78.86	0.48	1.155
10	2377417	6570288	138.85	78.86	0.96	1.247
10	2377417	6570271	136.15	78.86	1.14	1.220
10	2377417	6570246	132.15	78.86	1.39	1.180
10	2377417	6570202	132.05	78.86	1.82	1.179
10	2377417	6570094	131.65	78.86	2.91	1.175
10	2377417	6570083	129.85	78.86	3.02	1.157
10	2377417	6570081	129.85	78.86	3.03	1.157
10	2377417	6570072	125.35	78.86	3.13	1.112
10	2377417	6570070	124.55	78.86	3.14	1.104
10	2377417	6570062	108.55	78.86	3.23	0.944
10	2377417	6570060	107.75	78.86	3.24	0.936
10	2377417	6570059	105.45	78.86	3.26	0.913
10	2377417	6570043	104.25	78.86	3.41	0.901
10	2377417	6570029	103.15	78.86	3.56	0.890
10	2377417	6570018	102.35	78.86	3.67	0.882
10	2377417	6569984	96.75	78.86	4.01	0.826
10	2377417	6569980	96.25	78.86	4.04	0.821
10	2377417	6569951	95.05	78.86	4.33	0.809
10	2377417	6569879	99.25	78.86	5.06	0.851
10	2377417	6569738	105.55	78.86	6.47	0.914
10	2377417	6569585	118.95	78.86	8.00	1.048
10	2377417	6569581	119.25	78.86	8.04	1.051
10	2377417	6569562	120.65	78.86	8.22	1.065
10	2377417	6569555	120.45	78.86	8.29	1.063
10	2377417	6569506	118.65	78.86	8.79	1.045
10	2377417	6569496	118.45	78.86	8.88	1.043
10	2377417	6569480	118.55	78.86	9.04	1.044
10	2377417	6569465	118.95	78.86	9.20	1.048
10	2377417	6569458	119.15	78.86	9.26	1.050
10	2377417	6569435	119.75	78.86	9.50	1.056
10	2377417	6569431	119.85	78.86	9.54	1.057
10	2377417	6569420	120.15	78.86	9.65	1.060
10	2377417	6569376	121.15	78.86	10.09	1.070
10	2377417	6569368	121.35	78.86	10.17	1.072
10	2377417	6569351	121.75	78.86	10.34	1.076
10	2377417	6569178	121.15	78.86	12.07	1.070
10	2377417	6569151	120.95	78.86	12.34	1.068
10	2377417	6569134	120.85	78.86	12.51	1.067
10	2377417	6569058	120.85	78.86	13.27	1.067
10	2377417	6569049	120.95	78.86	13.35	1.068
10	2377417	6569035	121.25	78.86	13.50	1.071
10	2377417	6569021	121.65	78.86	13.64	1.075
10	2377417	6568998	121.95	78.86	13.86	1.078
10	2377417	6568956	122.25	78.86	14.29	1.081
10	2377417	6568829	122.25	78.86	15.56	1.081
10	2377417	6568822	122.55	78.86	15.63	1.084
10	2377417	6568795	122.95	78.86	15.90	1.088
10	2377417	6568792	122.75	78.86	15.93	1.086
10	2377417	6568788	122.65	78.86	15.97	1.085
10	2377417	6568785	122.45	78.86	16.00	1.083

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
10	2377417	6568780	122.25	78.86	16.04	1.081
10	2377417	6568738	121.95	78.86	16.47	1.078
10	2377417	6568669	121.15	78.86	17.15	1.070
10	2377417	6568665	120.95	78.86	17.19	1.068
10	2377417	6568607	120.25	78.86	17.78	1.061
10	2377417	6568605	120.45	78.86	17.80	1.063
10	2377417	6568600	120.75	78.86	17.84	1.066
10	2377417	6568591	121.25	78.86	17.93	1.071
10	2377417	6568587	121.55	78.86	17.97	1.074
10	2377417	6568579	121.95	78.86	18.05	1.078
10	2377417	6568574	122.25	78.86	18.11	1.081
10	2377417	6568568	122.65	78.86	18.17	1.085
10	2377417	6568563	122.95	78.86	18.22	1.088
10	2377417	6568558	123.25	78.86	18.27	1.091
10	2377417	6568555	123.45	78.86	18.29	1.093
10	2377417	6568551	123.65	78.86	18.33	1.095
10	2377417	6568544	124.15	78.86	18.41	1.100
10	2377417	6568526	124.75	78.86	18.58	1.106
10	2377417	6568509	125.15	78.86	18.76	1.110
10	2377417	6568505	125.25	78.86	18.80	1.111
10	2377417	6568344	125.75	78.86	20.41	1.116
10	2377417	6568338	125.45	78.86	20.47	1.113
10	2377417	6568331	125.05	78.86	20.54	1.109
10	2377417	6568326	124.75	78.86	20.58	1.106
10	2377417	6568323	124.65	78.86	20.61	1.105
10	2377417	6568320	124.35	78.86	20.65	1.102
10	2377417	6568303	123.45	78.86	20.81	1.093
10	2377417	6568302	123.35	78.86	20.83	1.092
10	2377417	6568298	123.05	78.86	20.87	1.089
10	2377417	6568287	122.45	78.86	20.97	1.083
10	2377417	6568215	122.25	78.86	21.69	1.081
10	2377417	6568210	122.45	78.86	21.74	1.083
10	2377417	6568205	122.75	78.86	21.80	1.086
10	2377417	6568130	123.45	78.86	22.55	1.093
10	2377417	6568120	123.75	78.86	22.64	1.096
10	2377417	6568110	123.95	78.86	22.75	1.098
10	2377417	6568101	124.25	78.86	22.84	1.101
10	2377417	6568098	124.35	78.86	22.87	1.102

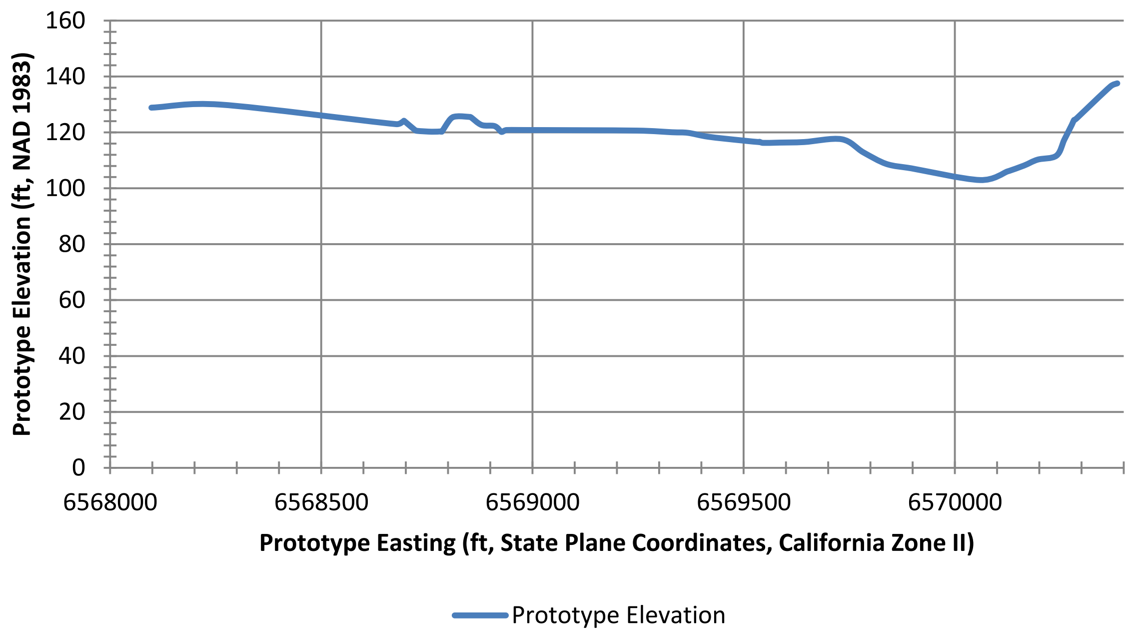

Figure C-23: Prototype Cross-section 11.

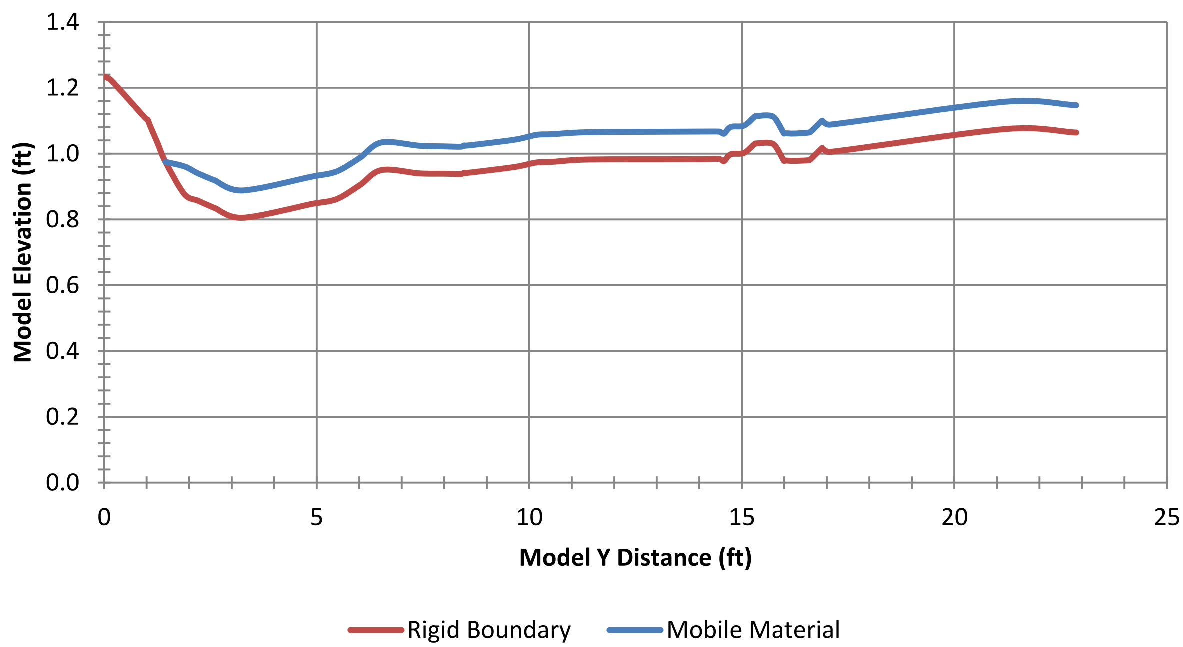

Figure C-24: Model Cross-Section 11.

Table C-12: Cross-section 11 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
11	2377717	6570385	137.55	75.86	0.00	1.234
11	2377717	6570368	136.45	75.86	0.16	1.223
11	2377717	6570289	125.15	75.86	0.95	1.110
11	2377717	6570285	124.65	75.86	0.99	1.105
11	2377717	6570282	124.35	75.86	1.03	1.102
11	2377717	6570277	122.75	75.86	1.08	1.086
11	2377717	6570259	117.45	75.86	1.25	1.033
11	2377717	6570240	111.65	75.86	1.44	0.975
11	2377717	6570196	110.25	75.86	1.89	0.961
11	2377717	6570164	108.15	75.86	2.21	0.940
11	2377717	6570129	106.25	75.86	2.56	0.921
11	2377717	6570125	106.05	75.86	2.60	0.919
11	2377717	6570060	102.95	75.86	3.25	0.888
11	2377717	6569897	107.15	75.86	4.88	0.930
11	2377717	6569888	107.35	75.86	4.97	0.932
11	2377717	6569837	108.75	75.86	5.47	0.946
11	2377717	6569784	112.85	75.86	6.01	0.987
11	2377717	6569732	117.55	75.86	6.53	1.034
11	2377717	6569643	116.55	75.86	7.42	1.024
11	2377717	6569585	116.35	75.86	8.00	1.022
11	2377717	6569546	116.25	75.86	8.39	1.021
11	2377717	6569537	116.65	75.86	8.47	1.025
11	2377717	6569535	116.55	75.86	8.49	1.024
11	2377717	6569494	117.15	75.86	8.91	1.030
11	2377717	6569416	118.45	75.86	9.69	1.043
11	2377717	6569368	119.85	75.86	10.17	1.057
11	2377717	6569331	120.05	75.86	10.54	1.059
11	2377717	6569247	120.65	75.86	11.37	1.065
11	2377717	6568979	120.85	75.86	14.05	1.067
11	2377717	6568939	120.85	75.86	14.46	1.067
11	2377717	6568929	120.25	75.86	14.55	1.061
11	2377717	6568926	120.25	75.86	14.59	1.061
11	2377717	6568910	122.25	75.86	14.74	1.081
11	2377717	6568880	122.65	75.86	15.05	1.085
11	2377717	6568855	125.35	75.86	15.30	1.112
11	2377717	6568852	125.55	75.86	15.33	1.114
11	2377717	6568852	125.55	75.86	15.33	1.114
11	2377717	6568850	125.55	75.86	15.34	1.114
11	2377717	6568822	125.75	75.86	15.62	1.116
11	2377717	6568806	124.85	75.86	15.78	1.107
11	2377717	6568786	120.25	75.86	15.99	1.061
11	2377717	6568785	120.35	75.86	16.00	1.062
11	2377717	6568783	120.35	75.86	16.02	1.062
11	2377717	6568762	120.25	75.86	16.23	1.061
11	2377717	6568727	120.55	75.86	16.58	1.064
11	2377717	6568721	120.95	75.86	16.64	1.068
11	2377717	6568696	124.15	75.86	16.89	1.100
11	2377717	6568695	124.05	75.86	16.90	1.099
11	2377717	6568678	122.95	75.86	17.07	1.088
11	2377717	6568261	129.95	75.86	21.23	1.158
11	2377717	6568098	128.85	75.86	22.87	1.147

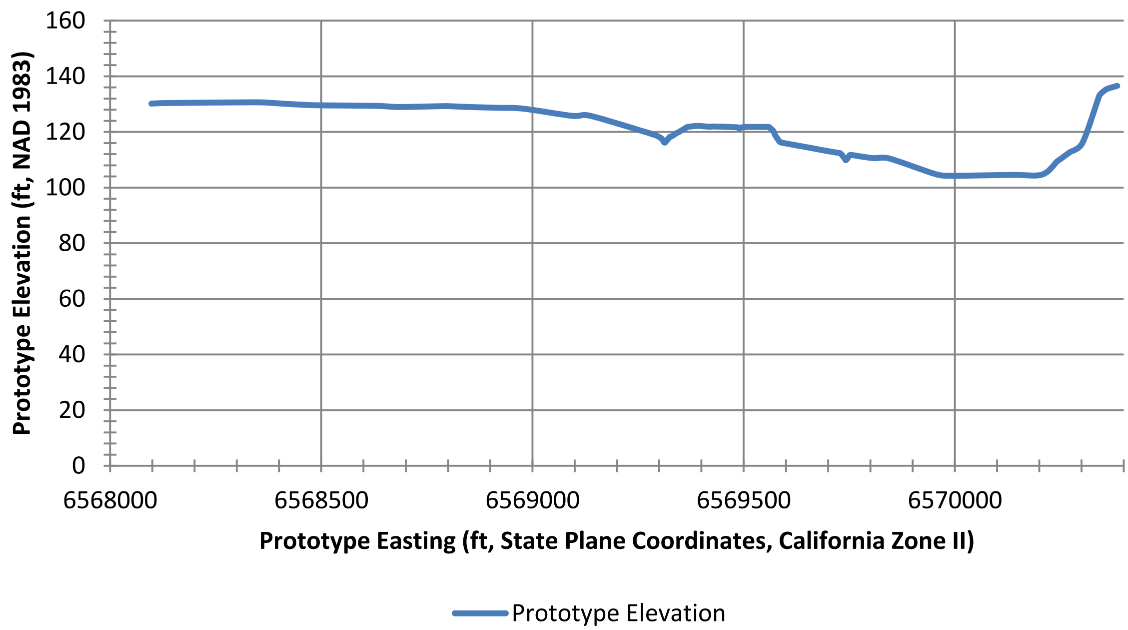

Figure C-25: Prototype Cross-section 12.

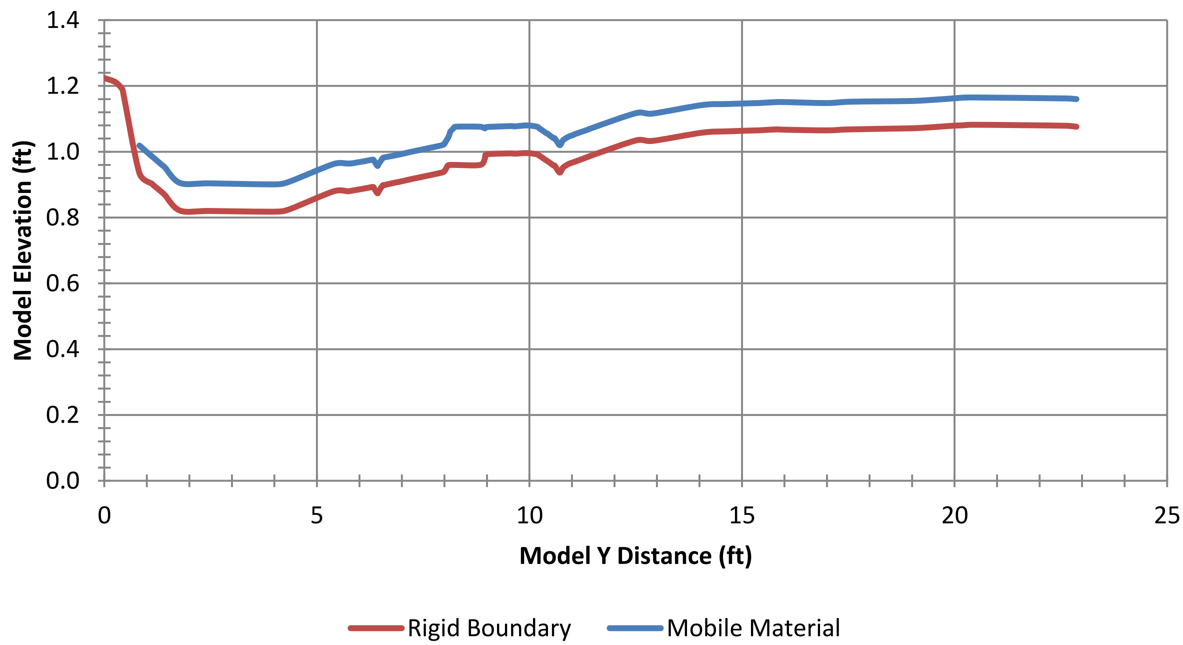

Figure C-26: Model Cross-section 12.

Table C-13: Cross-section 12 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
12	2377917	6570385	136.55	73.86	0.00	1.224
12	2377917	6570359	135.35	73.86	0.25	1.212
12	2377917	6570344	133.45	73.86	0.41	1.193
12	2377917	6570341	132.75	73.86	0.43	1.186
12	2377917	6570302	116.05	73.86	0.83	1.019
12	2377917	6570273	112.75	73.86	1.12	0.986
12	2377917	6570270	112.45	73.86	1.15	0.983
12	2377917	6570249	110.15	73.86	1.35	0.960
12	2377917	6570243	109.45	73.86	1.42	0.953
12	2377917	6570206	104.65	73.86	1.78	0.905
12	2377917	6570136	104.55	73.86	2.49	0.904
12	2377917	6569981	104.25	73.86	4.04	0.901
12	2377917	6569950	105.05	73.86	4.35	0.909
12	2377917	6569845	110.45	73.86	5.40	0.963
12	2377917	6569811	110.55	73.86	5.73	0.964
12	2377917	6569801	110.65	73.86	5.83	0.965
12	2377917	6569792	110.85	73.86	5.93	0.967
12	2377917	6569774	111.25	73.86	6.11	0.971
12	2377917	6569766	111.45	73.86	6.19	0.973
12	2377917	6569754	111.75	73.86	6.31	0.976
12	2377917	6569751	111.65	73.86	6.34	0.975
12	2377917	6569750	111.35	73.86	6.35	0.972
12	2377917	6569742	109.85	73.86	6.42	0.957
12	2377917	6569739	110.45	73.86	6.45	0.963
12	2377917	6569736	110.95	73.86	6.48	0.968
12	2377917	6569730	112.25	73.86	6.55	0.981
12	2377917	6569725	112.45	73.86	6.60	0.983
12	2377917	6569709	112.85	73.86	6.76	0.987
12	2377917	6569693	113.25	73.86	6.91	0.991
12	2377917	6569683	113.55	73.86	7.02	0.994
12	2377917	6569676	113.75	73.86	7.09	0.996
12	2377917	6569662	114.15	73.86	7.23	1.000
12	2377917	6569626	115.15	73.86	7.59	1.010
12	2377917	6569622	115.25	73.86	7.63	1.011
12	2377917	6569604	115.75	73.86	7.81	1.016
12	2377917	6569587	116.25	73.86	7.97	1.021
12	2377917	6569585	116.65	73.86	8.00	1.025
12	2377917	6569583	116.75	73.86	8.01	1.026
12	2377917	6569582	117.15	73.86	8.03	1.030
12	2377917	6569578	117.95	73.86	8.06	1.038
12	2377917	6569577	118.25	73.86	8.08	1.041
12	2377917	6569574	119.15	73.86	8.11	1.050
12	2377917	6569571	120.25	73.86	8.14	1.061
12	2377917	6569567	120.75	73.86	8.17	1.066
12	2377917	6569564	121.25	73.86	8.21	1.071
12	2377917	6569560	121.75	73.86	8.25	1.076
12	2377917	6569501	121.75	73.86	8.84	1.076
12	2377917	6569489	121.25	73.86	8.95	1.071
12	2377917	6569486	121.65	73.86	8.99	1.075
12	2377917	6569427	121.95	73.86	9.58	1.078
12	2377917	6569420	121.85	73.86	9.65	1.077
12	2377917	6569390	122.15	73.86	9.95	1.080
12	2377917	6569367	121.75	73.86	10.18	1.076
12	2377917	6569362	121.25	73.86	10.23	1.071

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
12	2377917	6569359	121.05	73.86	10.26	1.069
12	2377917	6569353	120.55	73.86	10.32	1.064
12	2377917	6569348	120.05	73.86	10.37	1.059
12	2377917	6569344	119.75	73.86	10.41	1.056
12	2377917	6569341	119.55	73.86	10.44	1.054
12	2377917	6569338	119.25	73.86	10.46	1.051
12	2377917	6569333	118.75	73.86	10.52	1.046
12	2377917	6569328	118.25	73.86	10.57	1.041
12	2377917	6569325	118.25	73.86	10.59	1.041
12	2377917	6569319	117.05	73.86	10.66	1.029
12	2377917	6569313	116.15	73.86	10.72	1.020
12	2377917	6569305	117.65	73.86	10.79	1.035
12	2377917	6569292	118.75	73.86	10.92	1.046
12	2377917	6569281	119.25	73.86	11.03	1.051
12	2377917	6569277	119.55	73.86	11.08	1.054
12	2377917	6569256	120.45	73.86	11.28	1.063
12	2377917	6569246	120.95	73.86	11.39	1.068
12	2377917	6569227	121.85	73.86	11.58	1.077
12	2377917	6569132	125.95	73.86	12.53	1.118
12	2377917	6569095	125.75	73.86	12.90	1.116
12	2377917	6568978	128.35	73.86	14.07	1.142
12	2377917	6568920	128.65	73.86	14.65	1.145
12	2377917	6568848	128.95	73.86	15.37	1.148
12	2377917	6568846	128.95	73.86	15.39	1.148
12	2377917	6568803	129.25	73.86	15.82	1.151
12	2377917	6568785	129.25	73.86	16.00	1.151
12	2377917	6568684	128.95	73.86	17.00	1.148
12	2377917	6568631	129.35	73.86	17.54	1.152
12	2377917	6568497	129.55	73.86	18.88	1.154
12	2377917	6568456	129.75	73.86	19.29	1.156
12	2377917	6568389	130.35	73.86	19.95	1.162
12	2377917	6568369	130.55	73.86	20.15	1.164
12	2377917	6568342	130.65	73.86	20.43	1.165
12	2377917	6568122	130.35	73.86	22.62	1.162
12	2377917	6568098	130.15	73.86	22.87	1.160

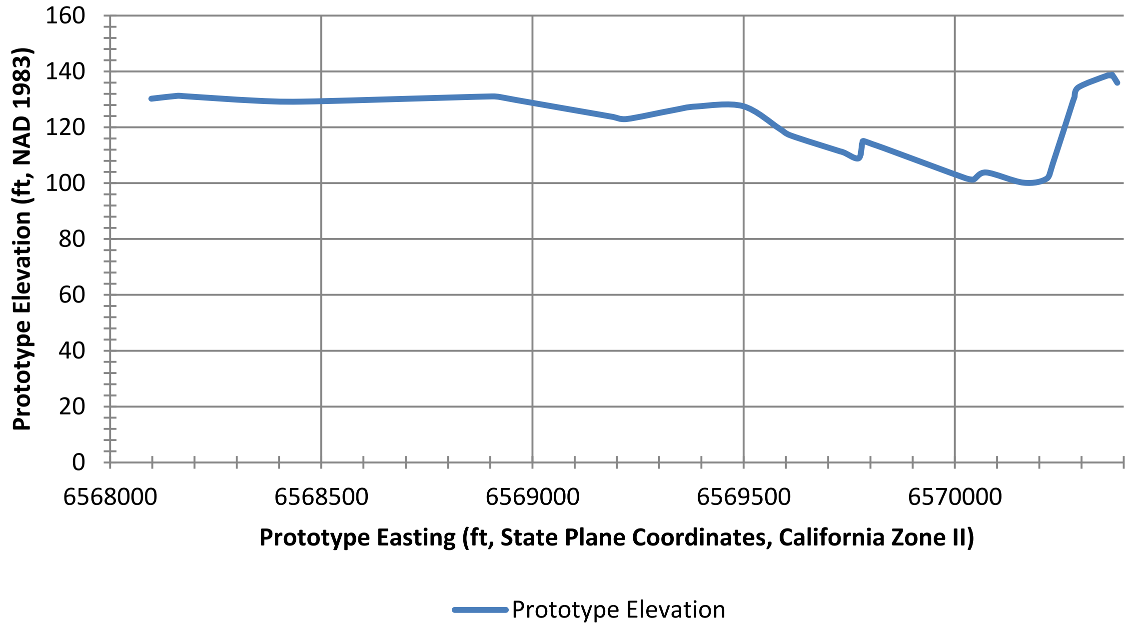

Figure C-27: Prototype Cross-section 13.

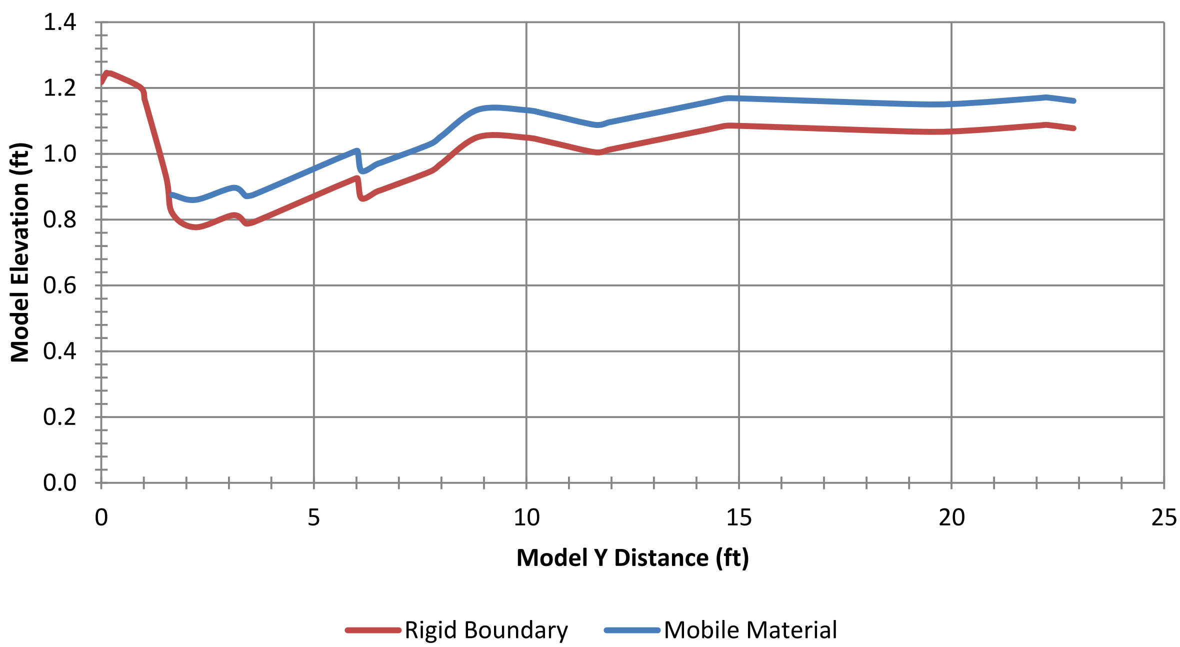

Figure C-28: Model Cross-section 13.

Table C-14: Cross-section 13 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
13	2378117	6570385	135.95	71.86	0.00	1.218
13	2378117	6570373	138.77	71.86	0.12	1.246
13	2378117	6570370	138.55	71.86	0.14	1.244
13	2378117	6570361	138.51	71.86	0.24	1.244
13	2378117	6570293	134.32	71.86	0.92	1.202
13	2378117	6570283	130.67	71.86	1.02	1.165
13	2378117	6570280	129.50	71.86	1.05	1.153
13	2378117	6570279	129.14	71.86	1.05	1.150
13	2378117	6570232	107.03	71.86	1.53	0.929
13	2378117	6570218	101.67	71.86	1.67	0.875
13	2378117	6570163	100.17	71.86	2.22	0.860
13	2378117	6570074	103.84	71.86	3.11	0.897
13	2378117	6570044	101.30	71.86	3.41	0.871
13	2378117	6570025	101.82	71.86	3.60	0.877
13	2378117	6569832	112.55	71.86	5.53	0.984
13	2378117	6569805	113.95	71.86	5.79	0.998
13	2378117	6569790	114.78	71.86	5.94	1.006
13	2378117	6569782	115.06	71.86	6.03	1.009
13	2378117	6569780	114.02	71.86	6.04	0.999
13	2378117	6569772	108.90	71.86	6.13	0.947
13	2378117	6569739	110.87	71.86	6.46	0.967
13	2378117	6569733	111.21	71.86	6.51	0.971
13	2378117	6569733	111.24	71.86	6.52	0.971
13	2378117	6569730	111.34	71.86	6.55	0.972
13	2378117	6569729	111.35	71.86	6.55	0.972
13	2378117	6569611	117.12	71.86	7.74	1.030
13	2378117	6569585	119.54	71.86	8.00	1.054
13	2378117	6569498	127.60	71.86	8.87	1.134
13	2378117	6569388	127.46	71.86	9.96	1.133
13	2378117	6569331	126.06	71.86	10.54	1.119
13	2378117	6569223	122.96	71.86	11.62	1.088
13	2378117	6569191	123.71	71.86	11.94	1.096
13	2378117	6569165	124.41	71.86	12.20	1.103
13	2378117	6568962	129.76	71.86	14.23	1.156
13	2378117	6568922	130.88	71.86	14.63	1.167
13	2378117	6568904	131.07	71.86	14.81	1.169
13	2378117	6568785	130.57	71.86	16.00	1.164
13	2378117	6568453	129.20	71.86	19.31	1.150
13	2378117	6568342	129.57	71.86	20.43	1.154
13	2378117	6568173	131.17	71.86	22.12	1.170
13	2378117	6568161	131.30	71.86	22.24	1.171
13	2378117	6568098	130.25	71.86	22.87	1.161

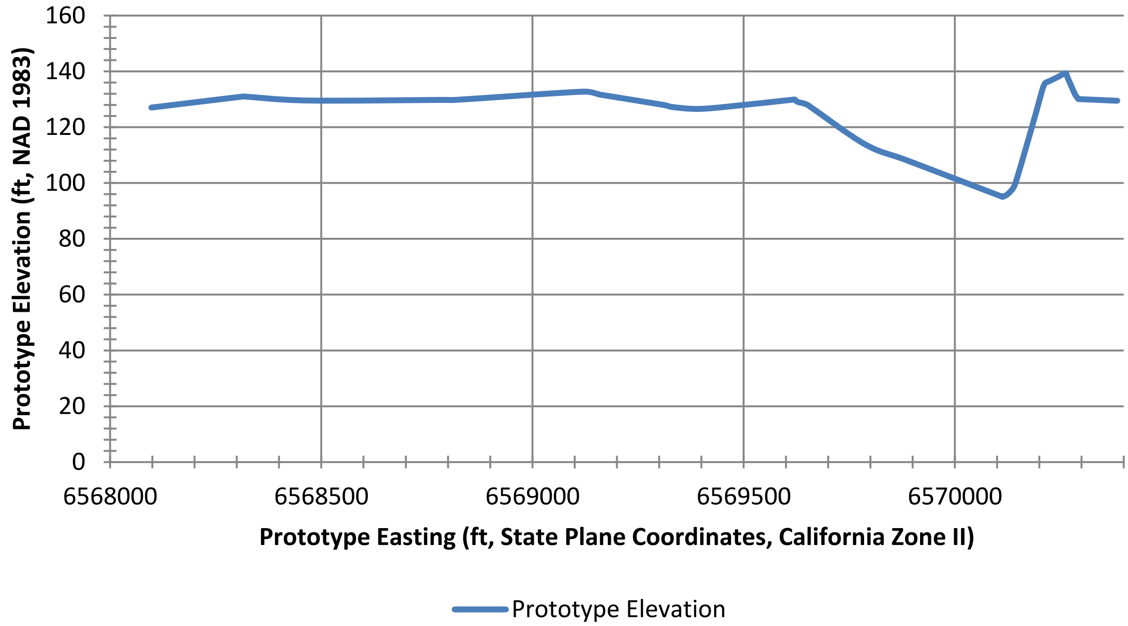

Figure C-29: Prototype Cross-section 14.

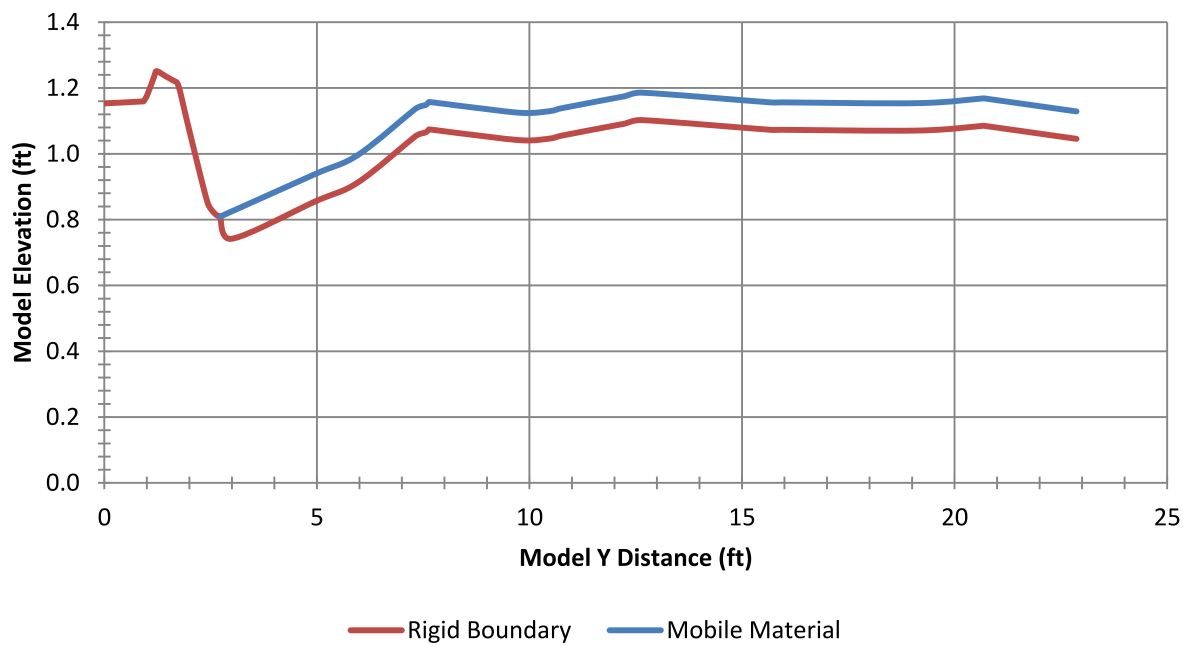

Figure C-30: Model Cross-section 14.

Table C-15: Cross-section 14 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
14	2378617	6570385	129.49	66.86	0.00	1.153
14	2378617	6570383	129.48	66.86	0.02	1.153
14	2378617	6570297	130.06	66.86	0.88	1.159
14	2378617	6570293	130.09	66.86	0.91	1.159
14	2378617	6570292	130.13	66.86	0.93	1.160
14	2378617	6570290	130.51	66.86	0.94	1.164
14	2378617	6570284	132.01	66.86	1.01	1.179
14	2378617	6570267	137.72	66.86	1.17	1.236
14	2378617	6570262	139.29	66.86	1.23	1.251
14	2378617	6570241	137.80	66.86	1.43	1.236
14	2378617	6570224	136.52	66.86	1.61	1.224
14	2378617	6570213	135.69	66.86	1.71	1.215
14	2378617	6570207	133.58	66.86	1.77	1.194
14	2378617	6570185	121.29	66.86	2.00	1.071
14	2378617	6570142	99.42	66.86	2.43	0.853
14	2378617	6570126	96.18	66.86	2.58	0.820
14	2378617	6570114	95.09	66.86	2.71	0.809
14	2378617	6570113	95.22	66.86	2.72	0.811
14	2378617	6570113	95.20	66.86	2.72	0.810
14	2378617	6570112	95.09	66.86	2.73	0.809
14	2378617	6570085	96.68	66.86	3.00	0.825
14	2378617	6569889	107.98	66.86	4.95	0.938
14	2378617	6569788	113.83	66.86	5.97	0.997
14	2378617	6569654	127.75	66.86	7.31	1.136
14	2378617	6569642	128.55	66.86	7.43	1.144
14	2378617	6569628	129.06	66.86	7.57	1.149
14	2378617	6569621	129.90	66.86	7.63	1.157
14	2378617	6569620	129.91	66.86	7.65	1.158
14	2378617	6569585	129.34	66.86	8.00	1.152
14	2378617	6569519	128.28	66.86	8.65	1.141
14	2378617	6569399	126.58	66.86	9.85	1.124
14	2378617	6569331	127.25	66.86	10.54	1.131
14	2378617	6569310	127.99	66.86	10.75	1.138
14	2378617	6569168	131.47	66.86	12.16	1.173
14	2378617	6569159	131.70	66.86	12.26	1.175
14	2378617	6569121	132.75	66.86	12.64	1.186
14	2378617	6568820	129.81	66.86	15.65	1.157
14	2378617	6568785	129.78	66.86	16.00	1.156
14	2378617	6568470	129.56	66.86	19.15	1.154
14	2378617	6568317	131.00	66.86	20.67	1.168
14	2378617	6568312	130.96	66.86	20.72	1.168
14	2378617	6568098	127.04	66.86	22.87	1.129

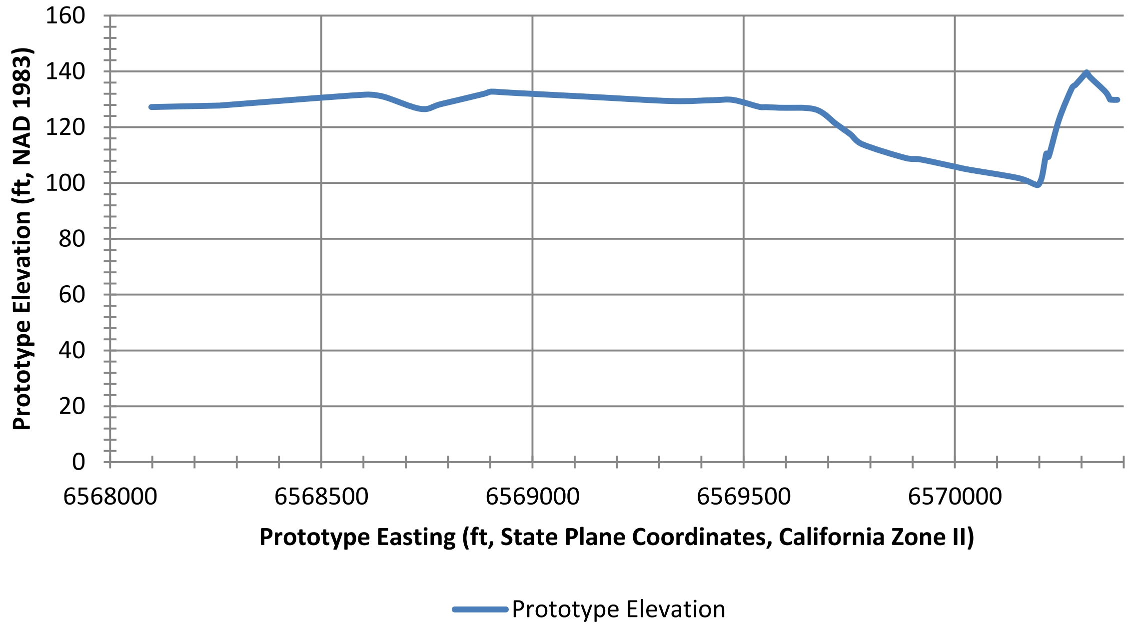

Figure C-31: Prototype Cross-section 15.

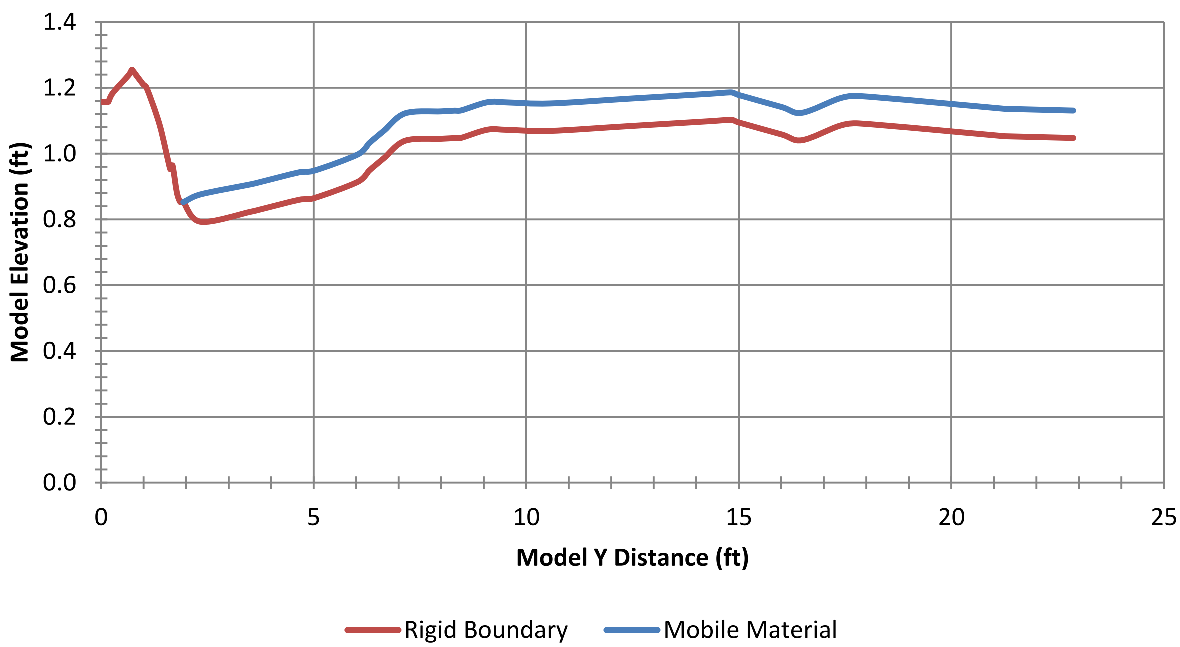

Figure C-32: Model Cross-section 15.

Table C-16: Cross-section 15 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
15	2379117	6570385	129.82	61.86	0.00	1.157
15	2379117	6570378	129.81	61.86	0.06	1.157
15	2379117	6570377	129.80	61.86	0.08	1.156
15	2379117	6570369	129.89	61.86	0.16	1.157
15	2379117	6570367	129.91	61.86	0.17	1.158
15	2379117	6570357	132.61	61.86	0.28	1.185
15	2379117	6570320	137.91	61.86	0.64	1.238
15	2379117	6570313	139.39	61.86	0.71	1.252
15	2379117	6570312	139.64	61.86	0.73	1.255
15	2379117	6570312	139.66	61.86	0.73	1.255
15	2379117	6570307	138.82	61.86	0.78	1.247
15	2379117	6570286	135.23	61.86	0.99	1.211
15	2379117	6570277	134.09	61.86	1.07	1.199
15	2379117	6570247	122.90	61.86	1.38	1.087
15	2379117	6570222	109.46	61.86	1.63	0.953
15	2379117	6570217	110.54	61.86	1.68	0.964
15	2379117	6570206	102.33	61.86	1.78	0.882
15	2379117	6570198	99.44	61.86	1.86	0.853
15	2379117	6570191	99.40	61.86	1.93	0.852
15	2379117	6570150	101.77	61.86	2.34	0.876
15	2379117	6570033	104.81	61.86	3.52	0.907
15	2379117	6570011	105.48	61.86	3.74	0.913
15	2379117	6569919	108.44	61.86	4.65	0.943
15	2379117	6569883	108.99	61.86	5.02	0.948
15	2379117	6569781	113.90	61.86	6.04	0.997
15	2379117	6569754	117.29	61.86	6.30	1.031
15	2379117	6569738	119.05	61.86	6.46	1.049
15	2379117	6569718	121.21	61.86	6.66	1.071
15	2379117	6569669	126.40	61.86	7.15	1.122
15	2379117	6569585	126.98	61.86	8.00	1.128
15	2379117	6569553	127.20	61.86	8.31	1.130
15	2379117	6569537	127.29	61.86	8.47	1.131
15	2379117	6569475	129.76	61.86	9.09	1.156
15	2379117	6569427	129.69	61.86	9.57	1.155
15	2379117	6569329	129.38	61.86	10.55	1.152
15	2379117	6569144	130.83	61.86	12.41	1.167
15	2379117	6568955	132.31	61.86	14.29	1.182
15	2379117	6568902	132.75	61.86	14.83	1.186
15	2379117	6568884	131.94	61.86	15.00	1.178
15	2379117	6568785	128.33	61.86	16.00	1.142
15	2379117	6568736	126.56	61.86	16.49	1.124
15	2379117	6568648	130.91	61.86	17.37	1.168
15	2379117	6568603	131.66	61.86	17.81	1.175
15	2379117	6568261	127.79	61.86	21.23	1.136
15	2379117	6568258	127.76	61.86	21.26	1.136
15	2379117	6568098	127.23	61.86	22.87	1.131

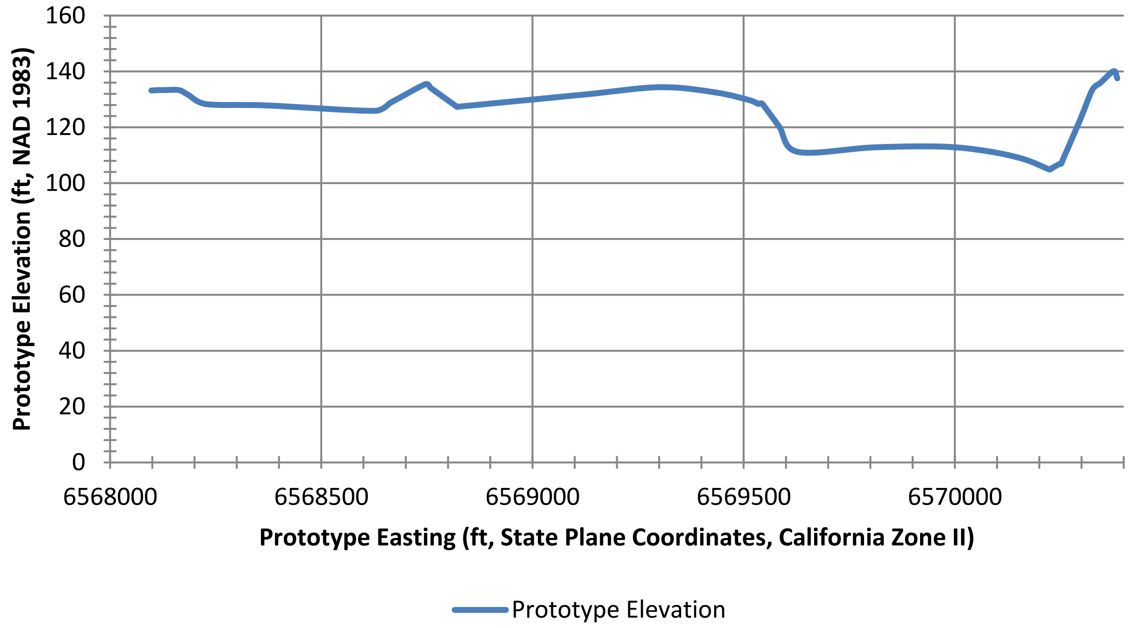

Figure C-33: Prototype Cross-section 16.

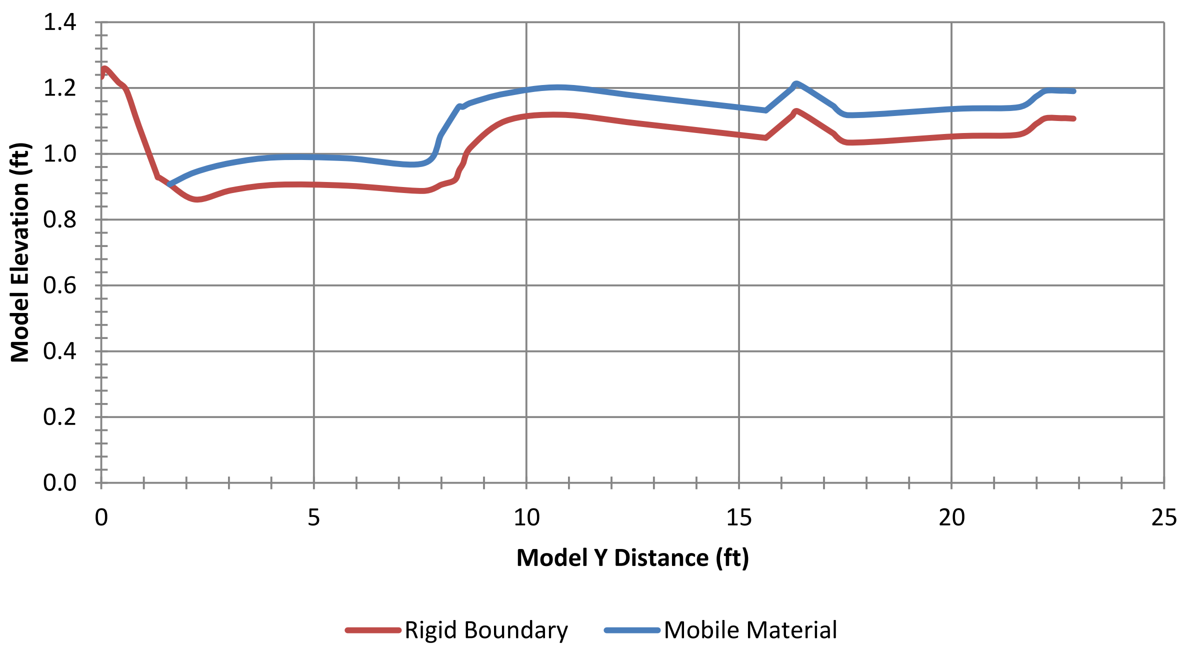

Figure C-34: Model Cross-section 16.

Table C-17: Cross-section 16 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
16	2379617	6570385	137.53	56.86	0.00	1.234
16	2379617	6570376	140.10	56.86	0.09	1.259
16	2379617	6570345	135.97	56.86	0.40	1.218
16	2379617	6570326	133.43	56.86	0.59	1.193
16	2379617	6570297	122.68	56.86	0.88	1.085
16	2379617	6570255	108.16	56.86	1.30	0.940
16	2379617	6570252	107.01	56.86	1.33	0.929
16	2379617	6570248	106.88	56.86	1.37	0.927
16	2379617	6570229	105.33	56.86	1.55	0.912
16	2379617	6570224	104.89	56.86	1.60	0.907
16	2379617	6570163	108.60	56.86	2.21	0.944
16	2379617	6570078	111.43	56.86	3.07	0.973
16	2379617	6569970	113.09	56.86	4.14	0.989
16	2379617	6569807	112.81	56.86	5.77	0.987
16	2379617	6569628	111.21	56.86	7.57	0.971
16	2379617	6569585	120.14	56.86	8.00	1.060
16	2379617	6569553	126.61	56.86	8.31	1.125
16	2379617	6569543	128.55	56.86	8.42	1.144
16	2379617	6569534	128.44	56.86	8.51	1.143
16	2379617	6569515	129.65	56.86	8.69	1.155
16	2379617	6569434	132.47	56.86	9.51	1.183
16	2379617	6569303	134.36	56.86	10.82	1.202
16	2379617	6569120	131.69	56.86	12.65	1.175
16	2379617	6568824	127.37	56.86	15.60	1.132
16	2379617	6568822	127.30	56.86	15.63	1.131
16	2379617	6568822	127.30	56.86	15.63	1.131
16	2379617	6568785	131.32	56.86	16.00	1.172
16	2379617	6568759	134.07	56.86	16.25	1.199
16	2379617	6568747	135.45	56.86	16.38	1.213
16	2379617	6568670	129.31	56.86	17.14	1.152
16	2379617	6568662	128.65	56.86	17.22	1.145
16	2379617	6568627	125.90	56.86	17.57	1.117
16	2379617	6568370	127.84	56.86	20.14	1.137
16	2379617	6568227	128.31	56.86	21.57	1.142
16	2379617	6568185	131.62	56.86	22.00	1.175
16	2379617	6568163	133.33	56.86	22.22	1.192
16	2379617	6568126	133.32	56.86	22.58	1.192
16	2379617	6568117	133.33	56.86	22.68	1.192
16	2379617	6568098	133.19	56.86	22.87	1.190

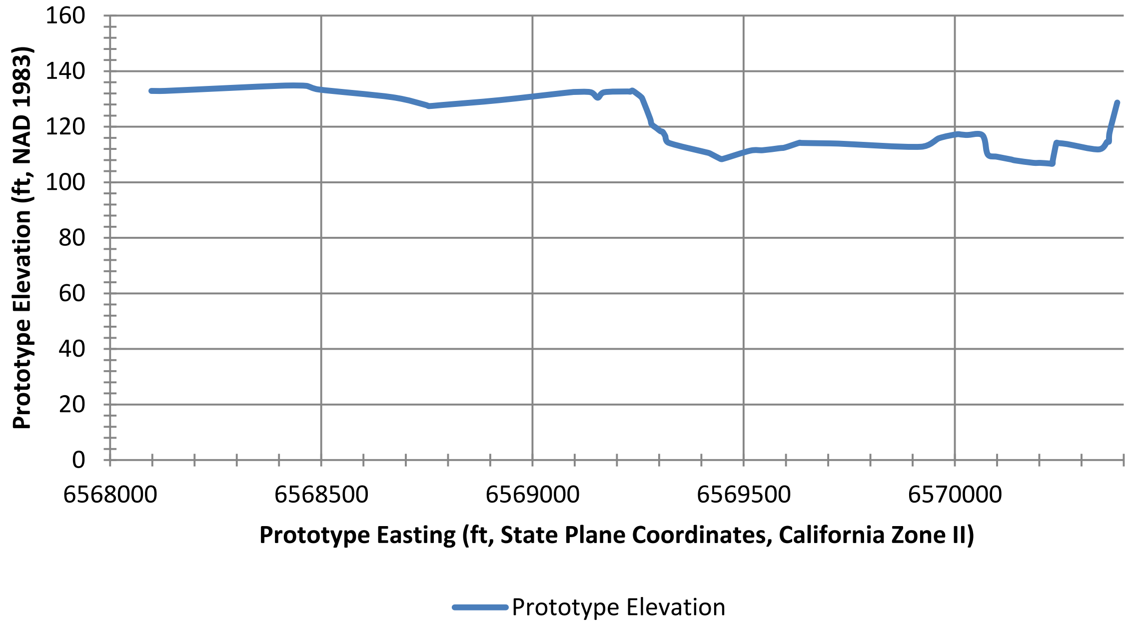

Figure C-35: Prototype Cross-section 17.

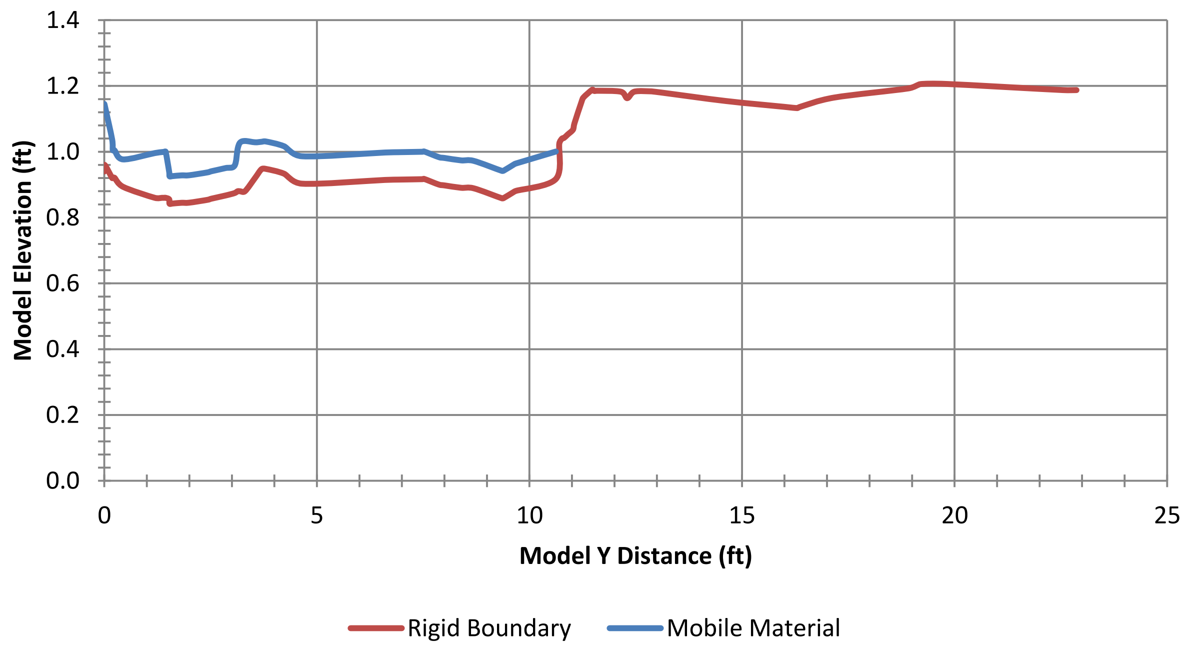

Figure C-36: Model Cross-section 17.

Table C-18: Cross-section 17 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
17	2380117	6570385	128.69	51.86	0.00	1.145
17	2380117	6570384	128.30	51.86	0.01	1.141
17	2380117	6570366	117.84	51.86	0.18	1.037
17	2380117	6570365	114.63	51.86	0.20	1.005
17	2380117	6570361	114.58	51.86	0.24	1.004
17	2380117	6570341	111.83	51.86	0.44	0.977
17	2380117	6570266	113.75	51.86	1.19	0.996
17	2380117	6570249	114.05	51.86	1.35	0.999
17	2380117	6570248	114.07	51.86	1.37	0.999
17	2380117	6570244	114.12	51.86	1.41	1.000
17	2380117	6570240	114.16	51.86	1.44	1.000
17	2380117	6570232	108.03	51.86	1.53	0.939
17	2380117	6570231	106.69	51.86	1.53	0.925
17	2380117	6570224	106.76	51.86	1.61	0.926
17	2380117	6570203	106.98	51.86	1.82	0.928
17	2380117	6570186	107.00	51.86	1.99	0.928
17	2380117	6570142	107.89	51.86	2.43	0.937
17	2380117	6570133	108.23	51.86	2.52	0.941
17	2380117	6570100	109.18	51.86	2.85	0.950
17	2380117	6570078	109.93	51.86	3.06	0.958
17	2380117	6570071	115.06	51.86	3.14	1.009
17	2380117	6570065	116.92	51.86	3.19	1.028
17	2380117	6570054	117.43	51.86	3.31	1.033
17	2380117	6570030	117.03	51.86	3.54	1.029
17	2380117	6570015	117.18	51.86	3.70	1.030
17	2380117	6570005	117.28	51.86	3.80	1.031
17	2380117	6569962	115.83	51.86	4.23	1.017
17	2380117	6569919	112.78	51.86	4.65	0.986
17	2380117	6569725	113.92	51.86	6.60	0.998
17	2380117	6569694	114.02	51.86	6.91	0.999
17	2380117	6569636	114.15	51.86	7.48	1.000
17	2380117	6569633	114.25	51.86	7.52	1.001
17	2380117	6569598	112.51	51.86	7.87	0.984
17	2380117	6569585	112.27	51.86	8.00	0.981
17	2380117	6569545	111.53	51.86	8.39	0.974
17	2380117	6569516	111.39	51.86	8.69	0.972
17	2380117	6569449	108.34	51.86	9.35	0.942
17	2380117	6569445	108.43	51.86	9.40	0.943
17	2380117	6569420	110.38	51.86	9.64	0.962
17	2380117	6569416	110.60	51.86	9.68	0.964
17	2380117	6569322	114.21	51.86	10.62	1.001
17	2380117	6569314	116.63	51.86	10.70	1.025
17	2380117	6569308	118.14	51.86	10.76	1.040
17	2380117	6569303	118.36	51.86	10.81	1.042
17	2380117	6569294	119.40	51.86	10.90	1.052
17	2380117	6569282	120.90	51.86	11.03	1.067
17	2380117	6569279	122.83	51.86	11.06	1.087
17	2380117	6569262	129.35	51.86	11.23	1.152
17	2380117	6569258	130.61	51.86	11.27	1.165
17	2380117	6569237	132.98	51.86	11.47	1.188
17	2380117	6569233	132.70	51.86	11.52	1.185
17	2380117	6569231	132.59	51.86	11.54	1.184
17	2380117	6569226	132.68	51.86	11.59	1.185
17	2380117	6569169	132.39	51.86	12.15	1.182

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
17	2380117	6569155	130.44	51.86	12.30	1.163
17	2380117	6569138	132.42	51.86	12.47	1.183
17	2380117	6569097	132.50	51.86	12.87	1.183
17	2380117	6569095	132.47	51.86	12.89	1.183
17	2380117	6569092	132.43	51.86	12.92	1.183
17	2380117	6569076	132.18	51.86	13.08	1.180
17	2380117	6568923	129.58	51.86	14.62	1.154
17	2380117	6568785	127.80	51.86	16.00	1.136
17	2380117	6568755	127.41	51.86	16.30	1.133
17	2380117	6568748	127.79	51.86	16.36	1.136
17	2380117	6568668	130.62	51.86	17.17	1.165
17	2380117	6568493	133.40	51.86	18.91	1.192
17	2380117	6568465	134.71	51.86	19.20	1.206
17	2380117	6568404	134.76	51.86	19.81	1.206
17	2380117	6568130	132.90	51.86	22.54	1.187
17	2380117	6568098	132.89	51.86	22.87	1.187

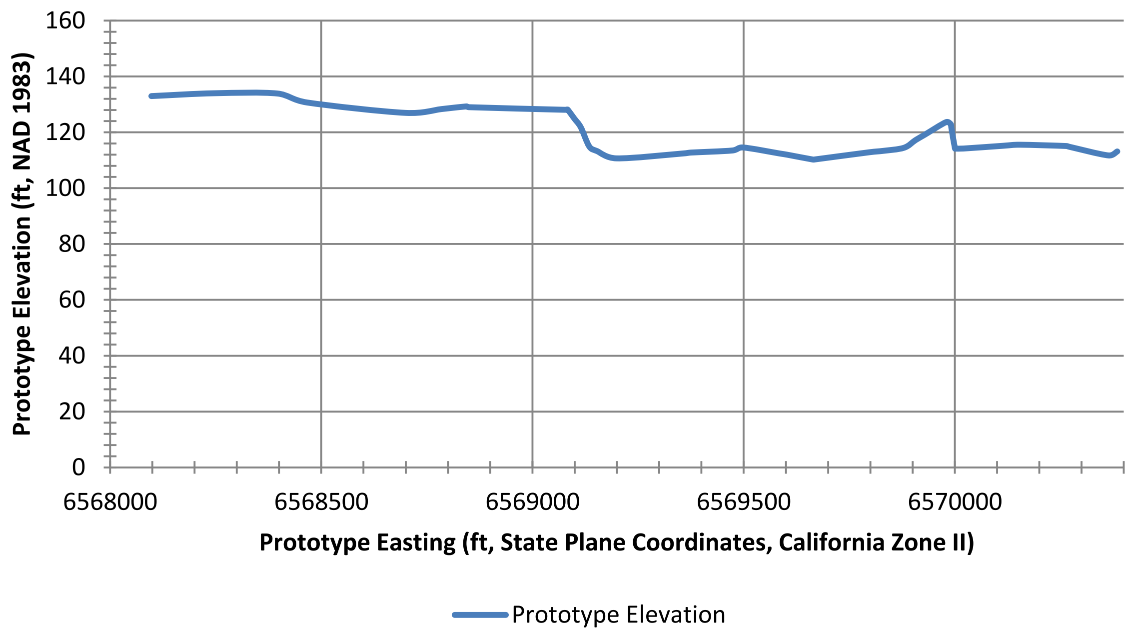

Figure C-37: Prototype Cross-section 18.

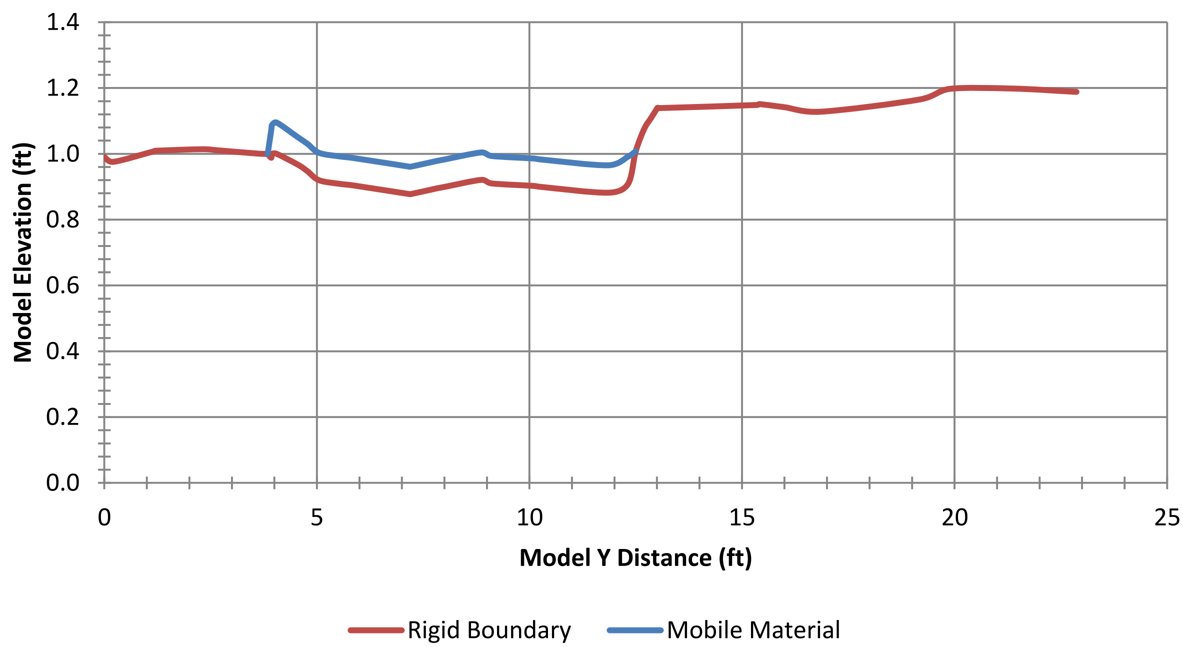

Figure C-38: Model Cross-section 18.

Table C-19: Cross-section 18 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
18	2380317	6570385	113.15	49.86	0.00	0.990
18	2380317	6570364	111.72	49.86	0.21	0.976
18	2380317	6570270	114.84	49.86	1.14	1.007
18	2380317	6570264	115.09	49.86	1.21	1.009
18	2380317	6570154	115.55	49.86	2.30	1.014
18	2380317	6570115	115.19	49.86	2.69	1.010
18	2380317	6570020	114.19	49.86	3.64	1.000
18	2380317	6570002	114.16	49.86	3.83	1.000
18	2380317	6570002	114.15	49.86	3.83	1.000
18	2380317	6570000	114.15	49.86	3.84	1.000
18	2380317	6569992	121.28	49.86	3.93	1.071
18	2380317	6569990	122.89	49.86	3.94	1.087
18	2380317	6569979	123.65	49.86	4.05	1.095
18	2380317	6569929	119.19	49.86	4.55	1.050
18	2380317	6569907	117.21	49.86	4.78	1.031
18	2380317	6569879	114.45	49.86	5.05	1.003
18	2380317	6569829	113.33	49.86	5.56	0.992
18	2380317	6569798	112.86	49.86	5.87	0.987
18	2380317	6569669	110.30	49.86	7.15	0.961
18	2380317	6569664	110.25	49.86	7.21	0.961
18	2380317	6569603	111.97	49.86	7.81	0.978
18	2380317	6569585	112.43	49.86	8.00	0.983
18	2380317	6569498	114.57	49.86	8.87	1.004
18	2380317	6569473	113.49	49.86	9.11	0.993
18	2380317	6569375	112.74	49.86	10.10	0.986
18	2380317	6569357	112.43	49.86	10.28	0.983
18	2380317	6569199	110.67	49.86	11.86	0.965
18	2380317	6569153	113.27	49.86	12.32	0.991
18	2380317	6569134	114.93	49.86	12.50	1.008
18	2380317	6569115	121.75	49.86	12.70	1.076
18	2380317	6569099	124.96	49.86	12.86	1.108
18	2380317	6569083	128.13	49.86	13.01	1.140
18	2380317	6569082	128.13	49.86	13.02	1.140
18	2380317	6569082	128.13	49.86	13.03	1.140
18	2380317	6569077	128.06	49.86	13.07	1.139
18	2380317	6568849	129.00	49.86	15.36	1.148
18	2380317	6568844	129.28	49.86	15.40	1.151
18	2380317	6568785	128.32	49.86	16.00	1.142
18	2380317	6568700	126.95	49.86	16.85	1.128
18	2380317	6568467	130.67	49.86	19.18	1.165
18	2380317	6568396	133.89	49.86	19.88	1.197
18	2380317	6568247	133.99	49.86	21.37	1.198
18	2380317	6568098	132.97	49.86	22.87	1.188

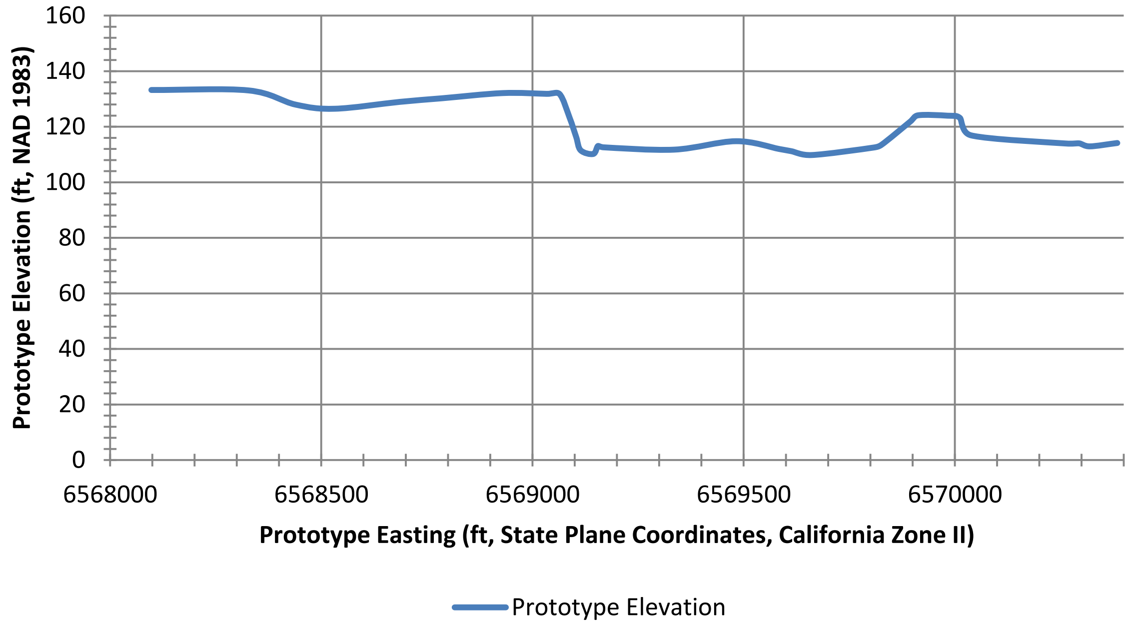

Figure C-39: Prototype Cross-section 19.

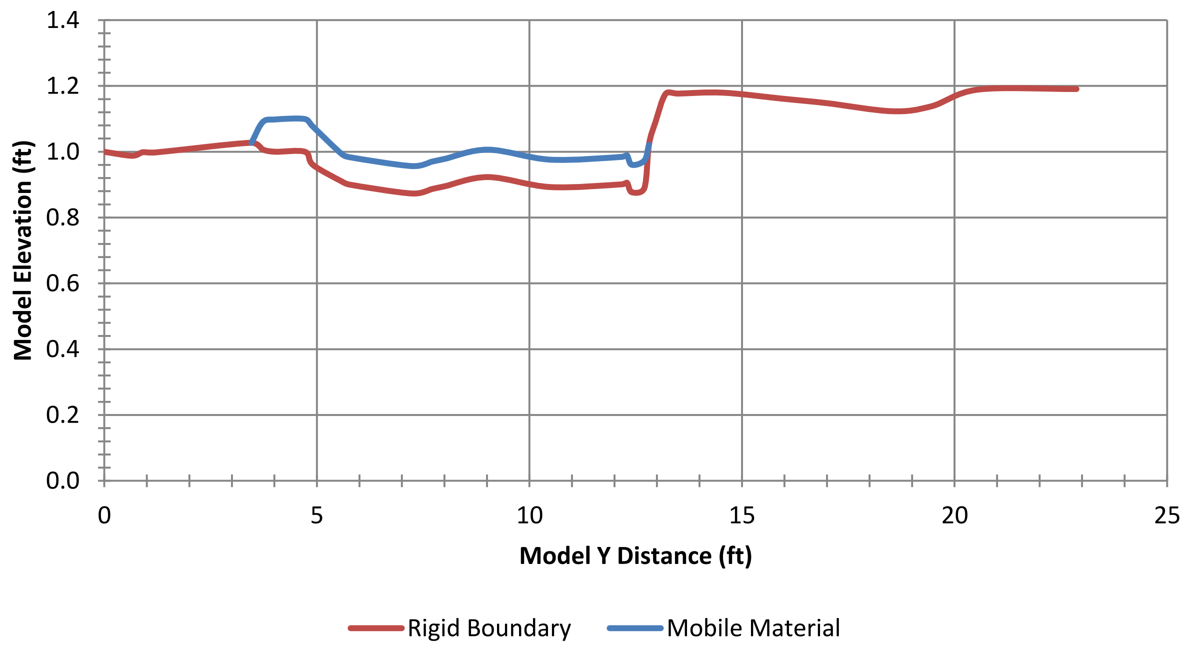

Figure C-40: Model Cross-section 19.

Table C-20: Cross-section 19 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
19	2380517	6570385	114.13	47.86	0.00	1.000
19	2380517	6570319	112.93	47.86	0.65	0.988
19	2380517	6570294	114.02	47.86	0.91	0.999
19	2380517	6570263	113.95	47.86	1.21	0.998
19	2380517	6570038	116.89	47.86	3.46	1.027
19	2380517	6570012	123.16	47.86	3.73	1.090
19	2380517	6569983	123.97	47.86	4.02	1.098
19	2380517	6569913	124.10	47.86	4.72	1.099
19	2380517	6569894	121.77	47.86	4.91	1.076
19	2380517	6569826	113.47	47.86	5.58	0.993
19	2380517	6569806	112.47	47.86	5.78	0.983
19	2380517	6569661	109.80	47.86	7.24	0.956
19	2380517	6569613	111.19	47.86	7.72	0.970
19	2380517	6569585	111.97	47.86	8.00	0.978
19	2380517	6569482	114.79	47.86	9.03	1.006
19	2380517	6569335	111.75	47.86	10.49	0.976
19	2380517	6569168	112.58	47.86	12.16	0.984
19	2380517	6569155	113.08	47.86	12.29	0.989
19	2380517	6569144	110.19	47.86	12.41	0.960
19	2380517	6569114	111.49	47.86	12.70	0.973
19	2380517	6569104	116.28	47.86	12.81	1.021
19	2380517	6569088	123.27	47.86	12.97	1.091
19	2380517	6569064	131.77	47.86	13.20	1.176
19	2380517	6569034	131.83	47.86	13.51	1.177
19	2380517	6568929	132.10	47.86	14.55	1.179
19	2380517	6568785	130.22	47.86	16.00	1.161
19	2380517	6568685	128.93	47.86	16.99	1.148
19	2380517	6568532	126.47	47.86	18.52	1.123
19	2380517	6568440	127.94	47.86	19.45	1.138
19	2380517	6568328	133.06	47.86	20.57	1.189
19	2380517	6568098	133.22	47.86	22.87	1.191

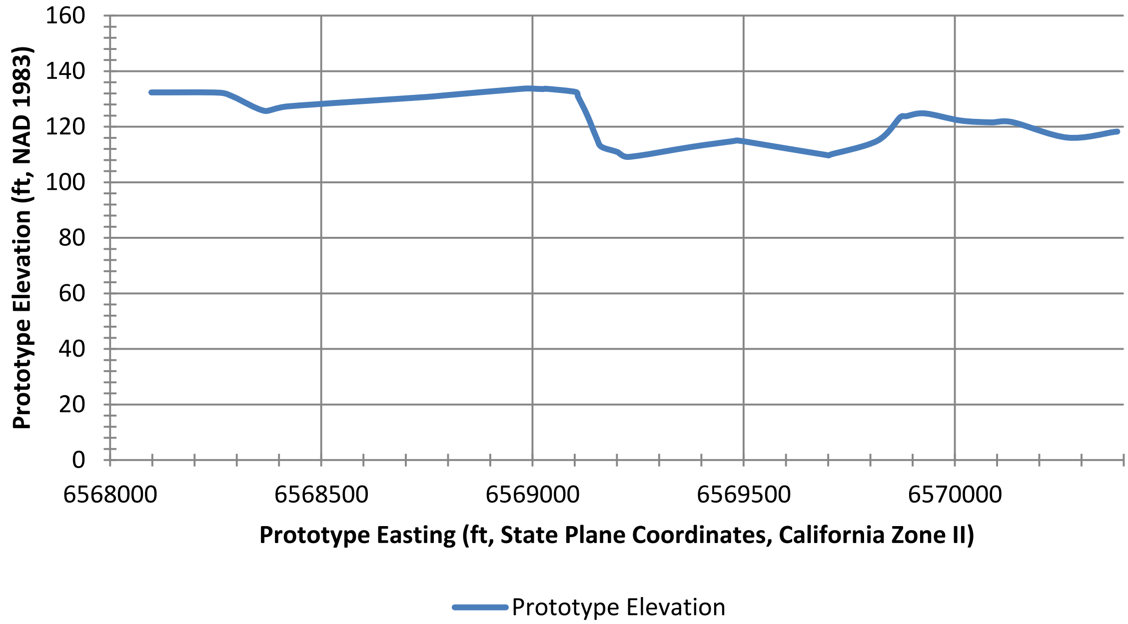

Figure C-41: Prototype Cross-section 20.

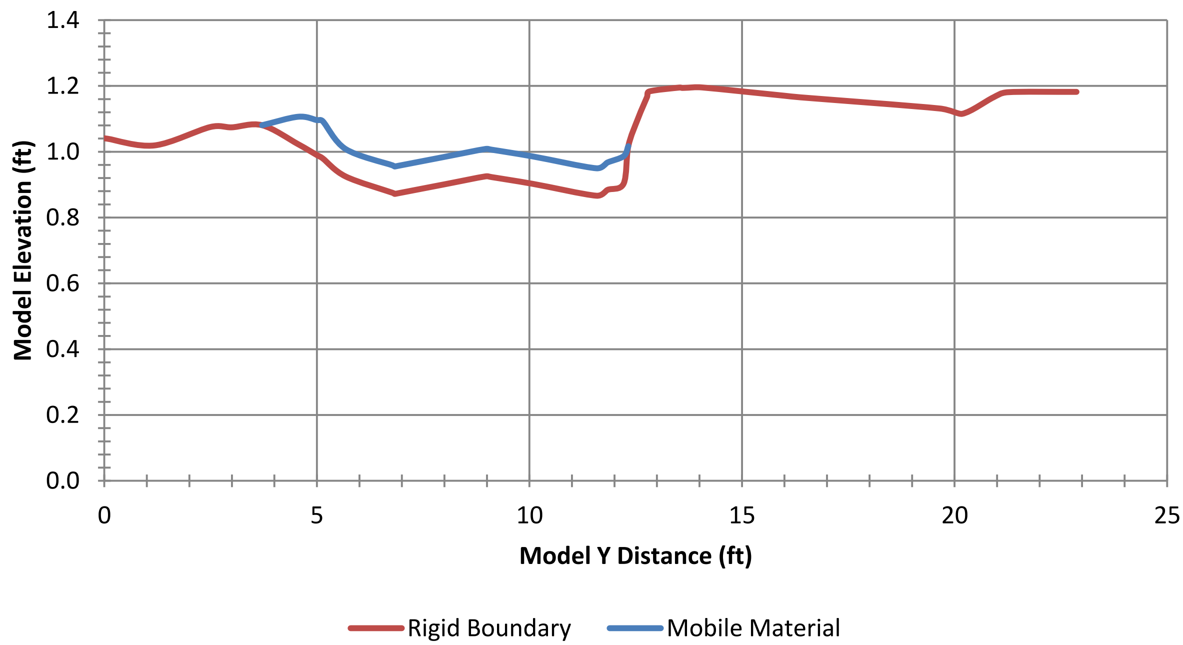

Figure C-42: Model Cross-section 20.

Table C-21: Cross-section 20 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
20	2380717	6570385	118.24	45.86	0.00	1.041
20	2380717	6570377	118.12	45.86	0.07	1.040
20	2380717	6570267	116.08	45.86	1.18	1.019
20	2380717	6570135	121.68	45.86	2.49	1.075
20	2380717	6570085	121.57	45.86	2.99	1.074
20	2380717	6570013	122.22	45.86	3.71	1.081
20	2380717	6569929	124.79	45.86	4.56	1.106
20	2380717	6569885	123.77	45.86	5.00	1.096
20	2380717	6569871	123.46	45.86	5.14	1.093
20	2380717	6569817	114.97	45.86	5.68	1.008
20	2380717	6569707	110.02	45.86	6.78	0.959
20	2380717	6569702	109.67	45.86	6.83	0.955
20	2380717	6569693	109.89	45.86	6.92	0.957
20	2380717	6569585	112.59	45.86	8.00	0.984
20	2380717	6569488	114.99	45.86	8.96	1.008
20	2380717	6569474	114.78	45.86	9.11	1.006
20	2380717	6569377	112.74	45.86	10.07	0.986
20	2380717	6569227	109.13	45.86	11.57	0.950
20	2380717	6569201	110.90	45.86	11.84	0.967
20	2380717	6569163	112.81	45.86	12.22	0.987
20	2380717	6569152	115.84	45.86	12.33	1.017
20	2380717	6569129	124.37	45.86	12.56	1.102
20	2380717	6569108	130.77	45.86	12.77	1.166
20	2380717	6569102	132.49	45.86	12.82	1.183
20	2380717	6569032	133.66	45.86	13.53	1.195
20	2380717	6569025	133.55	45.86	13.59	1.194
20	2380717	6569011	133.62	45.86	13.74	1.195
20	2380717	6568979	133.70	45.86	14.05	1.195
20	2380717	6568785	131.17	45.86	16.00	1.170
20	2380717	6568746	130.68	45.86	16.38	1.165
20	2380717	6568420	127.31	45.86	19.64	1.132
20	2380717	6568367	125.68	45.86	20.18	1.115
20	2380717	6568293	130.70	45.86	20.92	1.165
20	2380717	6568259	132.24	45.86	21.25	1.181
20	2380717	6568098	132.35	45.86	22.87	1.182

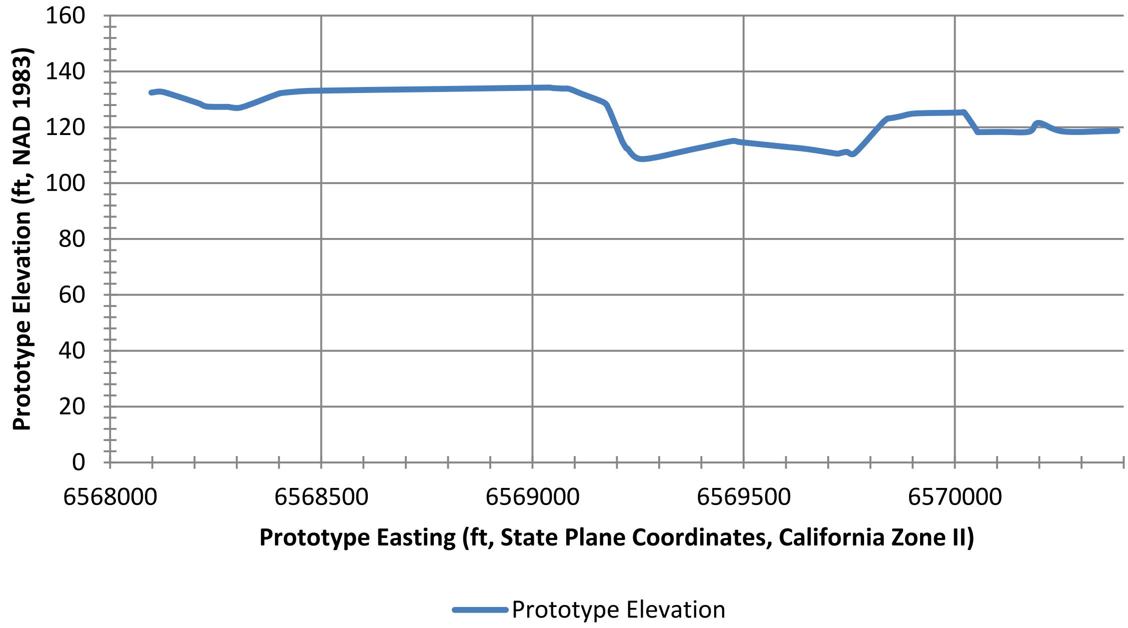

Figure C-43: Prototype Cross-section 21.

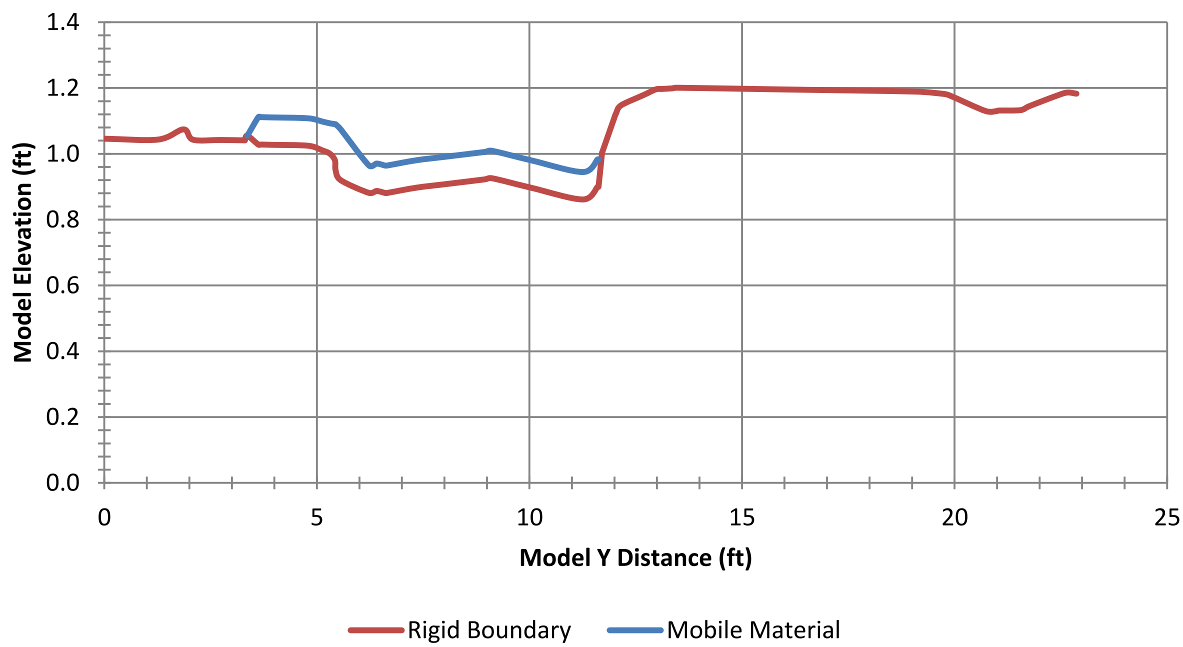

Figure C-44: Model Cross-section 21.

Table C-22: Cross-section 21 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
21	2381017	6570385	118.75	42.86	0.00	1.046
21	2381017	6570258	118.49	42.86	1.27	1.043
21	2381017	6570198	121.58	42.86	1.86	1.074
21	2381017	6570176	118.44	42.86	2.09	1.043
21	2381017	6570111	118.36	42.86	2.74	1.042
21	2381017	6570055	118.26	42.86	3.30	1.041
21	2381017	6570054	118.25	42.86	3.31	1.041
21	2381017	6570048	119.67	42.86	3.36	1.055
21	2381017	6570022	125.29	42.86	3.62	1.111
21	2381017	6570016	125.31	42.86	3.69	1.112
21	2381017	6569991	125.22	42.86	3.94	1.111
21	2381017	6569905	124.94	42.86	4.80	1.108
21	2381017	6569871	123.93	42.86	5.14	1.098
21	2381017	6569854	123.41	42.86	5.31	1.093
21	2381017	6569842	123.18	42.86	5.43	1.090
21	2381017	6569841	123.14	42.86	5.44	1.090
21	2381017	6569829	121.62	42.86	5.56	1.075
21	2381017	6569762	110.61	42.86	6.23	0.965
21	2381017	6569744	111.20	42.86	6.40	0.970
21	2381017	6569724	110.58	42.86	6.61	0.964
21	2381017	6569720	110.58	42.86	6.65	0.964
21	2381017	6569651	112.20	42.86	7.34	0.980
21	2381017	6569585	113.24	42.86	8.00	0.991
21	2381017	6569491	114.71	42.86	8.94	1.006
21	2381017	6569473	115.07	42.86	9.12	1.009
21	2381017	6569381	112.19	42.86	10.04	0.980
21	2381017	6569259	108.62	42.86	11.26	0.945
21	2381017	6569224	112.46	42.86	11.60	0.983
21	2381017	6569224	112.45	42.86	11.61	0.983
21	2381017	6569222	112.50	42.86	11.63	0.983
21	2381017	6569214	114.56	42.86	11.71	1.004
21	2381017	6569213	114.80	42.86	11.72	1.006
21	2381017	6569185	124.93	42.86	11.99	1.108
21	2381017	6569184	125.58	42.86	12.01	1.114
21	2381017	6569181	126.48	42.86	12.04	1.123
21	2381017	6569170	128.84	42.86	12.15	1.147
21	2381017	6569115	132.08	42.86	12.69	1.179
21	2381017	6569088	133.72	42.86	12.97	1.196
21	2381017	6569073	133.86	42.86	13.12	1.197
21	2381017	6569069	133.90	42.86	13.15	1.197
21	2381017	6569049	134.05	42.86	13.36	1.199
21	2381017	6569038	134.24	42.86	13.47	1.201
21	2381017	6568785	133.71	42.86	16.00	1.196
21	2381017	6568478	133.07	42.86	19.07	1.189
21	2381017	6568413	132.40	42.86	19.72	1.182
21	2381017	6568396	131.90	42.86	19.88	1.177
21	2381017	6568311	127.14	42.86	20.74	1.130
21	2381017	6568282	127.24	42.86	21.02	1.131
21	2381017	6568281	127.32	42.86	21.04	1.132
21	2381017	6568229	127.44	42.86	21.55	1.133
21	2381017	6568209	128.64	42.86	21.76	1.145
21	2381017	6568148	131.64	42.86	22.37	1.175
21	2381017	6568120	132.77	42.86	22.64	1.186
21	2381017	6568098	132.43	42.86	22.87	1.183

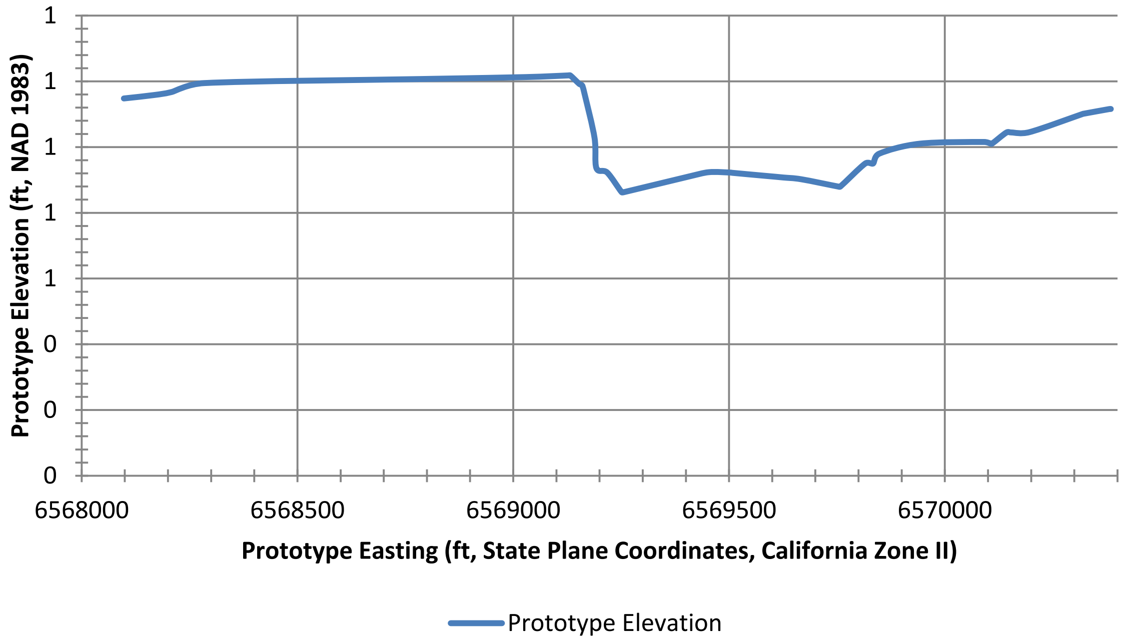

Figure C-45: Prototype Cross-section 22.

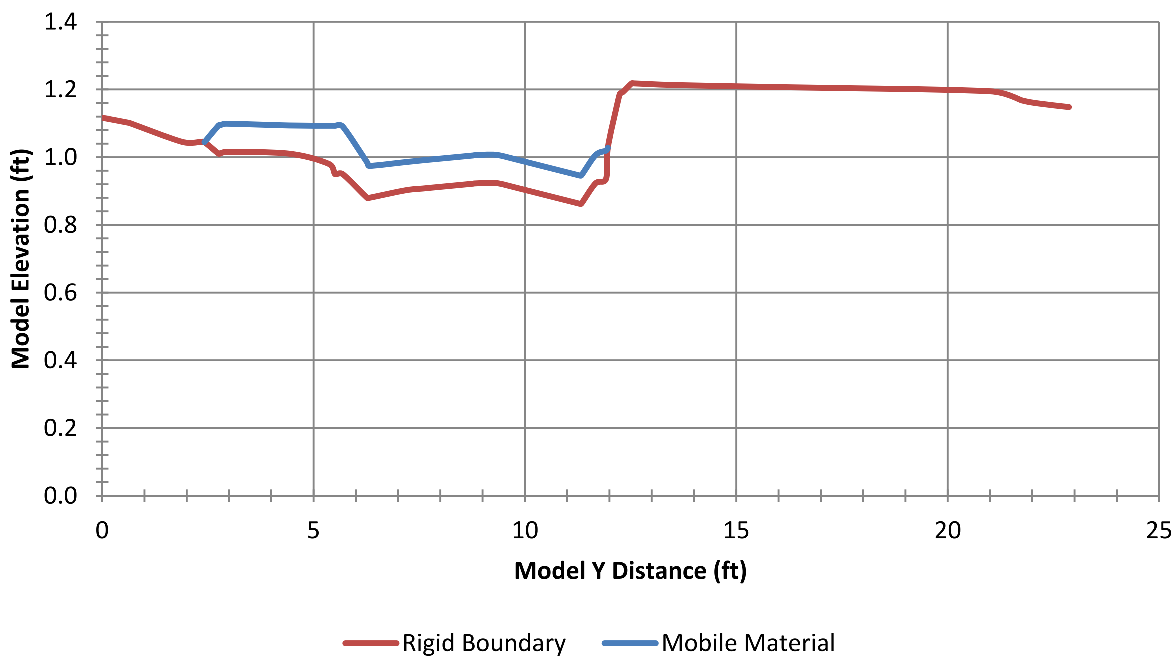

Figure C-46: Model Cross-section 22.

Table C-23: Cross-section 22 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
22	2381517	6570385	125.74	37.86	0.00	1.116
22	2381517	6570385	125.74	37.86	0.00	1.116
22	2381517	6570381	125.72	37.86	0.04	1.116
22	2381517	6570322	124.31	37.86	0.63	1.102
22	2381517	6570320	124.27	37.86	0.65	1.101
22	2381517	6570196	118.69	37.86	1.89	1.045
22	2381517	6570155	118.60	37.86	2.30	1.044
22	2381517	6570143	118.57	37.86	2.42	1.044
22	2381517	6570109	123.53	37.86	2.75	1.094
22	2381517	6570105	123.63	37.86	2.80	1.095
22	2381517	6570091	124.04	37.86	2.94	1.099
22	2381517	6569942	123.52	37.86	4.43	1.094
22	2381517	6569848	123.44	37.86	5.36	1.093
22	2381517	6569834	123.43	37.86	5.51	1.093
22	2381517	6569816	123.22	37.86	5.69	1.091
22	2381517	6569758	112.62	37.86	6.27	0.985
22	2381517	6569753	111.59	37.86	6.32	0.974
22	2381517	6569667	112.70	37.86	7.17	0.985
22	2381517	6569626	113.23	37.86	7.58	0.991
22	2381517	6569585	113.73	37.86	8.00	0.996
22	2381517	6569507	114.66	37.86	8.78	1.005
22	2381517	6569505	114.72	37.86	8.80	1.006
22	2381517	6569453	114.84	37.86	9.32	1.007
22	2381517	6569403	113.41	37.86	9.82	0.993
22	2381517	6569258	108.82	37.86	11.27	0.947
22	2381517	6569251	108.74	37.86	11.33	0.946
22	2381517	6569218	114.74	37.86	11.67	1.006
22	2381517	6569193	116.09	37.86	11.92	1.019
22	2381517	6569188	116.92	37.86	11.96	1.028
22	2381517	6569166	129.81	37.86	12.18	1.157
22	2381517	6569160	132.74	37.86	12.24	1.186
22	2381517	6569157	133.14	37.86	12.27	1.190
22	2381517	6569153	133.39	37.86	12.32	1.192
22	2381517	6569132	135.98	37.86	12.53	1.218
22	2381517	6569127	135.95	37.86	12.58	1.218
22	2381517	6569028	135.45	37.86	13.57	1.213
22	2381517	6568785	134.85	37.86	16.00	1.207
22	2381517	6568284	133.62	37.86	21.00	1.195
22	2381517	6568209	130.91	37.86	21.76	1.168
22	2381517	6568167	129.98	37.86	22.17	1.158
22	2381517	6568098	128.95	37.86	22.87	1.148

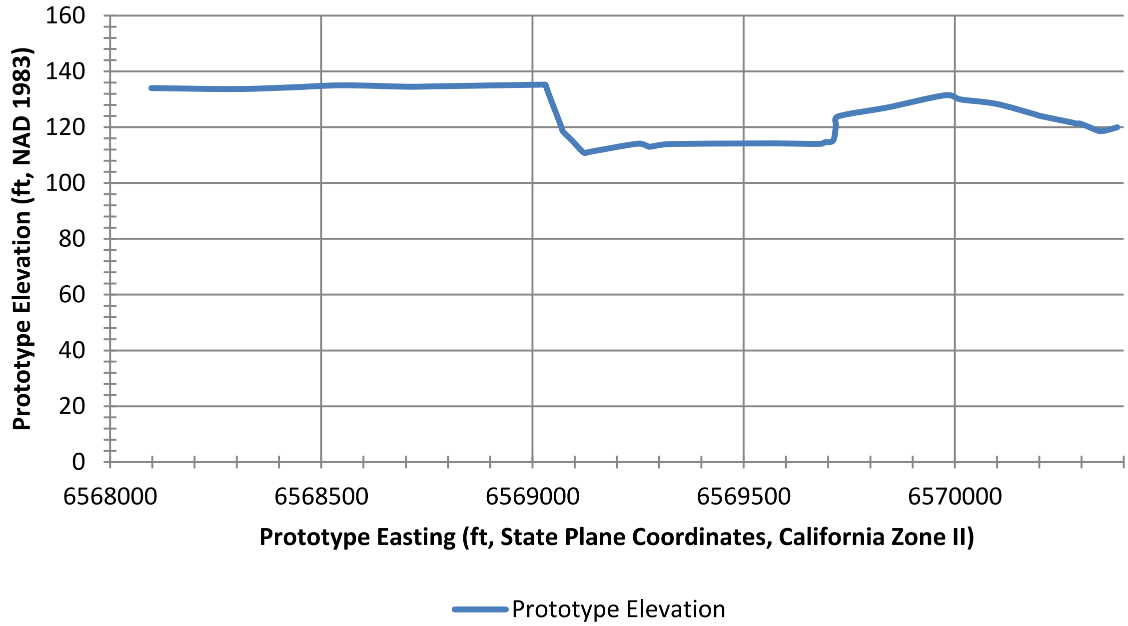

Figure C-47: Prototype Cross-section 23.

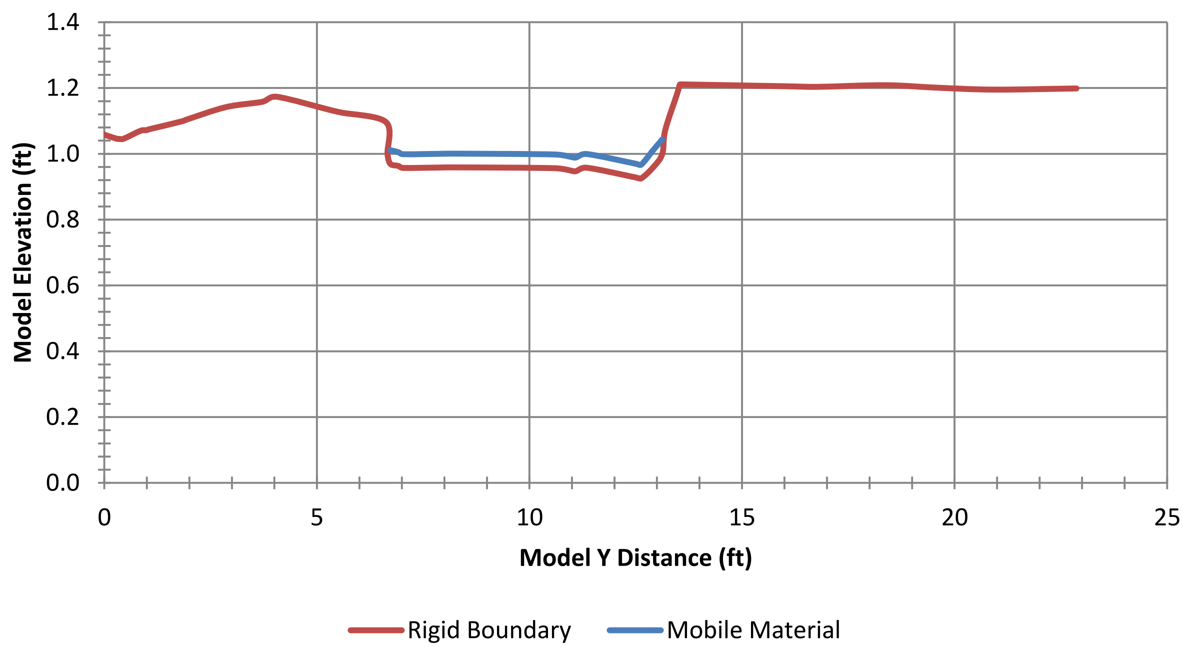

Figure C-48: Model Cross-section 23.

Table C-24: Cross-section 23 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
23	2382017	6570385	119.97	32.86	0.00	1.058
23	2382017	6570356	118.76	32.86	0.29	1.046
23	2382017	6570350	118.69	32.86	0.35	1.045
23	2382017	6570340	118.70	32.86	0.45	1.045
23	2382017	6570299	121.18	32.86	0.86	1.070
23	2382017	6570286	121.33	32.86	0.99	1.072
23	2382017	6570278	121.64	32.86	1.06	1.075
23	2382017	6570203	124.00	32.86	1.81	1.098
23	2382017	6570187	124.72	32.86	1.97	1.106
23	2382017	6570098	128.37	32.86	2.87	1.142
23	2382017	6570013	129.96	32.86	3.71	1.158
23	2382017	6569979	131.49	32.86	4.06	1.173
23	2382017	6569849	127.34	32.86	5.35	1.132
23	2382017	6569825	126.66	32.86	5.59	1.125
23	2382017	6569722	123.79	32.86	6.63	1.096
23	2382017	6569719	120.57	32.86	6.66	1.064
23	2382017	6569712	115.28	32.86	6.73	1.011
23	2382017	6569693	114.64	32.86	6.92	1.005
23	2382017	6569682	114.04	32.86	7.03	0.999
23	2382017	6569585	114.18	32.86	8.00	1.000
23	2382017	6569566	114.21	32.86	8.19	1.001
23	2382017	6569324	113.95	32.86	10.61	0.998
23	2382017	6569278	113.00	32.86	11.07	0.988
23	2382017	6569250	114.10	32.86	11.34	0.999
23	2382017	6569136	111.19	32.86	12.48	0.970
23	2382017	6569122	110.83	32.86	12.63	0.967
23	2382017	6569093	115.38	32.86	12.92	1.012
23	2382017	6569072	118.54	32.86	13.13	1.044
23	2382017	6569065	121.33	32.86	13.19	1.072
23	2382017	6569037	132.48	32.86	13.48	1.183
23	2382017	6569031	135.23	32.86	13.54	1.211
23	2382017	6569027	135.26	32.86	13.57	1.211
23	2382017	6568785	134.69	32.86	16.00	1.205
23	2382017	6568707	134.51	32.86	16.77	1.204
23	2382017	6568549	135.01	32.86	18.36	1.209
23	2382017	6568423	134.24	32.86	19.62	1.201
23	2382017	6568292	133.67	32.86	20.93	1.195
23	2382017	6568098	134.02	32.86	22.87	1.199

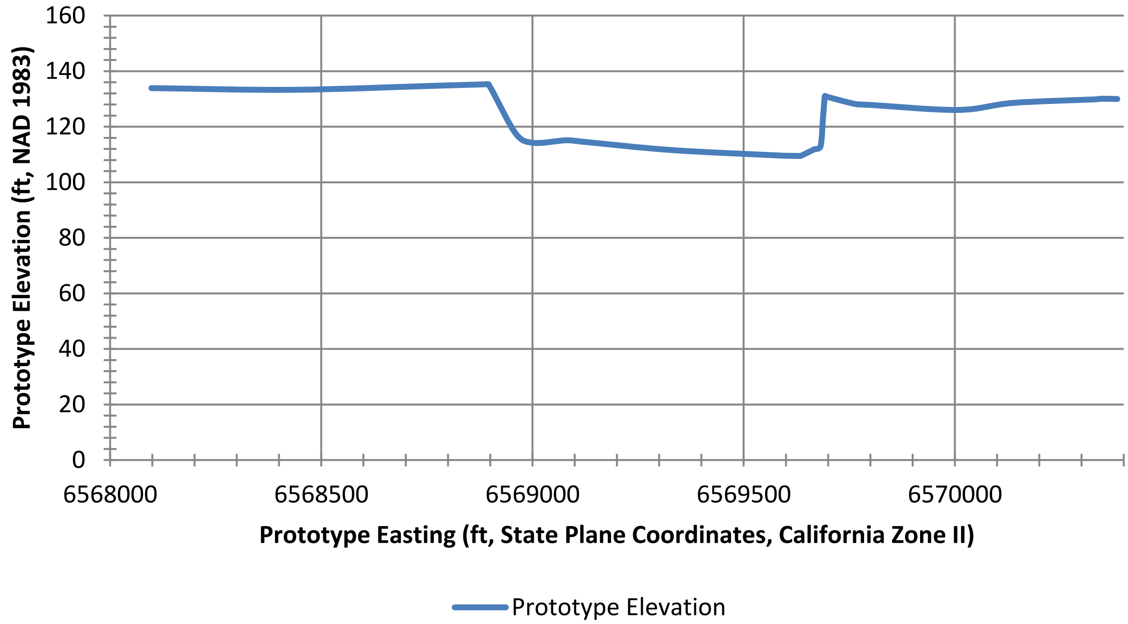

Figure C-49: Prototype Cross-section 24.

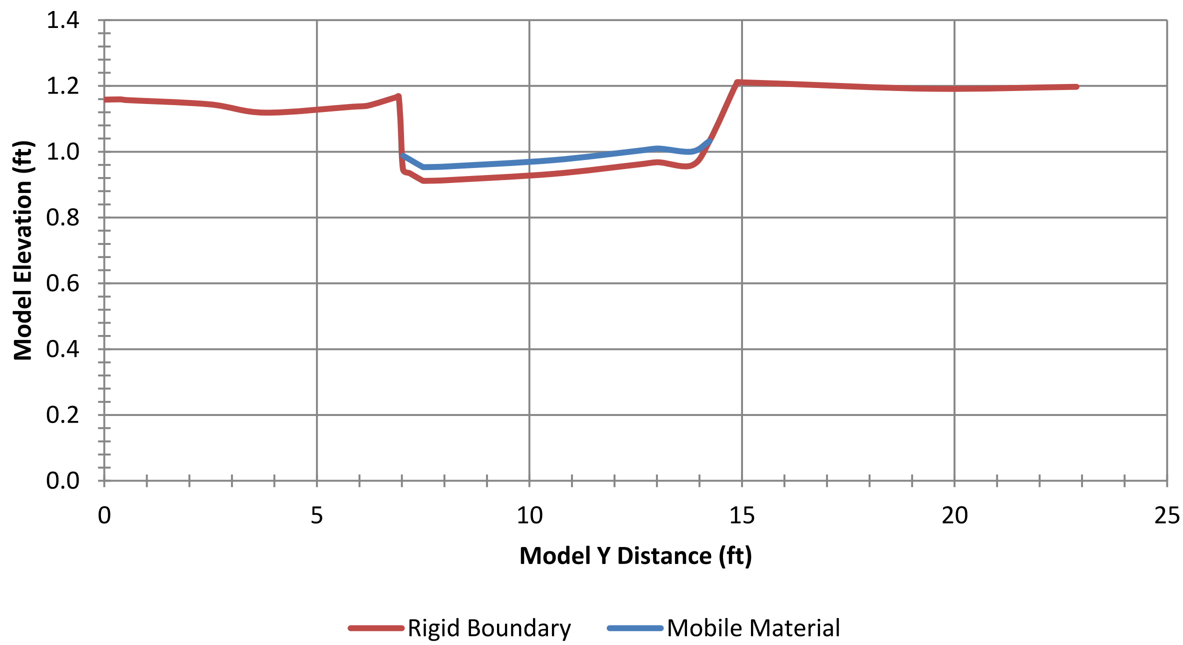

Figure C-50: Model Cross-section 24.

Table C-25: Cross-section 24 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
24	2382517	6570385	129.98	27.86	0.00	1.158
24	2382517	6570346	130.07	27.86	0.39	1.159
24	2382517	6570332	129.85	27.86	0.52	1.157
24	2382517	6570138	128.58	27.86	2.46	1.144
24	2382517	6570007	126.04	27.86	3.77	1.119
24	2382517	6569802	127.82	27.86	5.82	1.137
24	2382517	6569765	128.15	27.86	6.19	1.140
24	2382517	6569700	130.64	27.86	6.84	1.165
24	2382517	6569695	130.90	27.86	6.90	1.167
24	2382517	6569694	131.08	27.86	6.91	1.169
24	2382517	6569692	131.00	27.86	6.93	1.168
24	2382517	6569688	123.88	27.86	6.96	1.097
24	2382517	6569682	112.97	27.86	7.03	0.988
24	2382517	6569666	111.81	27.86	7.18	0.977
24	2382517	6569636	109.55	27.86	7.49	0.954
24	2382517	6569631	109.47	27.86	7.53	0.953
24	2382517	6569591	109.59	27.86	7.94	0.954
24	2382517	6569585	109.64	27.86	8.00	0.955
24	2382517	6569331	111.57	27.86	10.53	0.974
24	2382517	6569129	114.44	27.86	12.55	1.003
24	2382517	6569081	115.12	27.86	13.03	1.010
24	2382517	6569003	114.19	27.86	13.82	1.000
24	2382517	6568961	117.39	27.86	14.24	1.032
24	2382517	6568904	133.26	27.86	14.81	1.191
24	2382517	6568897	134.83	27.86	14.87	1.207
24	2382517	6568895	135.32	27.86	14.89	1.212
24	2382517	6568881	135.23	27.86	15.03	1.211
24	2382517	6568785	134.81	27.86	16.00	1.207
24	2382517	6568435	133.29	27.86	19.49	1.191
24	2382517	6568098	133.89	27.86	22.87	1.197

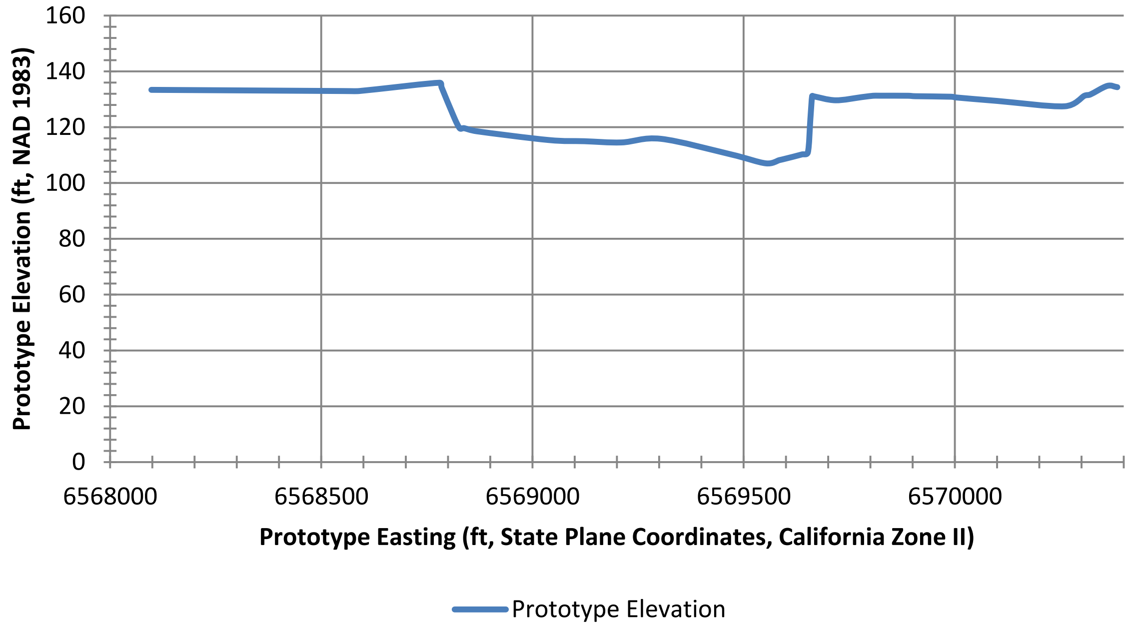

Figure C-51: Prototype Cross-section 25.

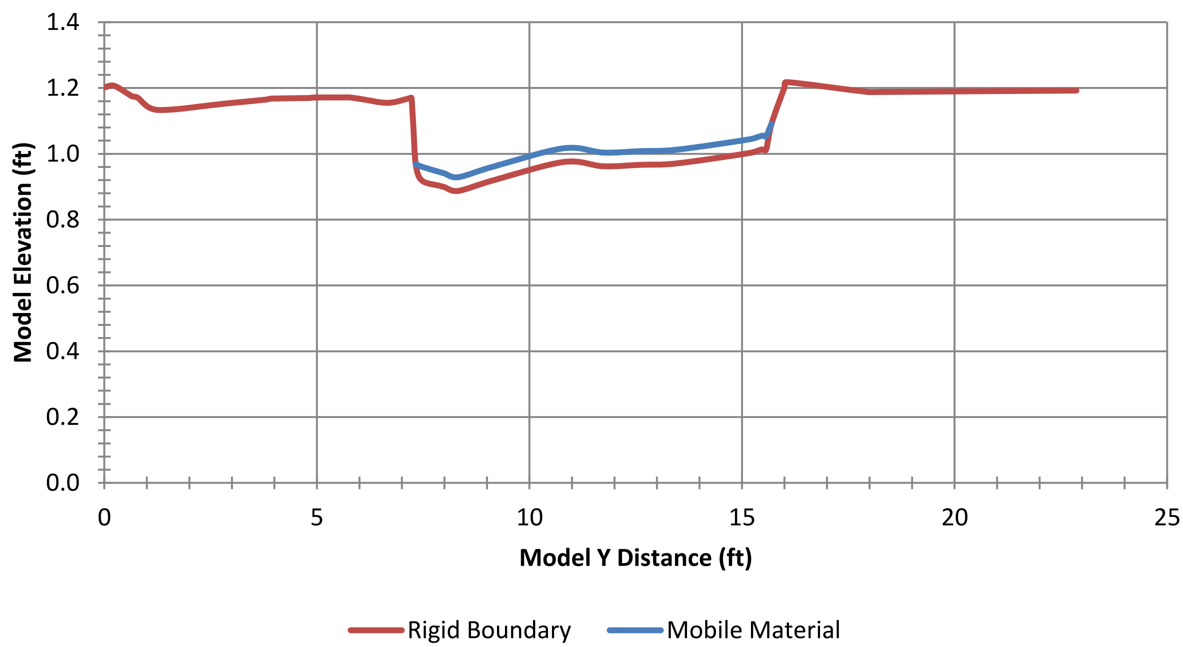

Figure C-52: Model Cross-section 25.

Table C-26: Cross-section 25 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
25	2383017	6570385	134.34	22.86	0.00	1.202
25	2383017	6570361	134.80	22.86	0.24	1.206
25	2383017	6570321	131.73	22.86	0.64	1.176
25	2383017	6570306	131.24	22.86	0.78	1.171
25	2383017	6570260	127.50	22.86	1.25	1.133
25	2383017	6570100	129.42	22.86	2.84	1.153
25	2383017	6570005	130.64	22.86	3.80	1.165
25	2383017	6569991	130.93	22.86	3.94	1.168
25	2383017	6569907	131.11	22.86	4.78	1.170
25	2383017	6569890	131.27	22.86	4.95	1.171
25	2383017	6569822	131.29	22.86	5.62	1.171
25	2383017	6569806	131.27	22.86	5.78	1.171
25	2383017	6569780	130.78	22.86	6.05	1.166
25	2383017	6569718	129.65	22.86	6.67	1.155
25	2383017	6569666	131.08	22.86	7.19	1.169
25	2383017	6569662	131.13	22.86	7.23	1.170
25	2383017	6569658	122.90	22.86	7.27	1.087
25	2383017	6569652	111.00	22.86	7.33	0.968
25	2383017	6569638	110.24	22.86	7.47	0.961
25	2383017	6569596	108.62	22.86	7.88	0.945
25	2383017	6569585	108.20	22.86	8.00	0.941
25	2383017	6569552	107.05	22.86	8.32	0.929
25	2383017	6569469	110.29	22.86	9.16	0.961
25	2383017	6569304	115.84	22.86	10.81	1.017
25	2383017	6569210	114.54	22.86	11.74	1.004
25	2383017	6569123	114.98	22.86	12.62	1.008
25	2383017	6569038	115.41	22.86	13.47	1.013
25	2383017	6568868	118.54	22.86	15.16	1.044
25	2383017	6568838	119.66	22.86	15.46	1.055
25	2383017	6568828	119.59	22.86	15.57	1.054
25	2383017	6568815	123.32	22.86	15.70	1.092
25	2383017	6568785	134.37	22.86	16.00	1.202
25	2383017	6568780	135.94	22.86	16.04	1.218
25	2383017	6568631	133.61	22.86	17.53	1.195
25	2383017	6568595	133.05	22.86	17.90	1.189
25	2383017	6568589	132.96	22.86	17.95	1.188
25	2383017	6568579	132.91	22.86	18.06	1.188
25	2383017	6568552	132.96	22.86	18.33	1.188
25	2383017	6568098	133.39	22.86	22.87	1.192

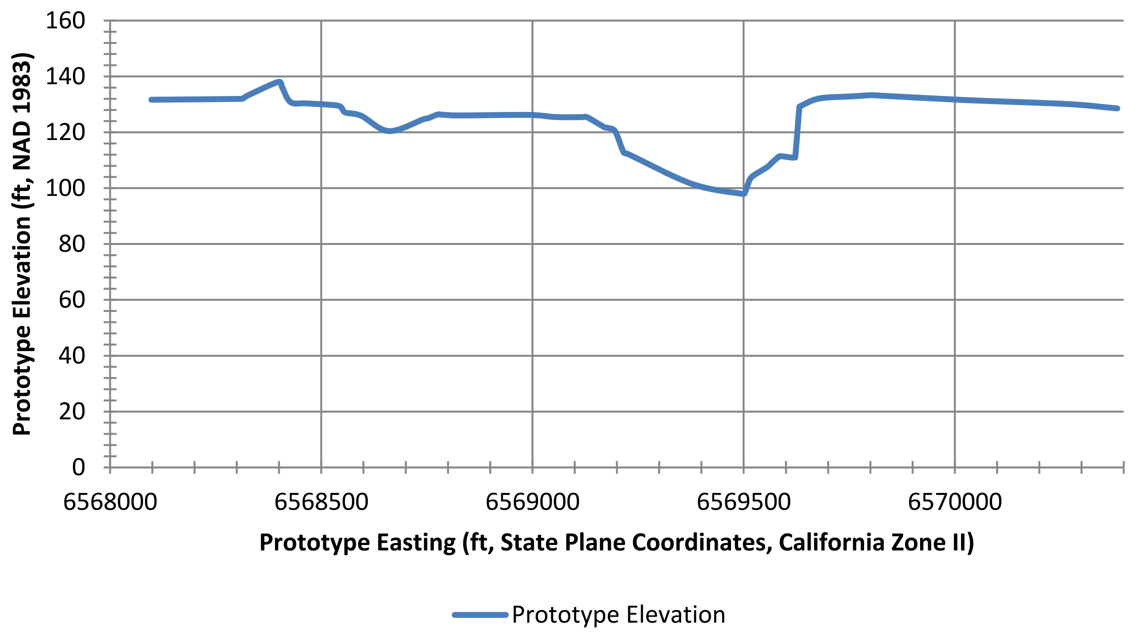

Figure C-53: Prototype Cross-section 26.

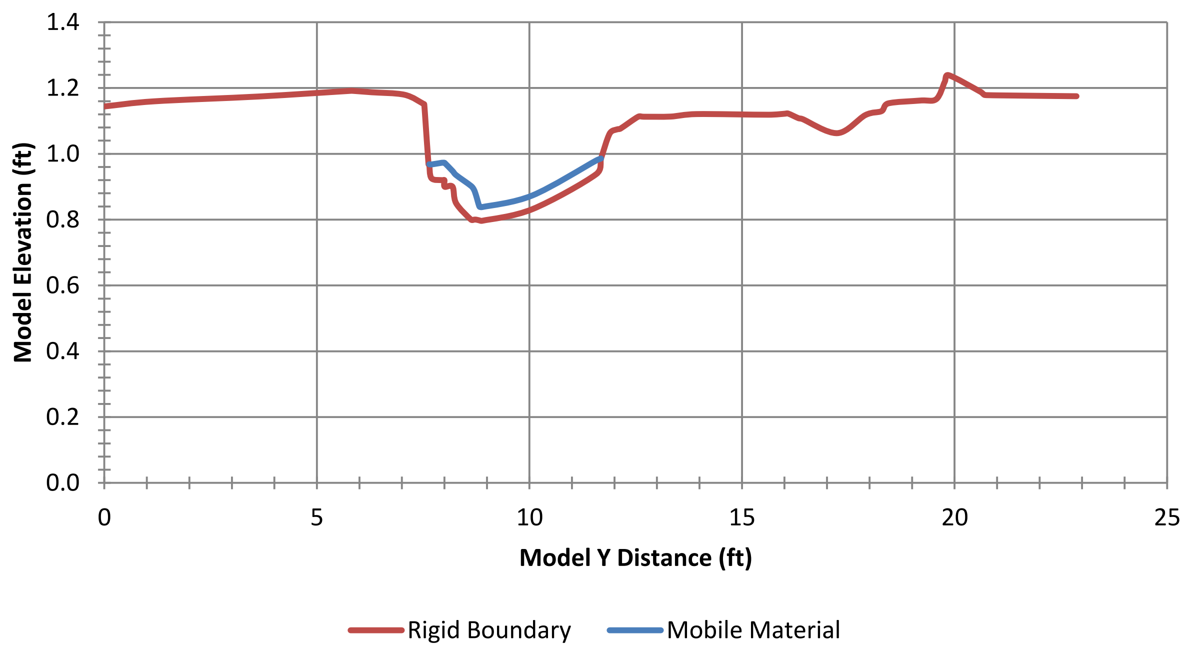

Figure C-54: Model Cross-section 26.

Table C-27: Cross-section 26 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
26	2383517	6570385	128.56	0.00	17.86	1.144
26	2383517	6570267	130.11	1.17	17.86	1.160
26	2383517	6570022	131.57	3.63	17.86	1.174
26	2383517	6569809	133.27	5.76	17.86	1.191
26	2383517	6569804	133.31	5.81	17.86	1.192
26	2383517	6569798	133.28	5.86	17.86	1.191
26	2383517	6569756	132.87	6.28	17.86	1.187
26	2383517	6569679	132.11	7.06	17.86	1.180
26	2383517	6569633	129.31	7.51	17.86	1.152
26	2383517	6569633	129.29	7.52	17.86	1.151
26	2383517	6569632	129.21	7.53	17.86	1.151
26	2383517	6569630	126.30	7.54	17.86	1.121
26	2383517	6569622	110.98	7.63	17.86	0.968
26	2383517	6569620	110.99	7.64	17.86	0.968
26	2383517	6569615	110.92	7.69	17.86	0.968
26	2383517	6569590	111.45	7.94	17.86	0.973
26	2383517	6569585	111.42	8.00	17.86	0.973
26	2383517	6569584	111.42	8.00	17.86	0.973
26	2383517	6569565	108.93	8.19	17.86	0.948
26	2383517	6569557	107.70	8.27	17.86	0.935
26	2383517	6569522	104.41	8.63	17.86	0.903
26	2383517	6569515	103.18	8.70	17.86	0.890
26	2383517	6569510	101.43	8.75	17.86	0.873
26	2383517	6569502	98.09	8.83	17.86	0.839
26	2383517	6569496	97.97	8.89	17.86	0.838
26	2383517	6569378	101.51	10.07	17.86	0.874
26	2383517	6569228	112.12	11.57	17.86	0.980
26	2383517	6569216	112.73	11.68	17.86	0.986
26	2383517	6569196	120.34	11.89	17.86	1.062
26	2383517	6569178	121.61	12.07	17.86	1.075
26	2383517	6569170	121.83	12.14	17.86	1.077
26	2383517	6569129	125.43	12.56	17.86	1.113
26	2383517	6569116	125.43	12.69	17.86	1.113
26	2383517	6569052	125.48	13.33	17.86	1.113
26	2383517	6568992	126.23	13.93	17.86	1.121
26	2383517	6568822	126.04	15.62	17.86	1.119
26	2383517	6568785	126.33	16.00	17.86	1.122
26	2383517	6568776	126.40	16.08	17.86	1.122
26	2383517	6568751	124.97	16.33	17.86	1.108
26	2383517	6568742	124.72	16.42	17.86	1.106
26	2383517	6568660	120.44	17.25	17.86	1.063
26	2383517	6568594	125.94	17.90	17.86	1.118
26	2383517	6568556	127.15	18.29	17.86	1.130
26	2383517	6568541	129.47	18.44	17.86	1.153
26	2383517	6568465	130.35	19.19	17.86	1.162
26	2383517	6568427	130.78	19.57	17.86	1.166
26	2383517	6568408	136.05	19.77	17.86	1.219
26	2383517	6568399	138.06	19.86	17.86	1.239
26	2383517	6568324	133.02	20.61	17.86	1.189
26	2383517	6568314	132.04	20.71	17.86	1.179
26	2383517	6568281	131.92	21.04	17.86	1.178
26	2383517	6568098	131.66	22.87	17.86	1.175

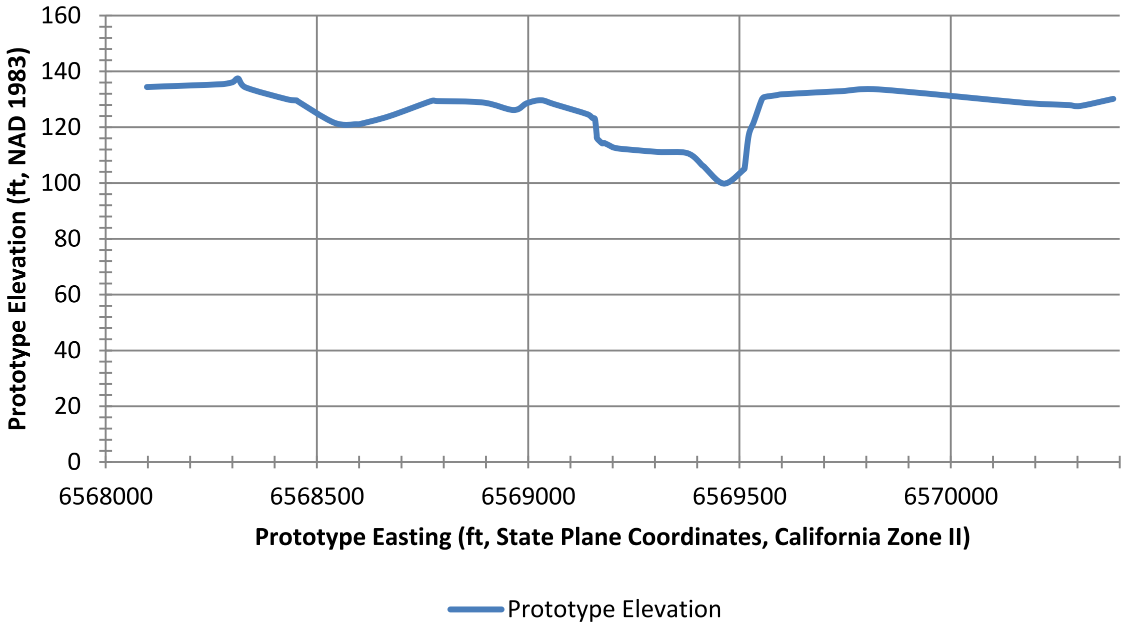

Figure C-55: Prototype Cross-section 27.

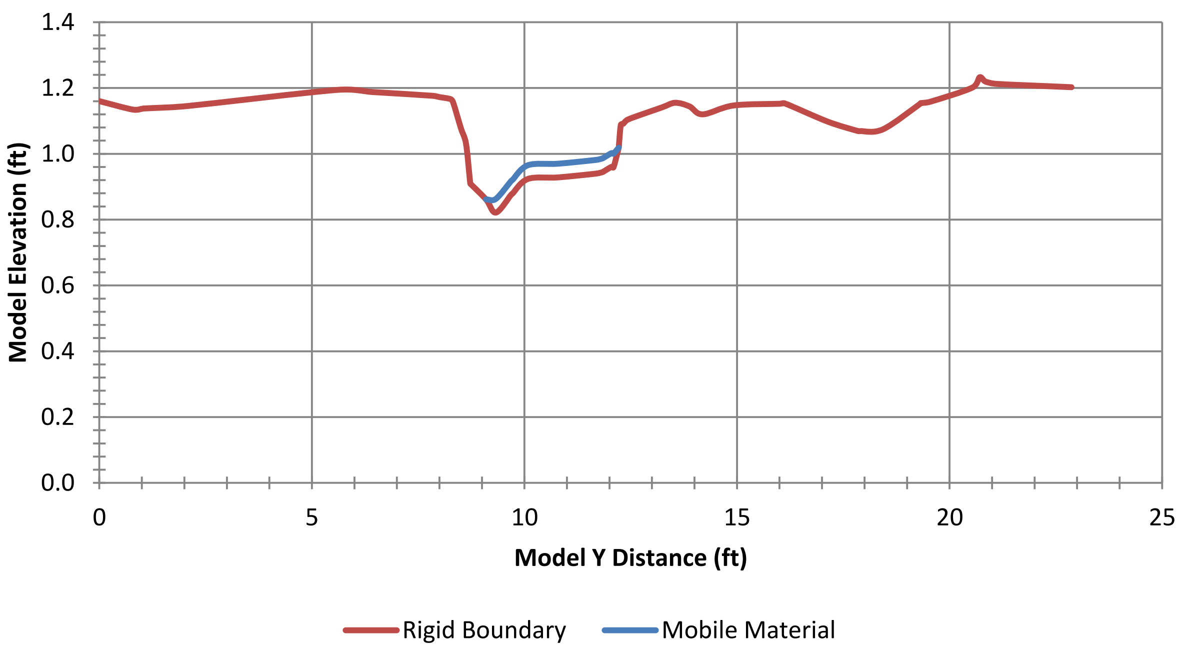

Figure C-56: Model Cross-section 27.

Table C-28: Cross-section 27 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
27	2383817	6570385	130.16	14.86	0.00	1.160
27	2383817	6570306	127.60	14.86	0.79	1.134
27	2383817	6570280	127.93	14.86	1.04	1.138
27	2383817	6570250	128.11	14.86	1.34	1.140
27	2383817	6570175	128.71	14.86	2.10	1.146
27	2383817	6569825	133.59	14.86	5.60	1.194
27	2383817	6569742	132.93	14.86	6.42	1.188
27	2383817	6569601	131.80	14.86	7.83	1.176
27	2383817	6569585	131.40	14.86	8.00	1.172
27	2383817	6569558	130.76	14.86	8.27	1.166
27	2383817	6569552	129.67	14.86	8.33	1.155
27	2383817	6569534	121.89	14.86	8.51	1.077
27	2383817	6569522	117.23	14.86	8.63	1.031
27	2383817	6569514	107.23	14.86	8.71	0.931
27	2383817	6569512	105.17	14.86	8.73	0.910
27	2383817	6569511	104.92	14.86	8.74	0.908
27	2383817	6569510	104.88	14.86	8.74	0.907
27	2383817	6569475	100.31	14.86	9.10	0.862
27	2383817	6569452	100.47	14.86	9.33	0.863
27	2383817	6569416	105.87	14.86	9.68	0.917
27	2383817	6569413	106.24	14.86	9.72	0.921
27	2383817	6569377	110.69	14.86	10.08	0.965
27	2383817	6569305	111.16	14.86	10.79	0.970
27	2383817	6569217	112.30	14.86	11.68	0.981
27	2383817	6569202	112.72	14.86	11.83	0.986
27	2383817	6569197	113.03	14.86	11.87	0.989
27	2383817	6569180	114.36	14.86	12.05	1.002
27	2383817	6569175	114.22	14.86	12.09	1.001
27	2383817	6569163	116.01	14.86	12.22	1.019
27	2383817	6569162	117.26	14.86	12.23	1.031
27	2383817	6569158	122.96	14.86	12.27	1.088
27	2383817	6569152	123.30	14.86	12.33	1.091
27	2383817	6569140	124.63	14.86	12.44	1.105
27	2383817	6569062	128.23	14.86	13.23	1.141
27	2383817	6569031	129.67	14.86	13.54	1.155
27	2383817	6568997	128.59	14.86	13.88	1.144
27	2383817	6568965	126.16	14.86	14.19	1.120
27	2383817	6568894	128.83	14.86	14.91	1.147
27	2383817	6568785	129.36	14.86	16.00	1.152
27	2383817	6568771	129.43	14.86	16.13	1.153
27	2383817	6568671	123.93	14.86	17.14	1.098
27	2383817	6568601	121.10	14.86	17.84	1.069
27	2383817	6568595	121.06	14.86	17.90	1.069
27	2383817	6568541	121.61	14.86	18.44	1.075
27	2383817	6568454	129.33	14.86	19.31	1.152
27	2383817	6568452	129.59	14.86	19.32	1.154
27	2383817	6568451	129.60	14.86	19.34	1.154
27	2383817	6568429	130.01	14.86	19.55	1.159
27	2383817	6568331	134.30	14.86	20.54	1.201
27	2383817	6568314	137.43	14.86	20.71	1.233
27	2383817	6568300	136.10	14.86	20.85	1.219
27	2383817	6568274	135.41	14.86	21.11	1.213
27	2383817	6568098	134.40	14.86	22.87	1.202

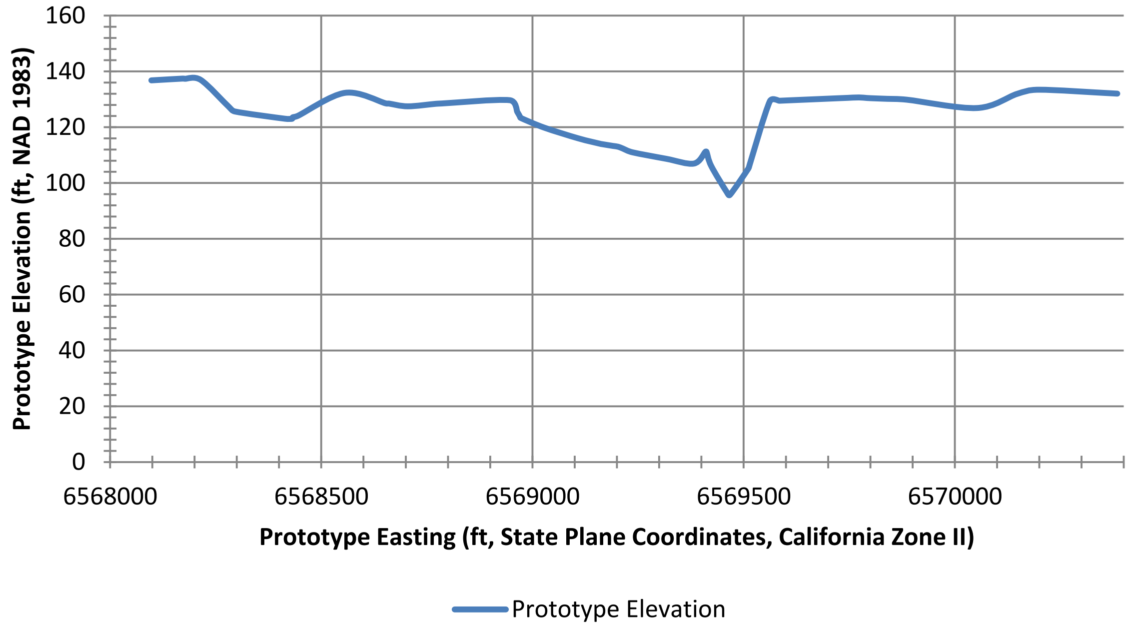

Figure C-57: Prototype Cross-section 28.

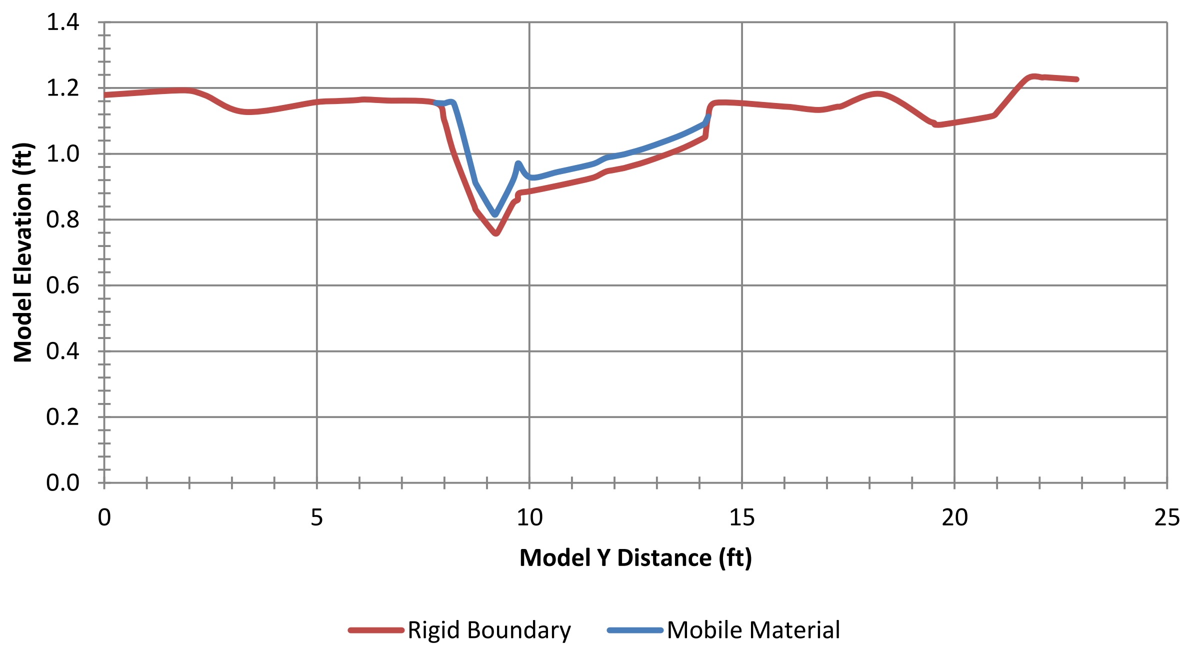

Figure C-58: Model Cross-section 28.

Table C-29: Cross-section 28 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
28	2384317	6570385	132.03	9.86	0.00	1.179
28	2384317	6570199	133.44	9.86	1.86	1.193
28	2384317	6570148	132.00	9.86	2.36	1.178
28	2384317	6570053	126.88	9.86	3.32	1.127
28	2384317	6569886	129.87	9.86	4.99	1.157
28	2384317	6569841	130.17	9.86	5.44	1.160
28	2384317	6569811	130.33	9.86	5.73	1.162
28	2384317	6569792	130.47	9.86	5.92	1.163
28	2384317	6569773	130.67	9.86	6.12	1.165
28	2384317	6569746	130.52	9.86	6.39	1.164
28	2384317	6569736	130.46	9.86	6.48	1.163
28	2384317	6569719	130.35	9.86	6.66	1.162
28	2384317	6569605	129.61	9.86	7.80	1.155
28	2384317	6569585	129.49	9.86	8.00	1.153
28	2384317	6569562	129.34	9.86	8.23	1.152
28	2384317	6569514	106.36	9.86	8.71	0.922
28	2384317	6569511	105.20	9.86	8.73	0.910
28	2384317	6569467	95.76	9.86	9.17	0.816
28	2384317	6569460	96.69	9.86	9.24	0.825
28	2384317	6569423	106.12	9.86	9.61	0.920
28	2384317	6569412	111.18	9.86	9.73	0.970
28	2384317	6569410	111.20	9.86	9.75	0.970
28	2384317	6569382	106.97	9.86	10.03	0.928
28	2384317	6569317	108.68	9.86	10.68	0.945
28	2384317	6569237	111.00	9.86	11.48	0.968
28	2384317	6569214	112.35	9.86	11.71	0.982
28	2384317	6569203	113.00	9.86	11.82	0.988
28	2384317	6569190	113.30	9.86	11.94	0.991
28	2384317	6569168	113.86	9.86	12.17	0.997
28	2384317	6569164	113.96	9.86	12.21	0.998
28	2384317	6569162	114.00	9.86	12.23	0.998
28	2384317	6569160	114.06	9.86	12.24	0.999
28	2384317	6569109	116.00	9.86	12.76	1.018
28	2384317	6569028	119.83	9.86	13.56	1.057
28	2384317	6568972	123.33	9.86	14.13	1.092
28	2384317	6568971	123.71	9.86	14.14	1.096
28	2384317	6568964	125.50	9.86	14.21	1.113
28	2384317	6568946	129.68	9.86	14.39	1.155
28	2384317	6568785	128.50	9.86	16.00	1.143
28	2384317	6568771	128.40	9.86	16.13	1.142
28	2384317	6568705	127.49	9.86	16.80	1.133
28	2384317	6568660	128.47	9.86	17.24	1.143
28	2384317	6568653	128.54	9.86	17.32	1.144
28	2384317	6568556	132.32	9.86	18.28	1.182
28	2384317	6568445	124.07	9.86	19.40	1.099
28	2384317	6568433	123.57	9.86	19.52	1.094
28	2384317	6568431	123.01	9.86	19.54	1.089
28	2384317	6568414	123.04	9.86	19.71	1.089
28	2384317	6568296	125.61	9.86	20.88	1.115
28	2384317	6568282	127.18	9.86	21.03	1.130
28	2384317	6568215	136.94	9.86	21.70	1.228
28	2384317	6568177	137.36	9.86	22.08	1.232
28	2384317	6568172	137.43	9.86	22.13	1.233
28	2384317	6568098	136.79	9.86	22.87	1.226

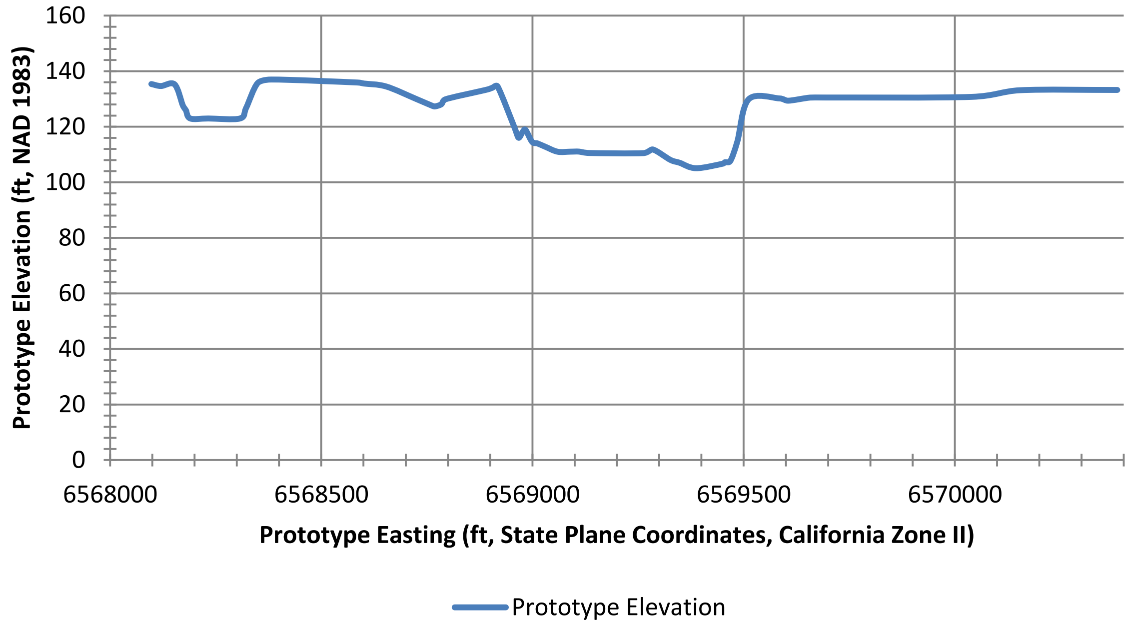

Figure C-59: Prototype Cross-section 29.

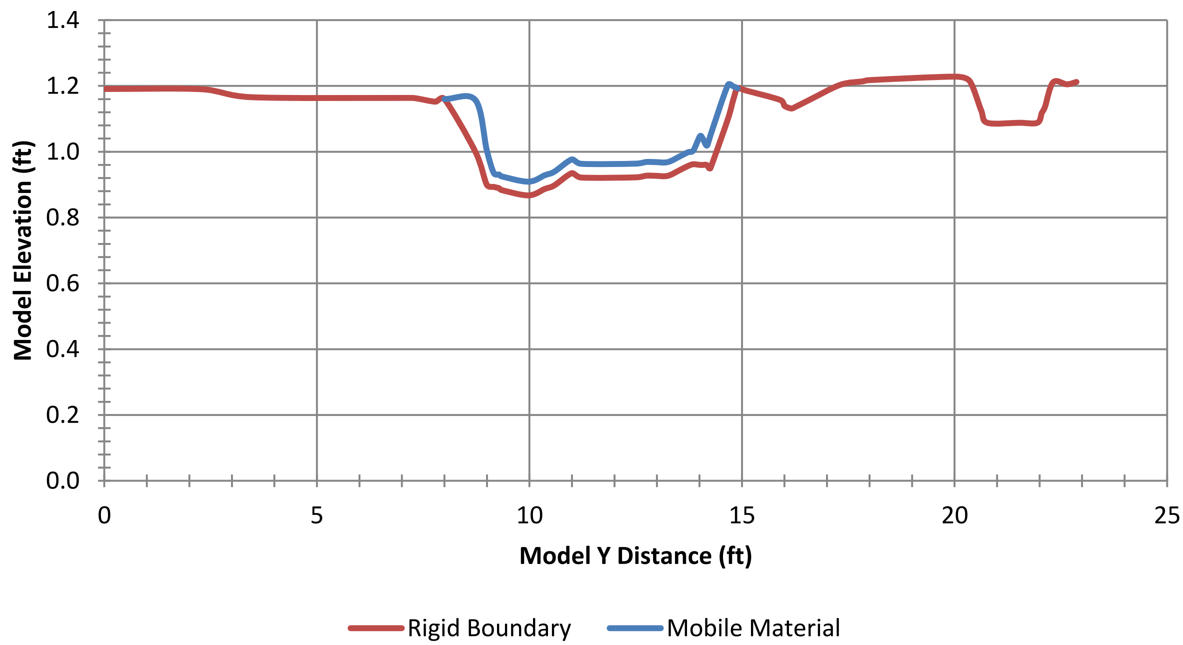

Figure C-60: Model Cross-section 29.

Table C-30: Cross-section 29 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
29	2384840	6570385	133.23	4.63	0.00	1.191
29	2384840	6570155	133.14	4.63	2.30	1.190
29	2384840	6570039	130.74	4.63	3.45	1.166
29	2384840	6569695	130.51	4.63	6.90	1.164
29	2384840	6569657	130.49	4.63	7.27	1.163
29	2384840	6569606	129.37	4.63	7.79	1.152
29	2384840	6569585	130.18	4.63	8.00	1.160
29	2384840	6569512	129.87	4.63	8.73	1.157
29	2384840	6569485	114.65	4.63	9.00	1.005
29	2384840	6569468	107.64	4.63	9.16	0.935
29	2384840	6569456	107.23	4.63	9.29	0.931
29	2384840	6569451	106.70	4.63	9.34	0.925
29	2384840	6569387	105.06	4.63	9.98	0.909
29	2384840	6569348	107.03	4.63	10.36	0.929
29	2384840	6569326	108.06	4.63	10.58	0.939
29	2384840	6569285	111.81	4.63	11.00	0.977
29	2384840	6569263	110.49	4.63	11.22	0.963
29	2384840	6569134	110.54	4.63	12.50	0.964
29	2384840	6569110	111.04	4.63	12.74	0.969
29	2384840	6569090	111.02	4.63	12.95	0.969
29	2384840	6569059	111.00	4.63	13.25	0.968
29	2384840	6569030	112.79	4.63	13.54	0.986
29	2384840	6569012	114.00	4.63	13.73	0.998
29	2384840	6568999	114.52	4.63	13.85	1.004
29	2384840	6568983	118.89	4.63	14.01	1.047
29	2384840	6568977	118.19	4.63	14.08	1.040
29	2384840	6568968	116.00	4.63	14.17	1.018
29	2384840	6568962	117.74	4.63	14.22	1.036
29	2384840	6568959	119.16	4.63	14.26	1.050
29	2384840	6568918	134.48	4.63	14.67	1.203
29	2384840	6568905	134.03	4.63	14.79	1.199
29	2384840	6568895	133.46	4.63	14.90	1.193
29	2384840	6568875	132.76	4.63	15.09	1.186
29	2384840	6568794	129.86	4.63	15.91	1.157
29	2384840	6568785	128.10	4.63	16.00	1.139
29	2384840	6568769	127.29	4.63	16.16	1.131
29	2384840	6568762	127.57	4.63	16.23	1.134
29	2384840	6568724	130.02	4.63	16.60	1.159
29	2384840	6568653	134.49	4.63	17.31	1.203
29	2384840	6568601	135.54	4.63	17.84	1.214
29	2384840	6568586	135.91	4.63	17.99	1.218
29	2384840	6568382	136.98	4.63	20.03	1.228
29	2384840	6568349	135.69	4.63	20.35	1.215
29	2384840	6568322	126.75	4.63	20.63	1.126
29	2384840	6568307	122.96	4.63	20.77	1.088
29	2384840	6568233	122.96	4.63	21.52	1.088
29	2384840	6568190	122.96	4.63	21.95	1.088
29	2384840	6568179	125.92	4.63	22.05	1.118
29	2384840	6568172	127.71	4.63	22.13	1.136
29	2384840	6568153	135.26	4.63	22.32	1.211
29	2384840	6568120	134.65	4.63	22.64	1.205
29	2384840	6568098	135.36	4.63	22.87	1.212

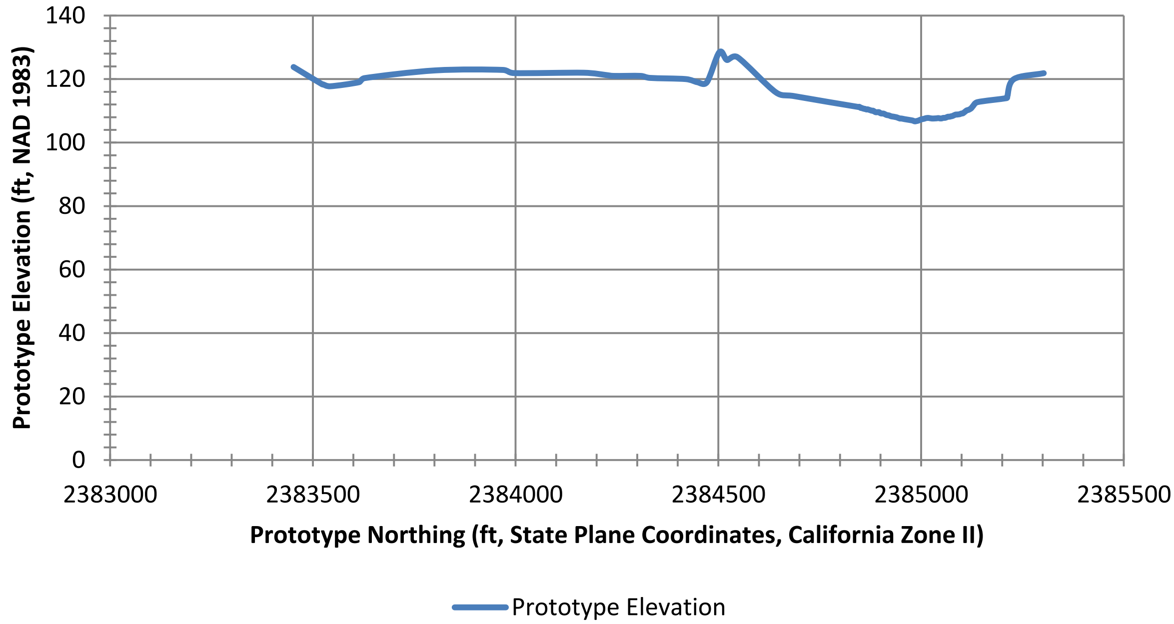

Figure C-61: Prototype downstream boundary cross section.

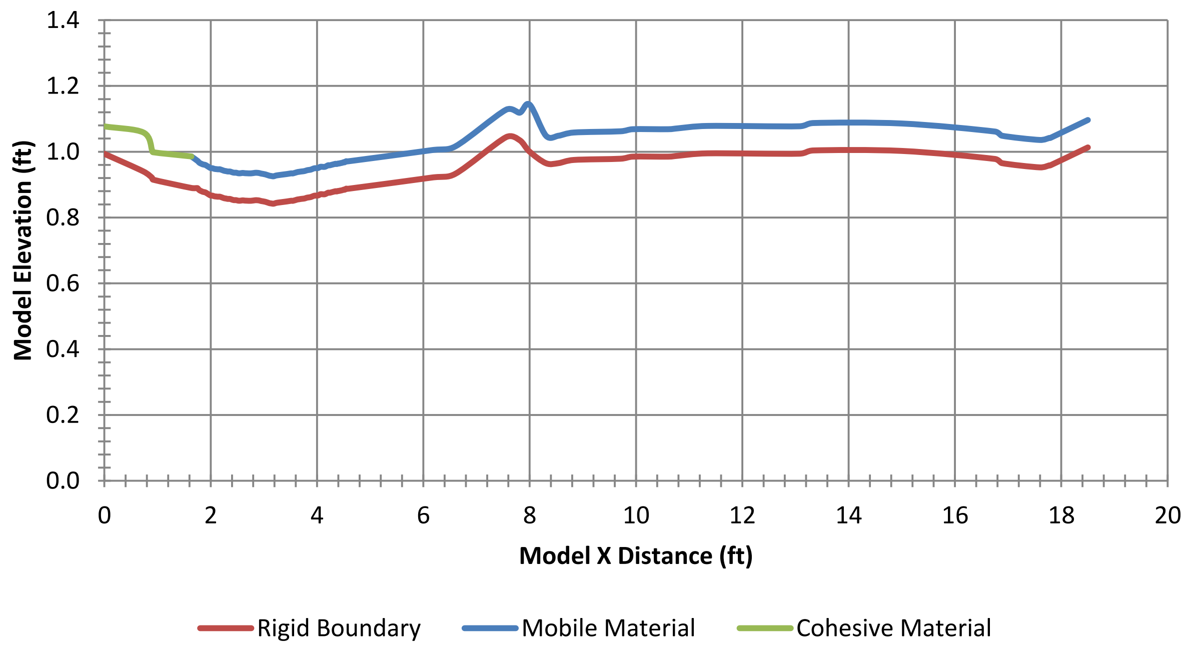

Figure C-62: Model downstream boundary cross section.

Table C-31: Downstream boundary cross-section topography data.

Cross-section[a]	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
N/S	2385303	6568098	121.86	0.00	22.87	1.077
N/S	2385229	6568098	120.00	0.74	22.87	1.058
N/S	2385213	6568098	114.56	0.90	22.87	1.004
N/S	2385211	6568098	114.00	0.92	22.87	0.998
N/S	2385139	6568098	112.73	1.64	22.87	0.986
N/S	2385128	6568098	111.45	1.75	22.87	0.973
N/S	2385126	6568098	111.22	1.76	22.87	0.971
N/S	2385124	6568098	110.79	1.79	22.87	0.966
N/S	2385120	6568098	110.48	1.83	22.87	0.963
N/S	2385117	6568098	110.32	1.85	22.87	0.962
N/S	2385115	6568098	110.22	1.88	22.87	0.961
N/S	2385112	6568098	110.08	1.91	22.87	0.959
N/S	2385106	6568098	109.45	1.97	22.87	0.953
N/S	2385102	6568098	109.19	2.00	22.87	0.950
N/S	2385099	6568098	109.15	2.03	22.87	0.950
N/S	2385096	6568098	108.95	2.07	22.87	0.948
N/S	2385092	6568098	108.88	2.11	22.87	0.947
N/S	2385088	6568098	108.82	2.14	22.87	0.947
N/S	2385085	6568098	108.82	2.18	22.87	0.947
N/S	2385078	6568098	108.38	2.25	22.87	0.942
N/S	2385074	6568098	108.28	2.29	22.87	0.941
N/S	2385070	6568098	108.15	2.32	22.87	0.940
N/S	2385066	6568098	108.15	2.36	22.87	0.940
N/S	2385063	6568098	107.95	2.40	22.87	0.938
N/S	2385059	6568098	107.78	2.44	22.87	0.936
N/S	2385055	6568098	107.78	2.48	22.87	0.936
N/S	2385051	6568098	107.62	2.52	22.87	0.935
N/S	2385047	6568098	107.62	2.56	22.87	0.935
N/S	2385043	6568098	107.72	2.60	22.87	0.936
N/S	2385039	6568098	107.65	2.64	22.87	0.935
N/S	2385035	6568098	107.62	2.68	22.87	0.935
N/S	2385027	6568098	107.58	2.76	22.87	0.934
N/S	2385019	6568098	107.75	2.83	22.87	0.936
N/S	2385015	6568098	107.75	2.87	22.87	0.936
N/S	2385011	6568098	107.68	2.91	22.87	0.935
N/S	2385008	6568098	107.52	2.95	22.87	0.934
N/S	2385000	6568098	107.28	3.03	22.87	0.931
N/S	2384992	6568098	106.88	3.10	22.87	0.927
N/S	2384988	6568098	106.78	3.14	22.87	0.926
N/S	2384985	6568098	106.68	3.18	22.87	0.925
N/S	2384981	6568098	106.88	3.22	22.87	0.927
N/S	2384977	6568098	107.02	3.26	22.87	0.929
N/S	2384959	6568098	107.38	3.43	22.87	0.932
N/S	2384951	6568098	107.58	3.51	22.87	0.934
N/S	2384948	6568098	107.58	3.55	22.87	0.934
N/S	2384940	6568098	107.95	3.62	22.87	0.938
N/S	2384936	6568098	108.05	3.66	22.87	0.939
N/S	2384933	6568098	108.15	3.70	22.87	0.940
N/S	2384929	6568098	108.22	3.74	22.87	0.941
N/S	2384925	6568098	108.32	3.77	22.87	0.942
N/S	2384922	6568098	108.52	3.81	22.87	0.944
N/S	2384918	6568098	108.62	3.85	22.87	0.945
N/S	2384914	6568098	108.72	3.88	22.87	0.946
N/S	2384911	6568098	108.95	3.92	22.87	0.948

Cross-section[a]	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
N/S	2384907	6568098	109.15	3.95	22.87	0.950
N/S	2384903	6568098	109.15	3.99	22.87	0.950
N/S	2384900	6568098	109.25	4.03	22.87	0.951
N/S	2384896	6568098	109.58	4.06	22.87	0.954
N/S	2384889	6568098	109.55	4.14	22.87	0.954
N/S	2384885	6568098	109.75	4.17	22.87	0.956
N/S	2384882	6568098	110.05	4.21	22.87	0.959
N/S	2384878	6568098	110.05	4.24	22.87	0.959
N/S	2384868	6568098	110.49	4.34	22.87	0.963
N/S	2384865	6568098	110.42	4.37	22.87	0.963
N/S	2384863	6568098	110.59	4.40	22.87	0.964
N/S	2384860	6568098	110.59	4.42	22.87	0.964
N/S	2384858	6568098	110.72	4.44	22.87	0.966
N/S	2384856	6568098	110.75	4.46	22.87	0.966
N/S	2384852	6568098	110.99	4.50	22.87	0.968
N/S	2384850	6568098	110.95	4.52	22.87	0.968
N/S	2384847	6568098	111.29	4.55	22.87	0.971
N/S	2384845	6568098	111.22	4.57	22.87	0.971
N/S	2384687	6568098	114.63	6.15	22.87	1.005
N/S	2384642	6568098	115.78	6.60	22.87	1.016
N/S	2384547	6568098	126.91	7.55	22.87	1.128
N/S	2384521	6568098	126.01	7.81	22.87	1.119
N/S	2384503	6568098	128.46	8.00	22.87	1.143
N/S	2384472	6568098	119.00	8.31	22.87	1.048
N/S	2384448	6568098	119.03	8.55	22.87	1.049
N/S	2384420	6568098	120.00	8.83	22.87	1.058
N/S	2384332	6568098	120.37	9.71	22.87	1.062
N/S	2384308	6568098	121.00	9.94	22.87	1.068
N/S	2384242	6568098	121.00	10.60	22.87	1.068
N/S	2384223	6568098	121.28	10.79	22.87	1.071
N/S	2384168	6568098	122.00	11.34	22.87	1.078
N/S	2383996	6568098	121.90	13.07	22.87	1.077
N/S	2383968	6568098	122.89	13.34	22.87	1.087
N/S	2383803	6568098	122.74	15.00	22.87	1.086
N/S	2383628	6568098	120.30	16.75	22.87	1.061
N/S	2383614	6568098	119.03	16.88	22.87	1.049
N/S	2383543	6568098	117.74	17.60	22.87	1.036
N/S	2383525	6568098	118.35	17.77	22.87	1.042
N/S	2383523	6568098	118.35	17.79	22.87	1.042
N/S	2383453	6568098	123.80	18.50	22.87	1.096

[a] N/S = north/south cross section

APPENDIX D. GRAVEL-STOCKPILE DESIGN

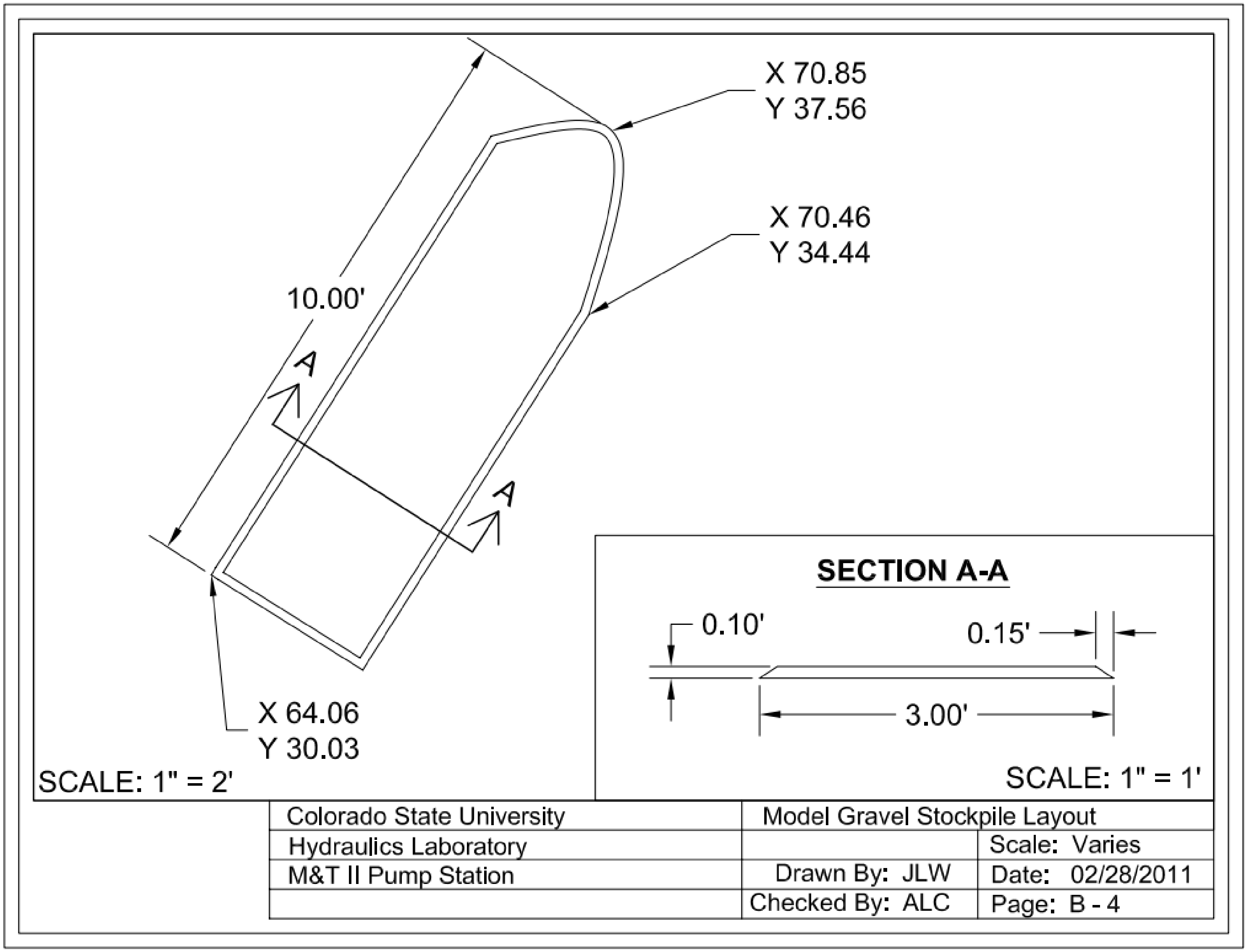

Figure D-1: Model gravel-stockpile layout.

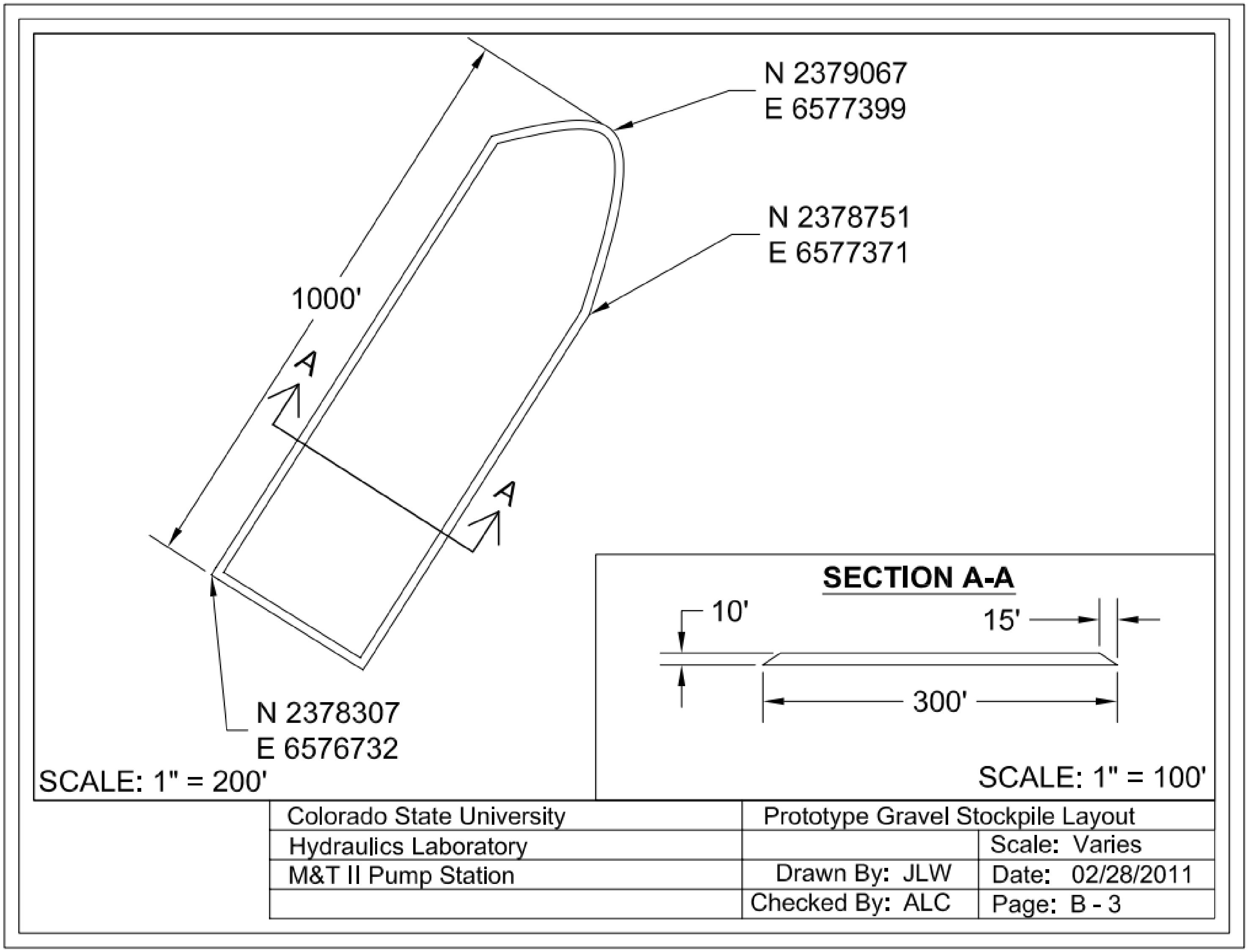

Figure D-2: Prototype gravel-stockpile layout.

APPENDIX E. REALIGNED-BANK DESIGN CROSS SECTIONS

(Note: Only those cross sections that were changed from the baseline design cross sections are included in this appendix.)

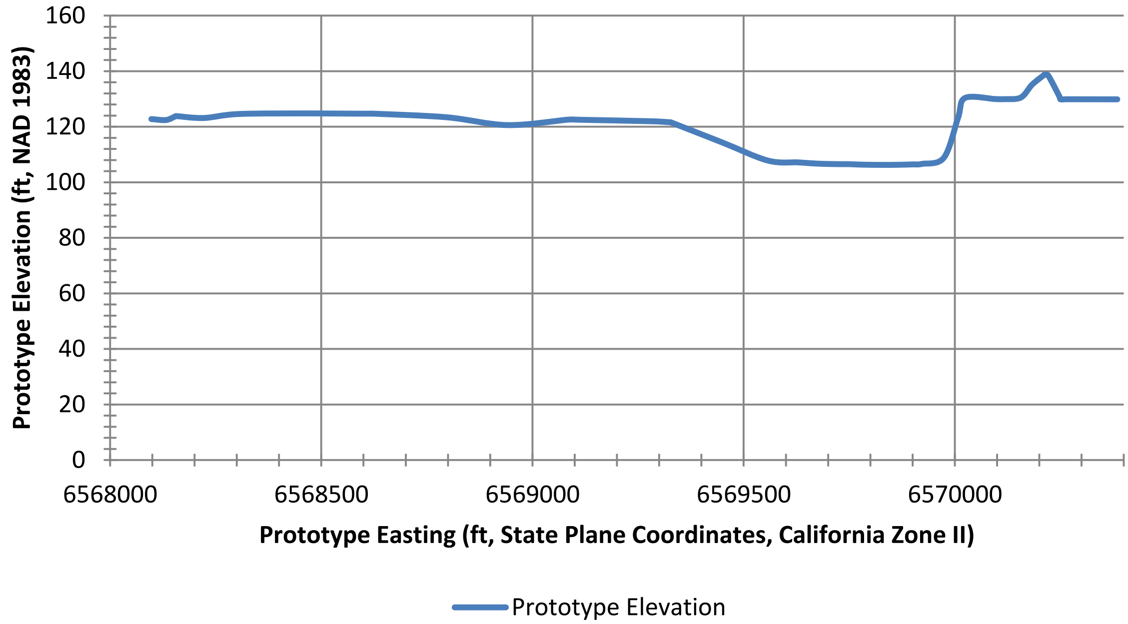

Figure E-1: Realigned east-bank prototype Cross-section 7.

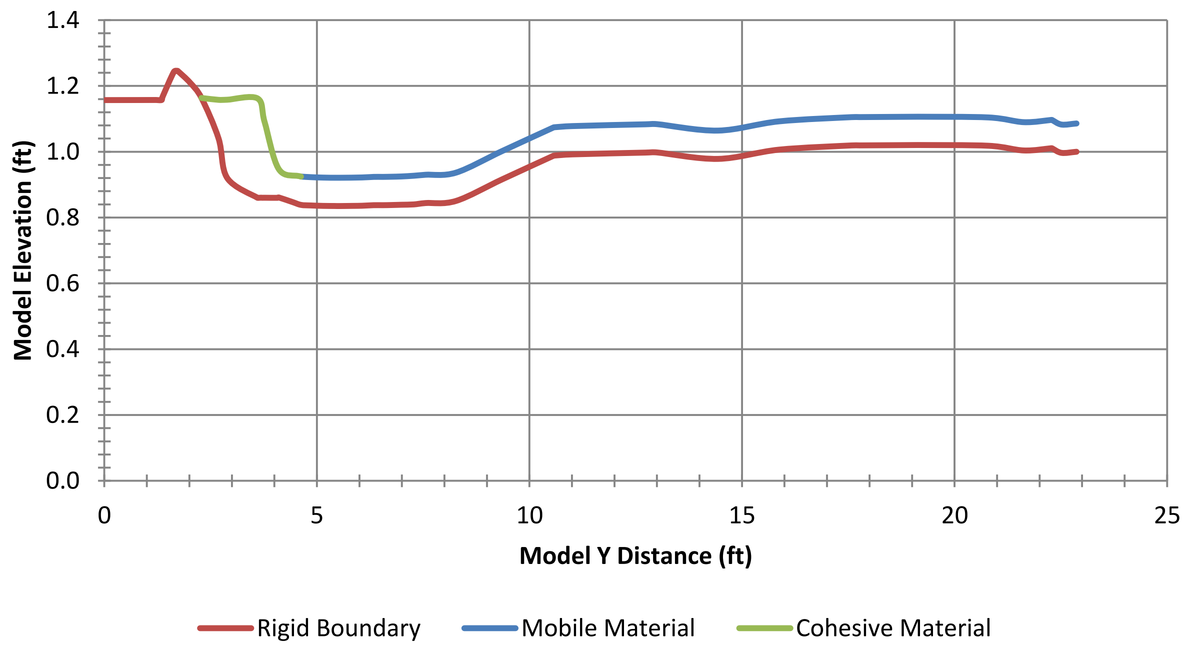

Figure E-2: Realigned east-bank model Cross-section 7.

Table E-1: Realigned east-bank Cross-section 7 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
7	2376892	6570385	129.85	84.41	0.00	1.157
7	2376892	6570263	129.88	84.41	1.21	1.157
7	2376892	6570263	129.88	84.41	1.22	1.157
7	2376892	6570250	129.88	84.41	1.35	1.157
7	2376892	6570248	130.85	84.41	1.37	1.167
7	2376892	6570221	138.46	84.41	1.64	1.243
7	2376892	6570212	138.73	84.41	1.73	1.246
7	2376892	6570211	138.66	84.41	1.73	1.245
7	2376892	6570183	135.13	84.41	2.02	1.210
7	2376892	6570156	130.49	84.41	2.29	1.163
7	2376892	6570116	129.92	84.41	2.69	1.158
7	2376892	6570095	129.96	84.41	2.89	1.158
7	2376892	6570024	130.36	84.41	3.60	1.162
7	2376892	6570008	123.21	84.41	3.77	1.091
7	2376892	6569974	108.85	84.41	4.10	0.947
7	2376892	6569922	106.60	84.41	4.63	0.925
7	2376892	6569899	106.43	84.41	4.85	0.923
7	2376892	6569870	106.30	84.41	5.15	0.922
7	2376892	6569831	106.25	84.41	5.54	0.921
7	2376892	6569779	106.34	84.41	6.06	0.922
7	2376892	6569751	106.51	84.41	6.34	0.924
7	2376892	6569730	106.51	84.41	6.55	0.924
7	2376892	6569709	106.56	84.41	6.76	0.924
7	2376892	6569686	106.64	84.41	6.99	0.925
7	2376892	6569657	106.86	84.41	7.28	0.927
7	2376892	6569629	107.16	84.41	7.56	0.930
7	2376892	6569557	107.81	84.41	8.27	0.937
7	2376892	6569448	114.41	84.41	9.37	1.003
7	2376892	6569328	121.53	84.41	10.56	1.074
7	2376892	6569327	121.58	84.41	10.58	1.074
7	2376892	6569284	121.95	84.41	11.01	1.078
7	2376892	6569112	122.49	84.41	12.72	1.083
7	2376892	6569085	122.54	84.41	13.00	1.084
7	2376892	6568941	120.58	84.41	14.43	1.064
7	2376892	6568797	123.39	84.41	15.87	1.092
7	2376892	6568626	124.67	84.41	17.58	1.105
7	2376892	6568608	124.68	84.41	17.77	1.105
7	2376892	6568472	124.79	84.41	19.13	1.106
7	2376892	6568469	124.79	84.41	19.16	1.106
7	2376892	6568304	124.57	84.41	20.80	1.104
7	2376892	6568221	123.14	84.41	21.63	1.090
7	2376892	6568157	123.82	84.41	22.28	1.097
7	2376892	6568155	123.80	84.41	22.29	1.097
7	2376892	6568133	122.41	84.41	22.52	1.083
7	2376892	6568098	122.74	84.41	22.87	1.086

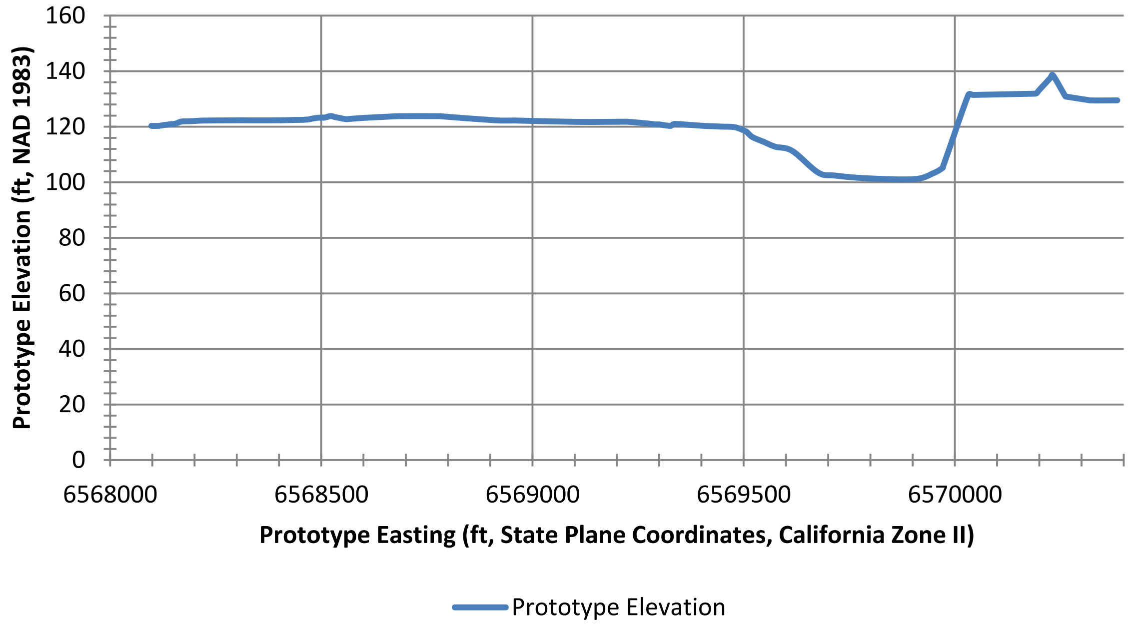

Figure E-3: Realigned east-bank prototype Cross-section 8.

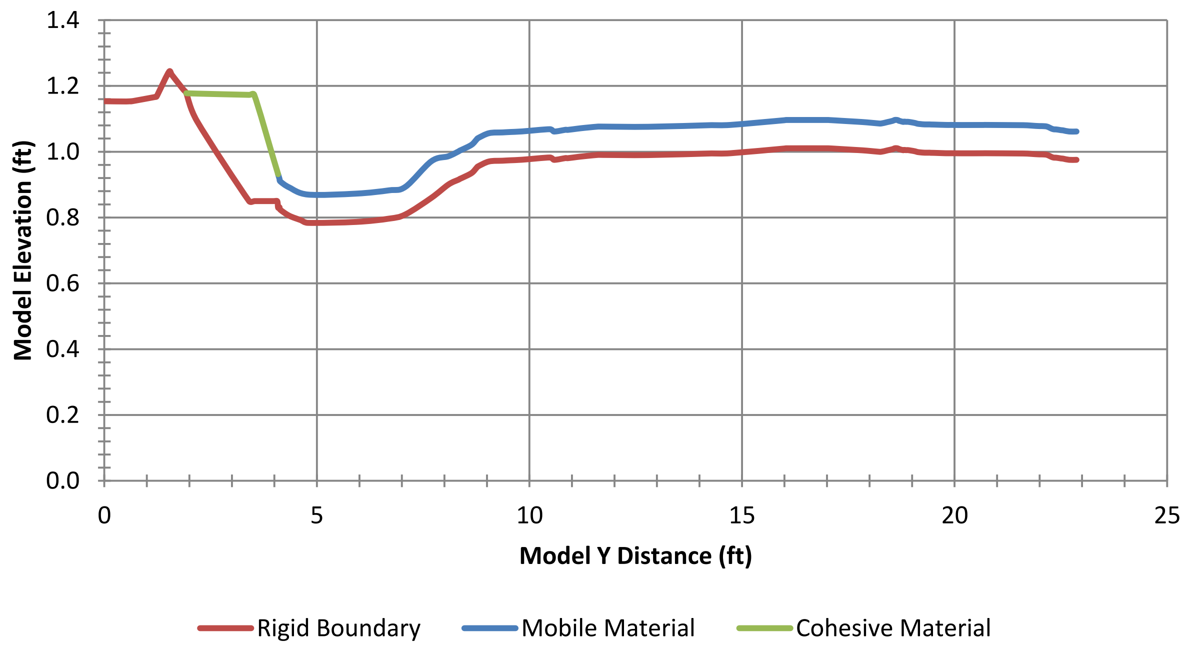

Figure E-4: Realigned east-bank model Cross-section 8.

Table E-2: Realigned east-bank Cross-section 8 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
8	2377067	6570385	129.49	82.36	0.00	1.153
8	2377067	6570333	129.43	82.36	0.52	1.153
8	2377067	6570321	129.51	82.36	0.63	1.154
8	2377067	6570320	129.48	82.36	0.64	1.153
8	2377067	6570266	130.77	82.36	1.19	1.166
8	2377067	6570262	130.86	82.36	1.23	1.167
8	2377067	6570257	132.15	82.36	1.28	1.180
8	2377067	6570232	138.53	82.36	1.53	1.244
8	2377067	6570226	137.48	82.36	1.59	1.233
8	2377067	6570199	133.06	82.36	1.86	1.189
8	2377067	6570192	131.93	82.36	1.93	1.178
8	2377067	6570167	131.82	82.36	2.18	1.177
8	2377067	6570044	131.44	82.36	3.40	1.173
8	2377067	6570032	131.44	82.36	3.53	1.173
8	2377067	6569987	112.13	82.36	3.98	0.980
8	2377067	6569978	108.26	82.36	4.07	0.941
8	2377067	6569976	107.33	82.36	4.09	0.932
8	2377067	6569973	106.17	82.36	4.11	0.920
8	2377067	6569972	105.86	82.36	4.12	0.917
8	2377067	6569971	105.14	82.36	4.14	0.910
8	2377067	6569950	103.31	82.36	4.35	0.892
8	2377067	6569906	101.14	82.36	4.79	0.870
8	2377067	6569792	101.43	82.36	5.93	0.873
8	2377067	6569715	102.42	82.36	6.69	0.883
8	2377067	6569676	103.51	82.36	7.08	0.894
8	2377067	6569615	111.27	82.36	7.69	0.971
8	2377067	6569575	112.78	82.36	8.09	0.986
8	2377067	6569551	114.30	82.36	8.34	1.002
8	2377067	6569549	114.49	82.36	8.36	1.003
8	2377067	6569542	114.87	82.36	8.43	1.007
8	2377067	6569521	116.28	82.36	8.64	1.021
8	2377067	6569509	117.80	82.36	8.75	1.037
8	2377067	6569505	118.30	82.36	8.79	1.042
8	2377067	6569480	119.80	82.36	9.05	1.057
8	2377067	6569448	120.03	82.36	9.37	1.059
8	2377067	6569429	120.16	82.36	9.56	1.060
8	2377067	6569402	120.33	82.36	9.83	1.062
8	2377067	6569336	121.00	82.36	10.48	1.069
8	2377067	6569328	120.35	82.36	10.56	1.062
8	2377067	6569325	120.30	82.36	10.60	1.062
8	2377067	6569316	120.45	82.36	10.69	1.063
8	2377067	6569300	120.83	82.36	10.85	1.067
8	2377067	6569294	120.80	82.36	10.90	1.067
8	2377067	6569271	121.17	82.36	11.13	1.070
8	2377067	6569259	121.36	82.36	11.26	1.072
8	2377067	6569248	121.50	82.36	11.37	1.074
8	2377067	6569223	121.80	82.36	11.62	1.077
8	2377067	6569212	121.79	82.36	11.72	1.076
8	2377067	6569105	121.74	82.36	12.79	1.076
8	2377067	6568958	122.23	82.36	14.27	1.081
8	2377067	6568953	122.23	82.36	14.31	1.081
8	2377067	6568912	122.30	82.36	14.73	1.082
8	2377067	6568785	123.73	82.36	16.00	1.096
8	2377067	6568781	123.80	82.36	16.04	1.097

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
8	2377067	6568682	123.80	82.36	17.03	1.097
8	2377067	6568678	123.77	82.36	17.06	1.096
8	2377067	6568669	123.71	82.36	17.16	1.096
8	2377067	6568651	123.56	82.36	17.34	1.094
8	2377067	6568615	123.29	82.36	17.69	1.091
8	2377067	6568591	123.08	82.36	17.93	1.089
8	2377067	6568567	122.80	82.36	18.17	1.087
8	2377067	6568557	122.74	82.36	18.27	1.086
8	2377067	6568543	123.15	82.36	18.41	1.090
8	2377067	6568530	123.55	82.36	18.55	1.094
8	2377067	6568526	123.80	82.36	18.59	1.097
8	2377067	6568521	123.83	82.36	18.63	1.097
8	2377067	6568518	123.74	82.36	18.67	1.096
8	2377067	6568516	123.55	82.36	18.69	1.094
8	2377067	6568514	123.53	82.36	18.71	1.094
8	2377067	6568505	123.22	82.36	18.79	1.091
8	2377067	6568503	123.31	82.36	18.82	1.092
8	2377067	6568499	123.24	82.36	18.86	1.091
8	2377067	6568495	123.25	82.36	18.90	1.091
8	2377067	6568487	123.12	82.36	18.97	1.090
8	2377067	6568477	122.88	82.36	19.07	1.087
8	2377067	6568472	122.68	82.36	19.13	1.085
8	2377067	6568465	122.56	82.36	19.20	1.084
8	2377067	6568455	122.46	82.36	19.30	1.083
8	2377067	6568443	122.46	82.36	19.41	1.083
8	2377067	6568441	122.43	82.36	19.44	1.083
8	2377067	6568432	122.41	82.36	19.53	1.083
8	2377067	6568406	122.30	82.36	19.79	1.082
8	2377067	6568392	122.30	82.36	19.92	1.082
8	2377067	6568368	122.27	82.36	20.17	1.081
8	2377067	6568316	122.29	82.36	20.68	1.081
8	2377067	6568314	122.30	82.36	20.71	1.082
8	2377067	6568223	122.22	82.36	21.61	1.081
8	2377067	6568210	122.15	82.36	21.75	1.080
8	2377067	6568196	122.02	82.36	21.89	1.079
8	2377067	6568184	121.95	82.36	22.00	1.078
8	2377067	6568178	121.94	82.36	22.07	1.078
8	2377067	6568167	121.80	82.36	22.17	1.077
8	2377067	6568155	121.10	82.36	22.30	1.070
8	2377067	6568150	120.95	82.36	22.35	1.068
8	2377067	6568147	120.95	82.36	22.37	1.068
8	2377067	6568142	120.87	82.36	22.43	1.067
8	2377067	6568134	120.71	82.36	22.51	1.066
8	2377067	6568129	120.65	82.36	22.55	1.065
8	2377067	6568115	120.30	82.36	22.70	1.062
8	2377067	6568098	120.30	82.36	22.87	1.062

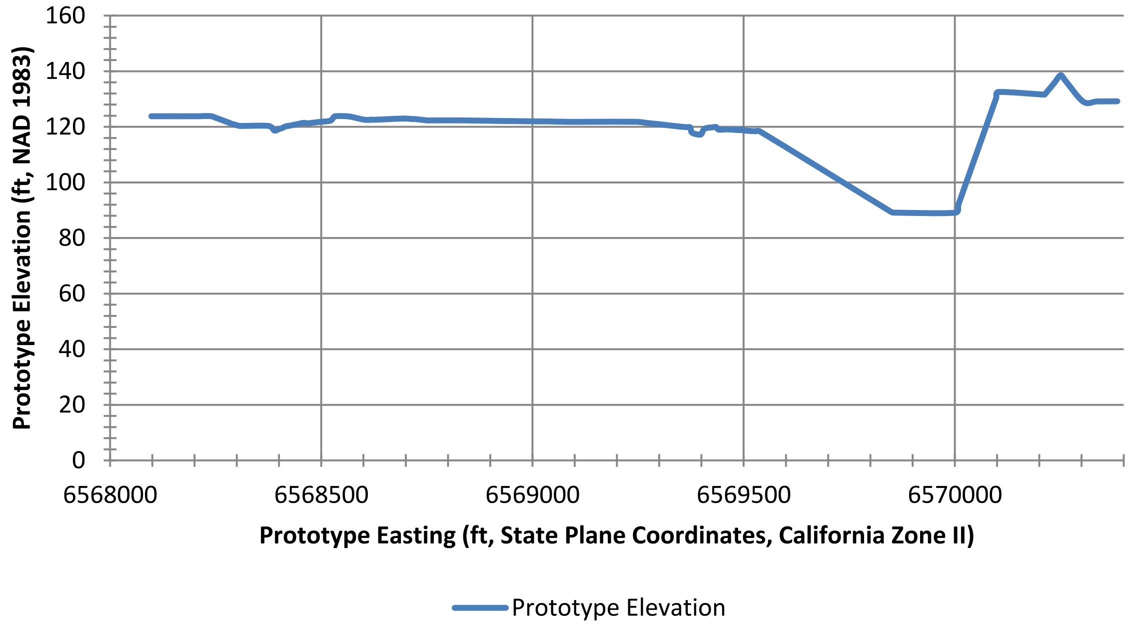

Figure E-5: Realigned east-bank prototype Cross-section 9.

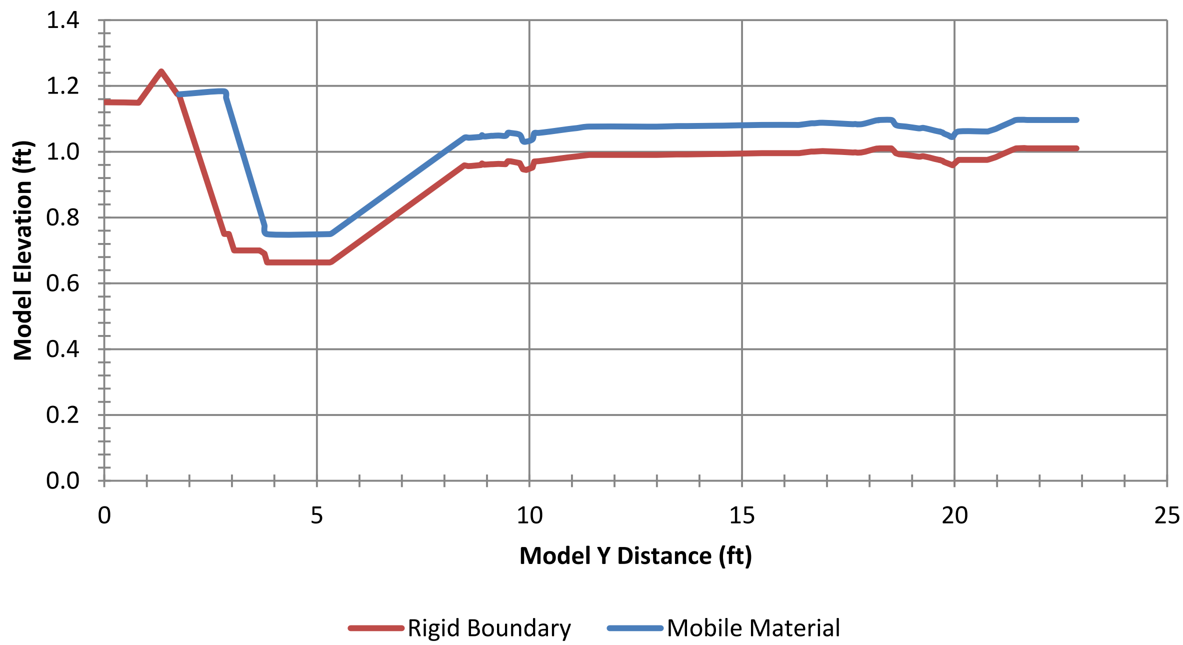

Figure E-6: Realigned east-bank model Cross-section 9.

Table E-3: Realigned east-bank Cross-section 9 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
9	2377242	6570385	129.18	80.61	0.00	1.150
9	2377242	6570337	129.12	80.61	0.47	1.150
9	2377242	6570304	129.03	80.61	0.80	1.149
9	2377242	6570262	136.60	80.61	1.23	1.225
9	2377242	6570251	138.57	80.61	1.34	1.244
9	2377242	6570235	135.60	80.61	1.50	1.215
9	2377242	6570214	131.72	80.61	1.71	1.176
9	2377242	6570213	131.59	80.61	1.72	1.174
9	2377242	6570209	131.59	80.61	1.75	1.174
9	2377242	6570103	132.52	80.61	2.82	1.184
9	2377242	6570098	130.52	80.61	2.86	1.164
9	2377242	6570092	127.78	80.61	2.93	1.136
9	2377242	6570079	122.44	80.61	3.05	1.083
9	2377242	6570074	120.22	80.61	3.10	1.061
9	2377242	6570070	118.22	80.61	3.15	1.041
9	2377242	6570065	116.30	80.61	3.20	1.022
9	2377242	6570057	113.04	80.61	3.27	0.989
9	2377242	6570050	109.85	80.61	3.35	0.957
9	2377242	6570038	104.89	80.61	3.46	0.907
9	2377242	6570025	99.11	80.61	3.60	0.850
9	2377242	6570019	96.67	80.61	3.65	0.825
9	2377242	6570008	91.78	80.61	3.77	0.776
9	2377242	6570002	89.11	80.61	3.83	0.750
9	2377242	6569854	89.13	80.61	5.30	0.750
9	2377242	6569850	89.33	80.61	5.35	0.752
9	2377242	6569846	89.68	80.61	5.39	0.755
9	2377242	6569538	118.40	80.61	8.47	1.043
9	2377242	6569529	118.40	80.61	8.56	1.043
9	2377242	6569522	118.45	80.61	8.63	1.043
9	2377242	6569498	118.72	80.61	8.86	1.046
9	2377242	6569496	119.21	80.61	8.88	1.051
9	2377242	6569491	118.80	80.61	8.93	1.047
9	2377242	6569475	118.99	80.61	9.10	1.048
9	2377242	6569471	118.98	80.61	9.13	1.048
9	2377242	6569458	119.08	80.61	9.27	1.049
9	2377242	6569441	118.98	80.61	9.44	1.048
9	2377242	6569435	119.91	80.61	9.49	1.058
9	2377242	6569428	119.86	80.61	9.56	1.057
9	2377242	6569407	119.30	80.61	9.77	1.052
9	2377242	6569400	117.40	80.61	9.85	1.033
9	2377242	6569392	117.22	80.61	9.92	1.031
9	2377242	6569377	117.94	80.61	10.07	1.038
9	2377242	6569373	119.80	80.61	10.11	1.057
9	2377242	6569363	119.88	80.61	10.22	1.057
9	2377242	6569334	120.32	80.61	10.50	1.062
9	2377242	6569295	121.01	80.61	10.89	1.069
9	2377242	6569273	121.35	80.61	11.12	1.072
9	2377242	6569244	121.80	80.61	11.41	1.077
9	2377242	6569139	121.80	80.61	12.46	1.077
9	2377242	6569085	121.78	80.61	12.99	1.076
9	2377242	6569038	121.94	80.61	13.47	1.078
9	2377242	6569015	121.95	80.61	13.70	1.078
9	2377242	6568944	122.06	80.61	14.40	1.079
9	2377242	6568929	122.08	80.61	14.56	1.079

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
9	2377242	6568838	122.30	80.61	15.47	1.082
9	2377242	6568759	122.30	80.61	16.25	1.082
9	2377242	6568750	122.30	80.61	16.34	1.082
9	2377242	6568722	122.80	80.61	16.63	1.087
9	2377242	6568715	122.80	80.61	16.70	1.087
9	2377242	6568695	122.97	80.61	16.90	1.088
9	2377242	6568650	122.69	80.61	17.35	1.085
9	2377242	6568624	122.52	80.61	17.61	1.084
9	2377242	6568618	122.58	80.61	17.66	1.084
9	2377242	6568613	122.46	80.61	17.72	1.083
9	2377242	6568612	122.49	80.61	17.73	1.083
9	2377242	6568605	122.51	80.61	17.80	1.084
9	2377242	6568595	122.76	80.61	17.90	1.086
9	2377242	6568575	123.47	80.61	18.10	1.093
9	2377242	6568567	123.71	80.61	18.17	1.096
9	2377242	6568564	123.70	80.61	18.21	1.096
9	2377242	6568562	123.80	80.61	18.23	1.097
9	2377242	6568533	123.80	80.61	18.52	1.097
9	2377242	6568527	122.94	80.61	18.58	1.088
9	2377242	6568523	122.30	80.61	18.62	1.082
9	2377242	6568515	122.00	80.61	18.70	1.079
9	2377242	6568499	121.80	80.61	18.86	1.077
9	2377242	6568469	121.26	80.61	19.15	1.071
9	2377242	6568466	121.27	80.61	19.19	1.071
9	2377242	6568461	121.39	80.61	19.24	1.072
9	2377242	6568458	121.40	80.61	19.27	1.073
9	2377242	6568444	121.00	80.61	19.40	1.069
9	2377242	6568431	120.58	80.61	19.54	1.064
9	2377242	6568421	120.30	80.61	19.64	1.062
9	2377242	6568419	120.30	80.61	19.66	1.062
9	2377242	6568418	120.19	80.61	19.67	1.060
9	2377242	6568413	120.00	80.61	19.72	1.059
9	2377242	6568409	119.67	80.61	19.75	1.055
9	2377242	6568400	119.20	80.61	19.84	1.051
9	2377242	6568389	118.65	80.61	19.96	1.045
9	2377242	6568376	120.30	80.61	20.09	1.062
9	2377242	6568308	120.30	80.61	20.77	1.062
9	2377242	6568303	120.47	80.61	20.82	1.063
9	2377242	6568288	121.06	80.61	20.96	1.069
9	2377242	6568287	121.14	80.61	20.98	1.070
9	2377242	6568274	121.93	80.61	21.11	1.078
9	2377242	6568250	123.25	80.61	21.34	1.091
9	2377242	6568240	123.80	80.61	21.45	1.097
9	2377242	6568220	123.87	80.61	21.64	1.097
9	2377242	6568213	123.80	80.61	21.72	1.097
9	2377242	6568098	123.80	80.61	22.87	1.097

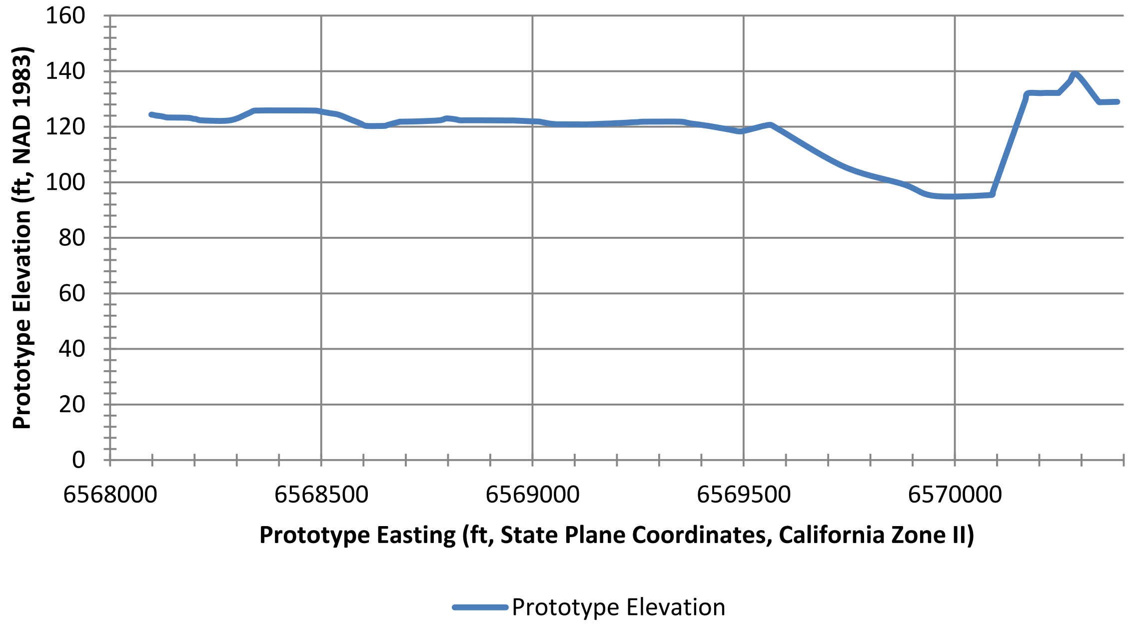

Figure E-7: Realigned east-bank prototype Cross-section 10.

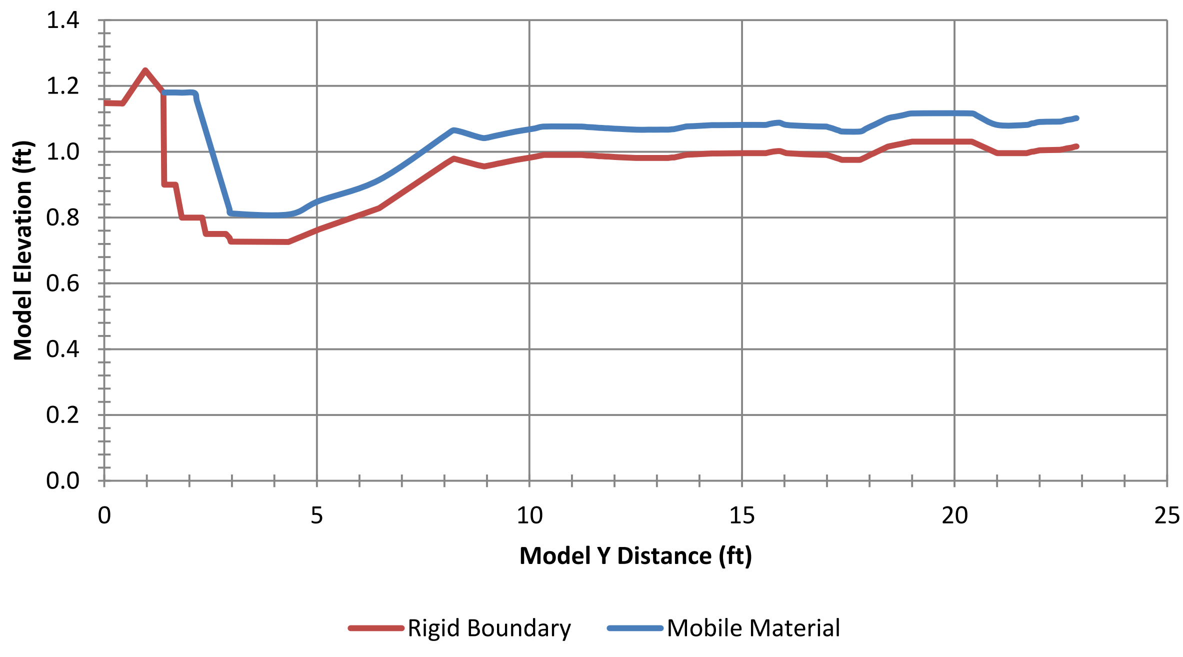

Figure E-8: Realigned east-bank model Cross-section 10.

Table E-4: Realigned east-bank Cross-section 10 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
10	2377417	6570385	128.96	0.00	78.86	1.148
10	2377417	6570346	128.82	0.39	78.86	1.147
10	2377417	6570342	128.81	0.43	78.86	1.147
10	2377417	6570337	129.66	0.48	78.86	1.155
10	2377417	6570288	138.89	0.96	78.86	1.247
10	2377417	6570271	136.14	1.14	78.86	1.220
10	2377417	6570246	132.15	1.39	78.86	1.180
10	2377417	6570244	132.15	1.41	78.86	1.180
10	2377417	6570217	132.16	1.68	78.86	1.180
10	2377417	6570202	132.09	1.82	78.86	1.179
10	2377417	6570173	132.02	2.12	78.86	1.179
10	2377417	6570167	129.75	2.17	78.86	1.156
10	2377417	6570162	127.47	2.23	78.86	1.133
10	2377417	6570154	124.07	2.31	78.86	1.099
10	2377417	6570146	120.62	2.39	78.86	1.065
10	2377417	6570138	117.28	2.46	78.86	1.031
10	2377417	6570120	109.51	2.64	78.86	0.954
10	2377417	6570113	106.60	2.71	78.86	0.925
10	2377417	6570109	104.57	2.76	78.86	0.904
10	2377417	6570103	102.35	2.81	78.86	0.882
10	2377417	6570098	100.19	2.86	78.86	0.860
10	2377417	6570090	96.54	2.95	78.86	0.824
10	2377417	6570087	95.43	2.97	78.86	0.813
10	2377417	6569951	95.09	4.33	78.86	0.809
10	2377417	6569878	99.25	5.06	78.86	0.851
10	2377417	6569738	105.59	6.47	78.86	0.914
10	2377417	6569581	119.26	8.04	78.86	1.051
10	2377417	6569562	120.68	8.22	78.86	1.065
10	2377417	6569506	118.66	8.79	78.86	1.045
10	2377417	6569491	118.30	8.94	78.86	1.042
10	2377417	6569468	118.89	9.17	78.86	1.047
10	2377417	6569458	119.17	9.26	78.86	1.050
10	2377417	6569452	119.33	9.33	78.86	1.052
10	2377417	6569416	120.30	9.69	78.86	1.062
10	2377417	6569382	121.02	10.03	78.86	1.069
10	2377417	6569371	121.26	10.14	78.86	1.071
10	2377417	6569351	121.80	10.34	78.86	1.077
10	2377417	6569261	121.80	11.23	78.86	1.077
10	2377417	6569250	121.66	11.35	78.86	1.075
10	2377417	6569236	121.58	11.48	78.86	1.074
10	2377417	6569221	121.42	11.64	78.86	1.073
10	2377417	6569215	121.40	11.70	78.86	1.073
10	2377417	6569205	121.30	11.80	78.86	1.072
10	2377417	6569200	121.30	11.84	78.86	1.072
10	2377417	6569184	121.15	12.00	78.86	1.070
10	2377417	6569178	121.13	12.07	78.86	1.070
10	2377417	6569134	120.85	12.51	78.86	1.067
10	2377417	6569111	120.84	12.73	78.86	1.067
10	2377417	6569104	120.86	12.81	78.86	1.067
10	2377417	6569084	120.85	13.00	78.86	1.067
10	2377417	6569074	120.88	13.10	78.86	1.067
10	2377417	6569058	120.87	13.26	78.86	1.067
10	2377417	6569049	120.99	13.35	78.86	1.068
10	2377417	6569044	121.03	13.40	78.86	1.069

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
10	2377417	6569021	121.70	13.64	78.86	1.076
10	2377417	6569014	121.86	13.70	78.86	1.077
10	2377417	6568998	121.93	13.86	78.86	1.078
10	2377417	6568956	122.23	14.29	78.86	1.081
10	2377417	6568944	122.23	14.41	78.86	1.081
10	2377417	6568878	122.30	15.07	78.86	1.082
10	2377417	6568841	122.30	15.44	78.86	1.082
10	2377417	6568829	122.30	15.56	78.86	1.082
10	2377417	6568821	122.56	15.64	78.86	1.084
10	2377417	6568811	122.80	15.73	78.86	1.087
10	2377417	6568804	122.92	15.81	78.86	1.088
10	2377417	6568800	122.96	15.85	78.86	1.088
10	2377417	6568795	122.94	15.90	78.86	1.088
10	2377417	6568780	122.30	16.04	78.86	1.082
10	2377417	6568738	121.98	16.47	78.86	1.078
10	2377417	6568705	121.84	16.79	78.86	1.077
10	2377417	6568686	121.80	16.99	78.86	1.077
10	2377417	6568683	121.67	17.01	78.86	1.075
10	2377417	6568672	121.27	17.13	78.86	1.071
10	2377417	6568663	120.85	17.21	78.86	1.067
10	2377417	6568657	120.60	17.28	78.86	1.065
10	2377417	6568650	120.30	17.35	78.86	1.062
10	2377417	6568607	120.30	17.78	78.86	1.062
10	2377417	6568593	121.13	17.91	78.86	1.070
10	2377417	6568581	121.91	18.04	78.86	1.078
10	2377417	6568574	122.30	18.11	78.86	1.082
10	2377417	6568569	122.64	18.16	78.86	1.085
10	2377417	6568541	124.30	18.43	78.86	1.102
10	2377417	6568522	124.84	18.63	78.86	1.107
10	2377417	6568509	125.18	18.76	78.86	1.110
10	2377417	6568500	125.44	18.85	78.86	1.113
10	2377417	6568484	125.80	19.00	78.86	1.117
10	2377417	6568344	125.80	20.41	78.86	1.117
10	2377417	6568332	125.14	20.53	78.86	1.110
10	2377417	6568284	122.30	21.00	78.86	1.082
10	2377417	6568215	122.30	21.69	78.86	1.082
10	2377417	6568203	122.77	21.82	78.86	1.086
10	2377417	6568199	122.81	21.86	78.86	1.087
10	2377417	6568185	123.20	22.00	78.86	1.091
10	2377417	6568153	123.29	22.32	78.86	1.091
10	2377417	6568136	123.32	22.48	78.86	1.092
10	2377417	6568130	123.48	22.55	78.86	1.093
10	2377417	6568120	123.80	22.64	78.86	1.097
10	2377417	6568110	123.99	22.75	78.86	1.098
10	2377417	6568101	124.30	22.84	78.86	1.102
10	2377417	6568098	124.35	22.87	78.86	1.102

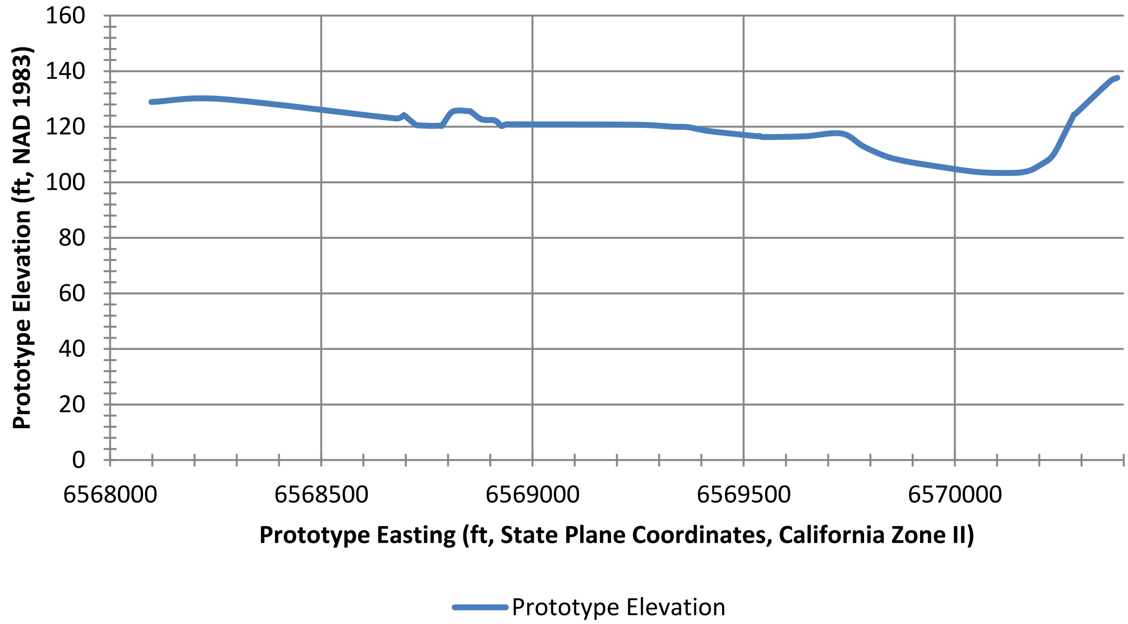

Figure E-9: Realigned east-bank prototype Cross-section 11.

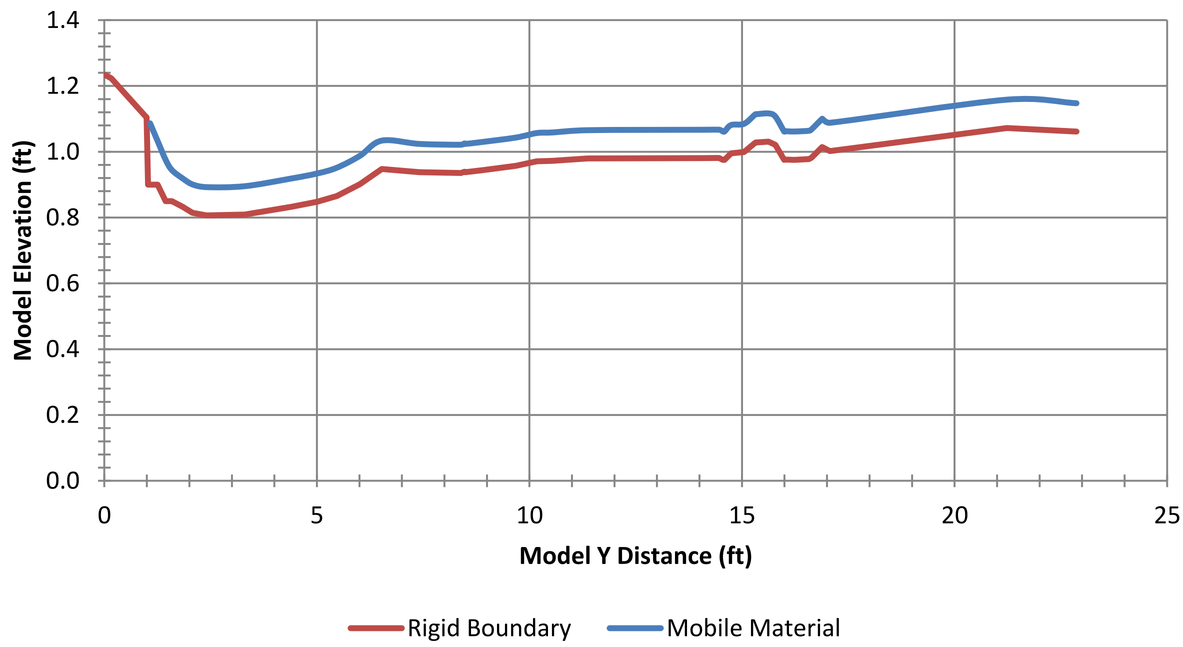

Figure E-10: Realigned east-bank model Cross-section 11.

Table E-5: Realigned east-bank Cross-section 11 topography data.

Cross-section	Prototype Northing (ft)	Prototype Easting (ft)	Prototype Elevation (ft)	Model *X* (ft)	Model *Y* (ft)	Model *Z* (ft)
11	2377717	6570385	137.58	75.86	0.00	1.234
11	2377717	6570368	136.46	75.86	0.16	1.223
11	2377717	6570289	125.14	75.86	0.95	1.110
11	2377717	6570285	124.63	75.86	0.99	1.105
11	2377717	6570282	124.33	75.86	1.03	1.102
11	2377717	6570277	122.78	75.86	1.08	1.086
11	2377717	6570259	117.42	75.86	1.25	1.033
11	2377717	6570240	111.70	75.86	1.44	0.976
11	2377717	6570226	108.56	75.86	1.59	0.944
11	2377717	6570200	106.04	75.86	1.84	0.919
11	2377717	6570177	104.21	75.86	2.08	0.901
11	2377717	6570144	103.40	75.86	2.41	0.893
11	2377717	6570055	103.67	75.86	3.30	0.895
11	2377717	6569946	105.98	75.86	4.38	0.918
11	2377717	6569884	107.54	75.86	5.00	0.934
11	2377717	6569838	109.30	75.86	5.47	0.952
11	2377717	6569784	112.90	75.86	6.01	0.988
11	2377717	6569732	117.53	75.86	6.53	1.034
11	2377717	6569643	116.53	75.86	7.41	1.024
11	2377717	6569546	116.28	75.86	8.39	1.021
11	2377717	6569537	116.68	75.86	8.47	1.025
11	2377717	6569535	116.54	75.86	8.49	1.024
11	2377717	6569494	117.15	75.86	8.91	1.030
11	2377717	6569416	118.47	75.86	9.69	1.043
11	2377717	6569368	119.83	75.86	10.17	1.057
11	2377717	6569331	120.01	75.86	10.54	1.059
11	2377717	6569247	120.70	75.86	11.37	1.066
11	2377717	6568979	120.83	75.86	14.05	1.067
11	2377717	6568939	120.85	75.86	14.46	1.067
11	2377717	6568929	120.30	75.86	14.55	1.062
11	2377717	6568926	120.30	75.86	14.59	1.062
11	2377717	6568910	122.26	75.86	14.74	1.081
11	2377717	6568880	122.64	75.86	15.05	1.085
11	2377717	6568855	125.35	75.86	15.30	1.112
11	2377717	6568852	125.59	75.86	15.33	1.114
11	2377717	6568852	125.59	75.86	15.33	1.114
11	2377717	6568850	125.57	75.86	15.34	1.114
11	2377717	6568822	125.80	75.86	15.62	1.117
11	2377717	6568806	124.86	75.86	15.78	1.107
11	2377717	6568785	120.30	75.86	15.99	1.062
11	2377717	6568783	120.39	75.86	16.02	1.062
11	2377717	6568762	120.30	75.86	16.23	1.062
11	2377717	6568727	120.53	75.86	16.58	1.064
11	2377717	6568721	120.96	75.86	16.64	1.068
11	2377717	6568696	124.17	75.86	16.89	1.100
11	2377717	6568695	124.05	75.86	16.90	1.099
11	2377717	6568678	122.96	75.86	17.07	1.088
11	2377717	6568261	129.98	75.86	21.23	1.158
11	2377717	6568098	128.89	75.86	22.87	1.147

APPENDIX F. DATA MEASUREMENTS

Date:	9/20/2010		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Baseline	**Start Time:**	8:30 AM
Discharge:	10,000 cfs	**End Time:**	5:00 PM

Table F-1: Data measurements for 10,000-cfs Baseline configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.043	1.046	1.097	0.054	N/A	N/A	N/A	
2	23	32.91	6577525.6	28.00	2382011.5	1.052	1.055	1.097	0.045	N/A	N/A	N/A	
3	23	32.91	6577325.6	30.00	2382011.5	1.050	1.050	1.092	0.042	N/A	N/A	N/A	
4	23	32.91	6577125.6	32.00	2382011.5	1.008	1.022	1.086	0.078	N/A	N/A	N/A	
5	23	32.91	6576925.6	34.00	2382011.5	1.241	N/A	N/A	N/A	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.113	1.112	N/A	N/A	N/A	N/A	N/A	
8	22	37.91	6577925.6	24.00	2381511.5	1.118	1.127	N/A	N/A	N/A	N/A	N/A	
9	22	37.91	6577725.6	26.00	2381511.5	1.055	1.053	1.083	0.028	N/A	N/A	N/A	
10	22	37.91	6577525.6	28.00	2381511.5	1.021	1.019	1.085	0.064	0.1	0.02	0.102	
11	22	37.91	6577325.6	30.00	2381511.5	0.991	0.975	1.070	0.079	N/A	N/A	N/A	
12	22	37.91	6577225.6	31.00	2381511.5	0.959	0.955	1.077	0.118	N/A	N/A	N/A	
14	21	42.91	6577925.6	24.00	2381011.5	1.038	1.124	N/A	N/A	N/A	N/A	N/A	
15	21	42.91	6577725.6	26.00	2381011.5	1.034	1.023	1.075	0.041	N/A	N/A	N/A	
16	21	42.91	6577525.6	28.00	2381011.5	1.022	1.039	1.078	0.056	N/A	N/A	N/A	
17	21	42.91	6577325.6	30.00	2381011.5	1.000	0.982	1.075	0.075	0.05	0.2	0.206	
18	21	42.91	6577225.6	31.00	2381011.5	0.979	0.980	1.072	0.093	0.5	0.28	0.573	outlier, removed
19	20	45.91	6577925.6	24.00	2380711.5	1.132	1.136	N/A	N/A	N/A	N/A	N/A	
20	20	45.91	6577725.6	26.00	2380711.5	1.055	1.059	1.077	0.022	N/A	N/A	N/A	
21	20	45.91	6577525.6	28.00	2380711.5	1.009	1.009	1.081	0.072	0.05	0.09	0.103	
22	20	45.91	6577325.6	30.00	2380711.5	1.009	1.005	1.078	0.069	N/A	N/A	N/A	
23	20	45.91	6577125.6	32.00	2380711.5	0.980	0.983	1.072	0.092	N/A	N/A	N/A	
24	19	47.91	6577925.6	24.00	2380511.5	1.139	1.142	N/A	N/A	N/A	N/A	N/A	
25	19	47.91	6577725.6	26.00	2380511.5	1.041	1.023	1.083	0.042	0.02	0.12	0.122	
26	19	47.91	6577525.6	28.00	2380511.5	1.012	1.011	1.088	0.076	N/A	0.11	0.149	
27	19	47.91	6577325.6	30.00	2380511.5	1.022	1.013	1.086	0.064	0.1	0.21	0.233	
28	19	47.91	6577125.6	32.00	2380511.5	1.023	1.020	1.051	0.028	N/A	N/A	N/A	
32	18	49.91	6577925.6	24.00	2380311.5	1.108	1.112	N/A	N/A	N/A	N/A	N/A	
33	18	49.91	6577725.6	26.00	2380311.5	1.033	1.030	1.078	0.045	0.02	0.19	0.191	
34	18	49.91	6577525.6	28.00	2380311.5	1.018	1.010	1.084	0.066	N/A	N/A	N/A	
35	18	49.91	6577325.6	30.00	2380311.5	1.012	1.006	1.082	0.07	0.02	0.18	0.181	
36	18	49.91	6577125.6	32.00	2380311.5	0.998	0.970	1.078	0.08	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
37	17	51.91	6578275.6	20.50	2380111.5	1.067	1.072	N/A	N/A	N/A	N/A	N/A	
38	17	51.91	6578125.6	22.00	2380111.5	1.012	1.019	1.050	0.038	0.25	0.01	0.250	
39	17	51.91	6577925.6	24.00	2380111.5	1.069	1.074	N/A	N/A	N/A	N/A	N/A	
40	17	51.91	6577725.6	26.00	2380111.5	1.020	1.023	1.067	0.047	N/A	N/A	N/A	
41	17	51.91	6577525.6	28.00	2380111.5	0.999	0.995	1.076	0.077	N/A	N/A	N/A	
42	17	51.91	6577325.6	30.00	2380111.5	1.007	1.000	N/A	N/A	N/A	N/A	N/A	
43	16	56.91	6578125.6	22.00	2379611.5	0.995	0.994	1.053	0.058	0.2	0.12	0.233	
44	16	56.91	6577925.6	24.00	2379611.5	1.029	1.024	1.053	0.024	N/A	N/A	N/A	
45	16	56.91	6577725.6	26.00	2379611.5	1.039	1.028	1.061	0.022	N/A	N/A	N/A	
46	16	56.91	6577525.6	28.00	2379611.5	1.108	1.118	N/A	N/A	N/A	N/A	N/A	
47	16	56.91	6577325.6	30.00	2379611.5	1.223	1.210	N/A	N/A	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.248	1.244	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.204	1.204	N/A	N/A	N/A	N/A	N/A	
50	16	56.91	6576725.6	36.00	2379611.5	1.220	1.220	N/A	N/A	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.158	1.158	N/A	N/A	N/A	N/A	N/A	
52	16	56.91	6576325.6	40.00	2379611.5	1.161	1.161	N/A	N/A	N/A	N/A	N/A	
53	16	56.91	6576125.6	42.00	2379611.5	1.203	1.203	N/A	N/A	N/A	N/A	N/A	
54	15	61.91	6578125.6	22.00	2379111.5	0.923	0.923	1.050	0.127	N/A	N/A	N/A	
55	15	61.91	6577925.6	24.00	2379111.5	0.949	0.949	1.051	0.102	N/A	0.2	0.224	
56	15	61.91	6577725.6	26.00	2379111.5	1.170	1.076	N/A	N/A	N/A	N/A	N/A	
57	15	61.91	6577525.6	28.00	2379111.5	1.163	1.164	N/A	N/A	N/A	N/A	N/A	
58	15	61.91	6577325.6	30.00	2379111.5	1.169	1.153	N/A	N/A	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.189	1.188	N/A	N/A	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.167	1.167	N/A	N/A	N/A	N/A	N/A	
63	15	61.91	6576325.6	40.00	2379111.5	1.165	1.165	N/A	N/A	N/A	N/A	N/A	
64	15	61.91	6576125.6	42.00	2379111.5	1.184	1.184	N/A	N/A	N/A	N/A	N/A	
65	14	66.91	6578025.6	23.00	2378611.5	0.891	0.880	1.055	0.164	0.15	0.23	0.275	
66	14	66.91	6577925.6	24.00	2378611.5	0.922	0.928	1.055	0.133	0.3	0.19	0.355	
67	14	66.91	6577725.6	26.00	2378611.5	1.053	1.057	N/A	N/A	N/A	N/A	N/A	
68	14	66.91	6577503.6	28.22	2378611.5	1.180	1.182	N/A	N/A	N/A	N/A	N/A	
69	14	66.91	6577325.6	30.00	2378611.5	1.189	1.185	N/A	N/A	N/A	N/A	N/A	
70	14	66.91	6577125.6	32.00	2378611.5	1.218	1.223	N/A	N/A	N/A	N/A	N/A	
71	14	66.91	6576925.6	34.00	2378611.5	1.219	1.219	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.199	1.199	N/A	N/A	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.212	1.212	N/A	N/A	N/A	N/A	N/A	
74	14	66.91	6576325.6	40.00	2378611.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
75	14	66.91	6576125.6	42.00	2378611.5	1.181	1.181	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
76	13	71.91	6578125.6	22.00	2378111.5	0.891	0.895	1.043	0.152	N/A	0.19	0.242	
77	13	71.91	6577925.6	24.00	2378111.5	0.940	0.937	1.046	0.106	N/A	0.19	0.190	
78	13	71.91	6577725.6	26.00	2378111.5	1.031	1.029	1.046	0.015	N/A	N/A	N/A	
79	13	71.91	6577525.6	28.00	2378111.5	1.112	1.117	N/A	N/A	N/A	N/A	N/A	
80	13	71.91	6577325.6	30.00	2378111.5	1.163	1.151	N/A	N/A	N/A	N/A	N/A	
81	13	71.91	6577125.6	32.00	2378111.5	1.147	1.136	N/A	N/A	N/A	N/A	N/A	
82	13	71.91	6576925.6	34.00	2378111.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	
83	13	71.91	6576725.6	36.00	2378111.5	1.217	1.217	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.152	1.152	N/A	N/A	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	0.992	0.970	1.049	0.057	N/A	N/A	N/A	
88	12	73.91	6578125.6	22.00	2377911.5	0.943	0.939	1.051	0.108	N/A	0.29	0.307	
89	12	73.91	6577925.6	24.00	2377911.5	0.948	0.950	1.051	0.103	N/A	0.2	0.206	
90	12	73.91	6577725.6	26.00	2377911.5	1.029	1.030	1.051	0.022	N/A	N/A	N/A	
91	12	73.91	6577525.6	28.00	2377911.5	1.089	1.090	N/A	N/A	N/A	N/A	N/A	
92	12	73.91	6577325.6	30.00	2377911.5	1.131	1.129	N/A	N/A	N/A	N/A	N/A	
93	12	73.91	6577125.6	32.00	2377911.5	1.152	1.134	N/A	N/A	N/A	N/A	N/A	
94	12	73.91	6576925.6	34.00	2377911.5	1.171	1.156	N/A	N/A	N/A	N/A	N/A	
95	12	73.91	6576725.6	36.00	2377911.5	1.187	1.190	N/A	N/A	N/A	N/A	N/A	
96	12	73.91	6576525.6	38.00	2377911.5	1.167	1.168	N/A	N/A	N/A	N/A	N/A	
97	12	73.91	6576325.6	40.00	2377911.5	1.183	1.183	N/A	N/A	N/A	N/A	N/A	
98	12	73.91	6576125.6	42.00	2377911.5	1.198	1.199	N/A	N/A	N/A	N/A	N/A	
99	11	75.91	6578125.6	22.00	2377711.5	0.993	0.991	1.052	0.059	0.1	0.15	0.180	
100	11	75.91	6577925.6	24.00	2377711.5	0.942	0.939	1.052	0.11	0.11	0.22	0.246	
101	11	75.91	6577725.6	26.00	2377711.5	1.029	1.028	1.052	0.023	N/A	N/A	N/A	
102	11	75.91	6577525.6	28.00	2377711.5	1.089	1.093	N/A	N/A	N/A	N/A	N/A	
103	11	75.91	6577325.6	30.00	2377711.5	1.094	1.081	N/A	N/A	N/A	N/A	N/A	
104	11	75.91	6577125.6	32.00	2377711.5	1.119	1.106	N/A	N/A	N/A	N/A	N/A	
105	11	75.91	6576925.6	34.00	2377711.5	1.100	1.091	N/A	N/A	N/A	N/A	N/A	
106	11	75.91	6576725.6	36.00	2377711.5	1.150	1.138	N/A	N/A	N/A	N/A	N/A	
107	11	75.91	6576525.6	38.00	2377711.5	1.119	1.103	N/A	N/A	N/A	N/A	N/A	
108	11	75.91	6576325.6	40.00	2377711.5	1.180	1.162	N/A	N/A	N/A	N/A	N/A	
109	11	75.91	6576125.6	42.00	2377711.5	1.163	1.163	N/A	N/A	N/A	N/A	N/A	
110	10	78.91	6577925.6	24.00	2377411.5	0.889	0.888	1.051	0.162	0.1	0.15	0.180	
111	10	78.91	6577725.6	26.00	2377411.5	0.938	0.923	1.050	0.112	0.1	0.09	0.135	
112	10	78.91	6577525.6	28.00	2377411.5	1.100	1.100	N/A	N/A	N/A	N/A	N/A	
113	10	78.91	6577325.6	30.00	2377411.5	1.118	1.118	N/A	N/A	N/A	N/A	N/A	
114	10	78.91	6577125.6	32.00	2377411.5	1.119	1.112	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.138	1.129	N/A	N/A	N/A	N/A	N/A	
116	10	78.91	6576725.6	36.00	2377411.5	1.120	1.111	N/A	N/A	N/A	N/A	N/A	
117	10	78.91	6576525.6	38.00	2377411.5	1.118	1.111	N/A	N/A	N/A	N/A	N/A	
118	10	78.91	6576325.6	40.00	2377411.5	1.118	1.118	N/A	N/A	N/A	N/A	N/A	
119	10	78.91	6576125.6	42.00	2377411.5	1.104	1.104	N/A	N/A	N/A	N/A	N/A	
120	9	80.66	6577725.6	26.00	2377236.5	0.932	0.924	1.052	0.12	0.1	0.16	0.189	
121	9	80.66	6577525.6	28.00	2377236.5	1.063	1.062	N/A	N/A	N/A	N/A	N/A	
122	9	80.66	6577325.6	30.00	2377236.5	1.093	1.093	N/A	N/A	N/A	N/A	N/A	
123	9	80.66	6577125.6	32.00	2377236.5	1.112	1.105	N/A	N/A	N/A	N/A	N/A	
124	9	80.66	6576925.6	34.00	2377236.5	1.126	1.115	N/A	N/A	N/A	N/A	N/A	
125	9	80.66	6576725.6	36.00	2377236.5	1.107	1.087	N/A	N/A	N/A	N/A	N/A	
126	9	80.66	6576525.6	38.00	2377236.5	1.117	1.096	N/A	N/A	N/A	N/A	N/A	
127	9	80.66	6576325.6	40.00	2377236.5	1.082	1.063	N/A	N/A	N/A	N/A	N/A	
128	9	80.66	6576125.6	42.00	2377236.5	1.132	1.118	N/A	N/A	N/A	N/A	N/A	
129	8	82.41	6578125.6	22.00	2377061.5	1.189	1.189	N/A	N/A	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.979	0.971	1.057	0.078	0.13	0.04	0.136	
131	8	82.41	6577725.6	26.00	2377061.5	0.911	0.912	1.057	0.146	0.18	0.15	0.234	
132	8	82.41	6577525.6	28.00	2377061.5	1.039	1.040	1.058	0.019	N/A	N/A	N/A	
133	8	82.41	6577325.6	30.00	2377061.5	1.109	1.111	N/A	N/A	N/A	N/A	N/A	
134	8	82.41	6577125.6	32.00	2377061.5	1.194	1.133	N/A	N/A	N/A	N/A	N/A	
135	8	82.41	6576925.6	34.00	2377061.5	1.130	1.123	N/A	N/A	N/A	N/A	N/A	
136	8	82.41	6576725.6	36.00	2377061.5	1.112	1.106	N/A	N/A	N/A	N/A	N/A	
137	8	82.41	6576525.6	38.00	2377061.5	1.121	1.112	N/A	N/A	N/A	N/A	N/A	
138	8	82.41	6576325.6	40.00	2377061.5	1.119	1.116	N/A	N/A	N/A	N/A	N/A	
139	8	82.41	6576125.6	42.00	2377061.5	1.121	1.114	N/A	N/A	N/A	N/A	N/A	
140	7	84.16	6578025.6	23.00	2376886.5	1.189	0.987	N/A	N/A	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	0.992	0.999	1.058	0.066	N/A	N/A	N/A	
142	7	84.16	6577725.6	26.00	2376886.5	1.008	0.970	1.054	0.046	N/A	N/A	N/A	
143	7	84.16	6577525.6	28.00	2376886.5	0.973	1.093	1.057	N/A	0.15	0.2	0.250	
144	7	84.16	6577325.6	30.00	2376886.5	1.087	1.119	N/A	N/A	N/A	N/A	N/A	
145	7	84.16	6577125.6	32.00	2376886.5	1.123	1.082	N/A	N/A	N/A	N/A	N/A	
146	7	84.16	6576925.6	34.00	2376886.5	1.091	1.092	N/A	N/A	N/A	N/A	N/A	
147	7	84.16	6576725.6	36.00	2376886.5	1.095	1.098	N/A	N/A	N/A	N/A	N/A	
148	7	84.16	6576525.6	38.00	2376886.5	1.094	1.094	N/A	N/A	N/A	N/A	N/A	
149	7	84.16	6576325.6	40.00	2376886.5	1.119	1.116	N/A	N/A	N/A	N/A	N/A	
150	7	84.16	6576125.6	42.00	2376886.5	1.112	1.010	N/A	N/A	N/A	N/A	N/A	
151	6	86.66	6577925.6	24.00	2376636.5	1.191	1.191	N/A	N/A	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.993	0.999	1.056	0.063	0.15	0.04	0.155	
153	6	86.66	6577525.6	28.00	2376636.5	0.997	0.982	1.058	0.061	0.2	0.1	0.224	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
154	6	86.66	6577325.6	30.00	2376636.5	1.037	1.038	1.055	0.018	N/A	N/A	N/A	
155	6	86.66	6577125.6	32.00	2376636.5	1.112	1.110	N/A	N/A	N/A	N/A	N/A	
156	6	86.66	6576925.6	34.00	2376636.5	1.116	1.194	N/A	N/A	N/A	N/A	N/A	
157	6	86.66	6576725.6	36.00	2376636.5	1.122	1.115	N/A	N/A	N/A	N/A	N/A	
158	6	86.66	6576525.6	38.00	2376636.5	1.105	1.103	N/A	N/A	N/A	N/A	N/A	
159	6	86.66	6576325.6	40.00	2376636.5	1.094	1.089	N/A	N/A	N/A	N/A	N/A	
160	6	86.66	6576125.6	42.00	2376636.5	1.119	1.108	N/A	N/A	N/A	N/A	N/A	
161	5	89.16	6577725.6	26.00	2376386.5	1.187	0.972	N/A	N/A	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.979	1.012	1.077	0.098	0.2	0.1	0.224	
163	5	89.16	6577325.6	30.00	2376386.5	1.009	1.054	1.054	N/A	0.2	0.08	0.215	
164	5	89.16	6577125.6	32.00	2376386.5	1.057	1.053	N/A	N/A	N/A	N/A	N/A	
165	5	89.16	6576925.6	34.00	2376386.5	1.118	1.109	N/A	N/A	N/A	N/A	N/A	
166	5	89.16	6576725.6	36.00	2376386.5	1.082	1.076	N/A	N/A	N/A	N/A	N/A	
167	5	89.16	6576525.6	38.00	2376386.5	1.100	1.170	N/A	N/A	N/A	N/A	N/A	
168	5	89.16	6576325.6	40.00	2376386.5	1.095	1.072	N/A	N/A	N/A	N/A	N/A	
169	5	89.16	6576125.6	42.00	2376386.5	1.109	1.096	N/A	N/A	N/A	N/A	N/A	
170	4	91.16	6577625.6	27.00	2376186.5	1.143	1.143	N/A	N/A	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.162	1.162	N/A	N/A	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.990	0.974	1.052	0.062	0.45	0.15	0.474	
173	4	91.16	6577125.6	32.00	2376186.5	0.980	0.985	1.046	0.066	0.35	0.12	0.370	
174	4	91.16	6576925.6	34.00	2376186.5	1.028	1.994	1.038	N/A	0.3	0.2	0.361	
175	4	91.16	6576725.6	36.00	2376186.5	1.087	1.083	N/A	N/A	N/A	N/A	N/A	
176	4	91.16	6576525.6	38.00	2376186.5	1.099	1.095	N/A	N/A	N/A	N/A	N/A	
177	4	91.16	6576325.6	40.00	2376186.5	1.126	1.110	N/A	N/A	N/A	N/A	N/A	
178	4	91.16	6576125.6	42.00	2376186.5	1.192	1.170	N/A	N/A	N/A	N/A	N/A	
179	3	93.16	6577425.6	29.00	2375986.5	1.191	1.191	N/A	N/A	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.227	1.160	N/A	N/A	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.966	0.972	1.048	0.082	N/A	N/A	N/A	
182	3	93.36	6576925.6	34.00	2375966.5	0.962	0.968	1.037	0.075	0.5	0.2	0.539	
183	3	93.36	6576725.6	36.00	2375966.5	0.990	0.985	1.025	0.035	N/A	N/A	N/A	
184	3	93.36	6576525.6	38.00	2375966.5	0.991	0.996	1.027	0.036	N/A	N/A	N/A	
185	3	93.36	6576325.6	40.00	2375966.5	1.012	1.020	1.019	N/A	N/A	N/A	N/A	
186	3	93.36	6576125.6	42.00	2375966.5	0.999	1.014	1.014	N/A	N/A	N/A	N/A	
187	2	95.36	6577225.6	31.00	2375766.5	1.155	1.155	N/A	N/A	N/A	N/A	N/A	
188	2	95.36	6577125.6	32.00	2375766.5	1.168	1.168	N/A	N/A	N/A	N/A	N/A	
189	2	95.36	6576925.6	34.00	2375766.5	1.192	1.192	N/A	N/A	N/A	N/A	N/A	
190	2	95.36	6576725.6	36.00	2375766.5	0.971	0.969	N/A	N/A	N/A	N/A	N/A	
191	2	95.36	6576525.6	38.00	2375766.5	0.939	0.940	1.026	0.087	0.3	0.1	0.316	
192	2	95.36	6576325.6	40.00	2375766.5	0.934	0.924	1.019	0.085	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
193	2	95.36	6576125.6	42.00	2375766.5	0.958	0.921	1.019	0.061	N/A	N/A	N/A	
194	1	97.36	6577125.6	32.00	2375566.5	1.113	1.113	N/A	N/A	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.148	1.148	N/A	N/A	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.158	1.158	N/A	N/A	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.232	1.201	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.018	1.000	1.024	0.006	N/A	N/A	N/A	
200	0	99.36	6576725.6	36.00	2375366.5	1.189	1.189	N/A	N/A	N/A	N/A	N/A	
201	0	99.36	6576525.6	38.00	2375366.5	1.075	1.075	N/A	N/A	N/A	N/A	N/A	
202	0	99.36	6576325.6	40.00	2375366.5	1.061	1.061	N/A	N/A	N/A	N/A	N/A	
203	0	99.36	6576125.6	42.00	2375366.5	1.067	1.067	N/A	N/A	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.952	0.948	N/A	0.1	N/A	N/A	N/A	
205	Current	59.30	6578231.6	20.94	2379372.2	1.181	1.181	N/A	N/A	N/A	N/A	N/A	concrete
206	Current	59.30	6578089.6	22.36	2379372.2	0.929	0.933	N/A	0.123	0.1	0.23	0.251	
207	Current	59.51	6578160.6	21.65	2379351.5	0.940	0.950	N/A	0.112	N/A	N/A	N/A	concrete
208	Current	60.01	6578260.6	20.65	2379301.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.125	1.125	N/A	N/A	N/A	N/A	N/A	concrete
210	Current	60.01	6578160.6	21.65	2379301.5	0.942	0.946	N/A	0.108	N/A	N/A	N/A	concrete
211	Current	60.01	6578110.6	22.15	2379301.5	0.920	0.921	N/A	0.127	0.23	N/A	0.230	
212	Current	60.01	6578060.6	22.65	2379301.5	0.924	0.921	N/A	0.123	N/A	N/A	N/A	
213	Current	60.51	6578160.6	21.65	2379251.5	0.958	0.962	N/A	0.086	N/A	N/A	N/A	concrete
214	Current	60.72	6578231.6	20.94	2379230.5	1.218	1.218	N/A	N/A	N/A	N/A	N/A	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.917	0.915	N/A	0.13	N/A	N/A	N/A	
216	Current	61.01	6578160.6	21.65	2379201.5	0.971	0.973	N/A	0.076	N/A	N/A	N/A	concrete
217	Alt 1	77.04	6578026.6	22.99	2377598.5	0.942	0.940	N/A	0.111	0.1	0.21	0.233	
218	Alt 1	77.33	6578097.6	22.28	2377569.5	1.004	1.004	N/A	0.048	N/A	N/A	N/A	concrete
219	Alt 1	77.33	6577955.6	23.70	2377569.5	0.922	0.924	N/A	0.13	0.52	0.22	0.565	
220	Alt 1	77.54	6578026.6	22.99	2377548.5	0.935	0.931	N/A	0.118	0.58	0.21	0.617	
221	Alt 1	78.04	6578126.6	21.99	2377498.5	1.195	1.195	N/A	N/A	N/A	N/A	N/A	concrete
222	Alt 1	78.04	6578076.6	22.49	2377498.5	1.073	1.073	N/A	N/A	N/A	N/A	N/A	concrete
223	Alt 1	78.04	6578026.6	22.99	2377498.5	0.930	0.930	N/A	0.123	N/A	N/A	N/A	
224	Alt 1	78.04	6577976.6	23.49	2377498.5	0.901	0.910	N/A	0.152	0.08	0.22	0.234	
225	Alt 1	78.04	6577926.6	23.99	2377498.5	0.902	0.896	N/A	0.151	N/A	N/A	N/A	
226	Alt 1	78.54	6578026.6	22.99	2377448.5	1.048	1.048	N/A	0.005	N/A	N/A	N/A	concrete
227	Alt 1	78.75	6578097.6	22.28	2377427.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	concrete
228	Alt 1	78.75	6577955.6	23.70	2377427.5	0.891	0.890	N/A	0.161	0.2	0.2	0.283	
229	Alt 1	79.04	6578026.6	22.99	2377398.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	concrete
230	Alt 2	92.09	6577250.6	30.75	2376093.5	0.963	0.968	N/A	0.082	0.3	0.2	0.361	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
231	Alt 2	92.38	6577321.6	30.04	2376064.5	0.971	0.972	N/A	0.076	N/A	N/A	N/A	
232	Alt 2	92.38	6577179.6	31.46	2376064.5	0.952	0.960	N/A	0.093	0.7	0.29	0.758	outlier, removed
233	Alt 2	92.59	6577250.6	30.75	2376043.5	0.962	0.968	N/A	0.084	0.28	0.27	0.389	
234	Alt 2	93.09	6577350.6	29.75	2375993.5	1.222	1.222	N/A	N/A	N/A	N/A	N/A	
235	Alt 2	93.09	6577300.6	30.25	2375993.5	1.050	1.012	N/A	0.003	N/A	N/A	N/A	
236	Alt 2	93.09	6577250.6	30.75	2375993.5	0.980	0.969	N/A	0.07	0.5	0.21	0.542	
237	Alt 2	93.09	6577200.6	31.25	2375993.5	0.972	0.972	N/A	0.075	0.3	0.22	0.372	
238	Alt 2	93.09	6577150.6	31.75	2375993.5	0.962	0.969	N/A	0.083	N/A	N/A	N/A	
239	Alt 2	93.59	6577250.6	30.75	2375943.5	1.137	1.117	N/A	N/A	N/A	N/A	N/A	
240	Alt 2	93.80	6577321.6	30.04	2375922.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	
241	Alt 2	93.80	6577179.6	31.46	2375922.5	1.067	1.022	N/A	N/A	N/A	N/A	N/A	
242	Alt 2	94.09	6577250.6	30.75	2375893.5	1.272	1.272	N/A	N/A	N/A	N/A	N/A	

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	9/29/2010 - 10/4/2010; 10/12/2010 - 10/16/2010		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Baseline	**Start Time:**	11:00 AM
Discharge:	90,000 cfs	**End Time:**	2:00 PM

Table F-2: Data measurements for 90,000-cfs Baseline configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.043	1.046	1.217	0.174	0.090	0.520	0.528	
2	23	32.91	6577525.6	28.00	2382011.5	1.052	1.055	1.217	0.165	N/A	0.590	0.606	
3	23	32.91	6577325.6	30.00	2382011.5	1.050	1.050	1.212	0.162	0.040	0.610	0.611	
4	23	32.91	6577125.6	32.00	2382011.5	1.008	1.022	1.205	0.197	0.120	0.420	0.437	
5	23	32.91	6576925.6	34.00	2382011.5	1.241	N/A	N/A	N/A	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.113	1.112	1.220	0.107	0.180	0.060	0.190	
8	22	37.91	6577925.6	24.00	2381511.5	1.118	1.127	1.209	0.091	0.080	0.040	0.089	
9	22	37.91	6577725.6	26.00	2381511.5	1.055	1.053	1.206	0.151	0.120	0.120	0.170	
10	22	37.91	6577525.6	28.00	2381511.5	1.021	1.019	1.209	0.188	0.030	0.520	0.521	
11	22	37.91	6577325.6	30.00	2381511.5	0.991	0.975	1.202	0.211	0.120	0.580	0.592	
12	22	37.91	6577225.6	31.00	2381511.5	0.959	0.955	1.200	0.241	N/A	0.490	0.495	
14	21	42.91	6577925.6	24.00	2381011.5	1.038	1.124	1.159	0.121	N/A	N/A	N/A	
15	21	42.91	6577725.6	26.00	2381011.5	1.034	1.023	1.190	0.156	N/A	0.410	0.422	
16	21	42.91	6577525.6	28.00	2381011.5	1.022	1.039	1.196	0.174	N/A	0.530	0.530	
17	21	42.91	6577325.6	30.00	2381011.5	1.000	0.982	1.196	0.196	N/A	0.560	0.573	
18	21	42.91	6577225.6	31.00	2381011.5	0.979	0.980	1.196	0.217	N/A	0.420	0.432	
19	20	45.91	6577925.6	24.00	2380711.5	1.132	1.136	1.200	0.068	N/A	N/A	N/A	
20	20	45.91	6577725.6	26.00	2380711.5	1.055	1.059	1.199	0.144	N/A	0.510	0.520	
21	20	45.91	6577525.6	28.00	2380711.5	1.009	1.009	1.206	0.197	0.010	0.420	0.420	
22	20	45.91	6577325.6	30.00	2380711.5	1.009	1.005	1.200	0.191	N/A	0.460	0.494	
23	20	45.91	6577125.6	32.00	2380711.5	0.980	0.983	1.195	0.215	0.020	0.080	0.082	
24	19	47.91	6577925.6	24.00	2380511.5	1.139	1.142	1.206	0.067	N/A	N/A	N/A	
25	19	47.91	6577725.6	26.00	2380511.5	1.041	1.023	1.206	0.165	N/A	0.490	0.537	
26	19	47.91	6577525.6	28.00	2380511.5	1.012	1.011	1.210	0.198	N/A	0.420	0.432	
27	19	47.91	6577325.6	30.00	2380511.5	1.022	1.013	1.209	0.187	N/A	0.410	0.410	
28	19	47.91	6577125.6	32.00	2380511.5	1.023	1.020	1.202	0.179	N/A	0.100	0.141	
32	18	49.91	6577925.6	24.00	2380311.5	1.108	1.112	1.202	0.094	N/A	0.280	0.448	
33	18	49.91	6577725.6	26.00	2380311.5	1.033	1.030	1.202	0.169	N/A	0.480	0.520	
34	18	49.91	6577525.6	28.00	2380311.5	1.018	1.010	1.208	0.190	N/A	0.450	0.488	
35	18	49.91	6577325.6	30.00	2380311.5	1.012	1.006	1.203	0.191	N/A	0.380	0.429	
36	18	49.91	6577125.6	32.00	2380311.5	0.998	0.970	1.198	0.200	0.050	0.030	0.058	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
37	17	51.91	6578275.6	20.50	2380111.5	1.047	1.072	1.191	0.144	0.100	0.100	0.141	
38	17	51.91	6578125.6	22.00	2380111.5	0.980	1.019	1.196	0.216	N/A	0.200	0.200	
39	17	51.91	6577925.6	24.00	2380111.5	1.069	1.074	1.195	0.126	N/A	0.400	0.447	
40	17	51.91	6577725.6	26.00	2380111.5	1.020	1.023	1.197	0.177	N/A	0.500	0.539	
41	17	51.91	6577525.6	28.00	2380111.5	0.999	0.995	1.200	0.201	N/A	0.450	0.461	
42	17	51.91	6577325.6	30.00	2380111.5	1.007	1.000	1.198	0.191	0.100	0.250	0.269	
43	16	56.91	6578125.6	22.00	2379611.5	0.995	0.994	1.208	0.213	N/A	0.290	0.314	
44	16	56.91	6577925.6	24.00	2379611.5	1.029	1.024	1.210	0.181	0.140	0.510	0.529	
45	16	56.91	6577725.6	26.00	2379611.5	1.039	1.028	1.205	0.166	0.210	0.520	0.561	
46	16	56.91	6577525.6	28.00	2379611.5	1.108	1.118	1.212	0.104	N/A	0.220	0.284	
47	16	56.91	6577325.6	30.00	2379611.5	1.223	1.210	N/A	N/A	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.248	1.244	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.204	1.204	N/A	N/A	N/A	N/A	N/A	
50	16	56.91	6576725.6	36.00	2379611.5	1.220	1.220	N/A	N/A	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.158	1.158	N/A	N/A	N/A	N/A	N/A	
52	16	56.91	6576325.6	40.00	2379611.5	1.161	1.161	N/A	N/A	N/A	N/A	N/A	
53	16	56.91	6576125.6	42.00	2379611.5	1.203	1.203	N/A	N/A	N/A	N/A	N/A	
54	15	61.91	6578125.6	22.00	2379111.5	0.922	0.923	1.200	0.278	0.020	0.330	0.331	
55	15	61.91	6577925.6	24.00	2379111.5	0.949	0.949	1.200	0.251	N/A	0.510	0.516	
56	15	61.91	6577725.6	26.00	2379111.5	1.170	1.076	1.201	0.031	0.080	0.520	0.526	WSL outlier; not used
57	15	61.91	6577525.6	28.00	2379111.5	1.163	1.164	1.211	0.048	N/A	N/A	N/A	
58	15	61.91	6577325.6	30.00	2379111.5	1.169	1.153	1.207	0.038	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.189	1.188	N/A	N/A	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.167	1.167	N/A	N/A	N/A	N/A	N/A	
63	15	61.91	6576325.6	40.00	2379111.5	1.165	1.165	N/A	N/A	N/A	N/A	N/A	
64	15	61.91	6576125.6	42.00	2379111.5	1.184	1.184	N/A	N/A	N/A	N/A	N/A	
65	14	66.91	6578025.6	23.00	2378611.5	0.891	0.880	1.220	0.329	N/A	0.520	0.656	
66	14	66.91	6577925.6	24.00	2378611.5	0.922	0.928	1.206	0.284	0.140	0.570	0.587	
67	14	66.91	6577725.6	26.00	2378611.5	1.053	1.057	1.206	0.153	N/A	0.340	0.405	
68	14	66.91	6577503.6	28.22	2378611.5	1.180	1.182	1.207	0.027	N/A	N/A	N/A	
69	14	66.91	6577325.6	30.00	2378611.5	1.189	1.185	1.203	0.014	N/A	N/A	N/A	
70	14	66.91	6577125.6	32.00	2378611.5	1.218	1.223	N/A	N/A	N/A	N/A	N/A	
71	14	66.91	6576925.6	34.00	2378611.5	1.219	1.219	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.199	1.199	N/A	N/A	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.212	1.212	N/A	N/A	N/A	N/A	N/A	
74	14	66.91	6576325.6	40.00	2378611.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
75	14	66.91	6576125.6	42.00	2378611.5	1.181	1.181	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
76	13	71.91	6578125.6	22.00	2378111.5	0.891	0.895	1.198	0.307	0.030	0.280	0.282	
77	13	71.91	6577925.6	24.00	2378111.5	0.940	0.937	1.198	0.258	0.110	0.540	0.551	
78	13	71.91	6577725.6	26.00	2378111.5	1.031	1.029	1.195	0.164	0.150	0.450	0.474	
79	13	71.91	6577525.6	28.00	2378111.5	1.112	1.117	1.202	0.090	N/A	N/A	N/A	
80	13	71.91	6577325.6	30.00	2378111.5	1.163	1.151	1.199	0.036	N/A	N/A	N/A	
81	13	71.91	6577125.6	32.00	2378111.5	1.147	1.136	1.195	0.048	0.230	0.060	0.238	
82	13	71.91	6576925.6	34.00	2378111.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	
83	13	71.91	6576725.6	36.00	2378111.5	1.217	1.217	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.152	1.152	N/A	N/A	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.190	1.190	N/A	N/A	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	0.992	0.970	N/A	N/A	N/A	N/A	N/A	
88	12	73.91	6578125.6	22.00	2377911.5	0.943	0.939	1.189	0.246	N/A	0.330	0.340	
89	12	73.91	6577925.6	24.00	2377911.5	0.948	0.950	1.199	0.251	0.070	0.500	0.505	WSL outlier; not used
90	12	73.91	6577725.6	26.00	2377911.5	1.029	1.030	1.191	0.162	0.110	0.480	0.492	WSL outlier; not used
91	12	73.91	6577525.6	28.00	2377911.5	1.089	1.090	1.185	0.096	0.060	0.130	0.143	
92	12	73.91	6577325.6	30.00	2377911.5	1.131	1.129	1.204	0.073	0.070	0.080	0.106	
93	12	73.91	6577125.6	32.00	2377911.5	1.152	1.134	1.200	0.048	N/A	N/A	N/A	
94	12	73.91	6576925.6	34.00	2377911.5	1.171	1.156	1.193	0.022	N/A	N/A	N/A	
95	12	73.91	6576725.6	36.00	2377911.5	1.187	1.190	N/A	N/A	N/A	N/A	N/A	
96	12	73.91	6576525.6	38.00	2377911.5	1.167	1.168	N/A	N/A	N/A	N/A	N/A	
97	12	73.91	6576325.6	40.00	2377911.5	1.183	1.183	N/A	N/A	N/A	N/A	N/A	
98	12	73.91	6576125.6	42.00	2377911.5	1.198	1.199	N/A	N/A	N/A	N/A	N/A	
99	11	75.91	6578125.6	22.00	2377711.5	0.993	0.991	1.190	0.197	0.080	0.170	0.188	
100	11	75.91	6577925.6	24.00	2377711.5	0.942	0.939	1.199	0.257	0.070	0.520	0.525	
101	11	75.91	6577725.6	26.00	2377711.5	1.029	1.028	1.190	0.161	0.210	0.500	0.542	
102	11	75.91	6577525.6	28.00	2377711.5	1.089	1.093	1.189	0.100	0.140	0.320	0.349	
103	11	75.91	6577325.6	30.00	2377711.5	1.094	1.081	1.200	0.106	0.110	0.020	0.112	
104	11	75.91	6577125.6	32.00	2377711.5	1.119	1.106	1.195	0.076	0.03	0.08	0.085	
105	11	75.91	6576925.6	34.00	2377711.5	1.100	1.091	1.188	0.088	0.08	0.1	0.128	
106	11	75.91	6576725.6	36.00	2377711.5	1.150	1.138	1.187	0.037	N/A	N/A	N/A	
107	11	75.91	6576525.6	38.00	2377711.5	1.119	1.103	1.184	0.065	N/A	N/A	N/A	
108	11	75.91	6576325.6	40.00	2377711.5	1.180	1.162	N/A	N/A	N/A	N/A	N/A	
109	11	75.91	6576125.6	42.00	2377711.5	1.163	1.163	N/A	N/A	N/A	N/A	N/A	
110	10	78.91	6577925.6	24.00	2377411.5	0.889	0.888	1.195	0.306	0.180	0.390	0.430	
111	10	78.91	6577725.6	26.00	2377411.5	0.900	0.923	1.199	0.299	0.110	0.350	0.367	WSL outlier; not used
112	10	78.91	6577525.6	28.00	2377411.5	1.100	1.100	1.198	0.098	0.130	0.300	0.327	
113	10	78.91	6577325.6	30.00	2377411.5	1.118	1.118	1.199	0.081	0.180	0.210	0.277	
114	10	78.91	6577125.6	32.00	2377411.5	1.119	1.112	1.189	0.070	0.120	0.090	0.150	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.138	1.129	1.181	0.043	0.500	0.100	0.510	
116	10	78.91	6576725.6	36.00	2377411.5	1.120	1.111	1.179	0.059	0.110	0.020	0.112	WSL outlier; not used
117	10	78.91	6576525.6	38.00	2377411.5	1.118	1.111	1.174	0.056	0.150	0.050	0.158	
118	10	78.91	6576325.6	40.00	2377411.5	1.118	1.118	1.180	0.062	0.100	0.050	0.112	
119	10	78.91	6576125.6	42.00	2377411.5	1.104	1.104	1.170	0.066	0.050	0.050	0.071	
120	9	80.66	6577725.6	26.00	2377236.5	0.882	0.924	1.202	0.320	0.110	0.490	0.502	
121	9	80.66	6577525.6	28.00	2377236.5	1.018	1.062	1.205	0.187	N/A	N/A	N/A	
122	9	80.66	6577325.6	30.00	2377236.5	1.093	1.093	1.200	0.107	0.150	0.210	0.258	
123	9	80.66	6577125.6	32.00	2377236.5	1.112	1.105	1.190	0.078	0.080	0.180	0.197	
124	9	80.66	6576925.6	34.00	2377236.5	1.126	1.115	1.182	0.056	0.200	0.100	0.224	
125	9	80.66	6576725.6	36.00	2377236.5	1.107	1.087	1.171	0.064	N/A	N/A	N/A	
126	9	80.66	6576525.6	38.00	2377236.5	1.117	1.096	1.171	0.054	0.150	0.080	0.170	
127	9	80.66	6576325.6	40.00	2377236.5	1.082	1.063	1.170	0.088	0.050	0.100	0.112	
128	9	80.66	6576125.6	42.00	2377236.5	1.132	1.118	1.170	0.038	0.050	0.080	0.094	
129	8	82.41	6578125.6	22.00	2377061.5	1.189	1.189	N/A	N/A	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.979	0.971	1.210	0.231	0.090	N/A	0.090	
131	8	82.41	6577725.6	26.00	2377061.5	0.908	0.912	1.209	0.301	0.100	0.500	0.510	
132	8	82.41	6577525.6	28.00	2377061.5	1.039	1.040	1.210	0.171	0.100	0.480	0.490	
133	8	82.41	6577325.6	30.00	2377061.5	1.109	1.111	1.207	0.098	0.100	0.300	0.316	
134	8	82.41	6577125.6	32.00	2377061.5	1.194	1.133	1.198	0.004	N/A	N/A	N/A	WSL outlier; not used
135	8	82.41	6576925.6	34.00	2377061.5	1.130	1.123	1.193	0.063	N/A	0.150	0.180	
136	8	82.41	6576725.6	36.00	2377061.5	1.112	1.106	1.189	0.077	N/A	N/A	N/A	
137	8	82.41	6576525.6	38.00	2377061.5	1.121	1.112	1.188	0.067	N/A	N/A	N/A	
138	8	82.41	6576325.6	40.00	2377061.5	1.119	1.116	1.184	0.065	N/A	N/A	N/A	
139	8	82.41	6576125.6	42.00	2377061.5	1.121	1.114	1.187	0.066	N/A	N/A	N/A	
140	7	84.16	6578025.6	23.00	2376886.5	1.189	0.987	N/A	N/A	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	0.992	0.999	1.211	0.219	N/A	N/A	N/A	
142	7	84.16	6577725.6	26.00	2376886.5	1.008	0.970	1.208	0.200	N/A	0.520	0.520	
143	7	84.16	6577525.6	28.00	2376886.5	0.973	1.093	1.210	0.237	0.100	0.430	0.441	
144	7	84.16	6577325.6	30.00	2376886.5	1.087	1.119	1.207	0.120	0.300	0.330	0.446	
145	7	84.16	6577125.6	32.00	2376886.5	1.123	1.082	1.198	0.075	0.450	0.190	0.488	
146	7	84.16	6576925.6	34.00	2376886.5	1.091	1.092	1.192	0.101	0.100	0.120	0.156	
147	7	84.16	6576725.6	36.00	2376886.5	1.095	1.098	1.187	0.092	0.120	0.100	0.156	
148	7	84.16	6576525.6	38.00	2376886.5	1.094	1.094	1.184	0.090	N/A	N/A	N/A	
149	7	84.16	6576325.6	40.00	2376886.5	1.119	1.116	1.180	0.061	N/A	N/A	N/A	
150	7	84.16	6576125.6	42.00	2376886.5	1.112	1.010	1.180	0.068	N/A	N/A	N/A	
151	6	86.66	6577925.6	24.00	2376636.5	1.191	1.191	N/A	N/A	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.993	0.999	1.209	0.216	N/A	0.190	0.196	
153	6	86.66	6577525.6	28.00	2376636.5	0.997	0.982	1.212	0.215	0.100	0.450	0.461	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
154	6	86.66	6577325.6	30.00	2376636.5	1.037	1.038	1.208	0.171	0.150	0.400	0.427	
155	6	86.66	6577125.6	32.00	2376636.5	1.112	1.110	1.200	0.088	0.100	0.200	0.224	
156	6	86.66	6576925.6	34.00	2376636.5	1.116	1.194	1.193	N/A	0.400	0.180	0.439	
157	6	86.66	6576725.6	36.00	2376636.5	1.122	1.115	1.190	0.068	N/A	N/A	N/A	
158	6	86.66	6576525.6	38.00	2376636.5	1.105	1.103	1.187	0.082	N/A	N/A	N/A	
159	6	86.66	6576325.6	40.00	2376636.5	1.094	1.089	1.174	0.080	N/A	N/A	N/A	
160	6	86.66	6576125.6	42.00	2376636.5	1.119	1.108	1.172	0.053	N/A	N/A	N/A	
161	5	89.16	6577725.6	26.00	2376386.5	1.187	0.972	N/A	N/A	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.979	1.012	1.216	0.237	0.050	0.380	0.383	
163	5	89.16	6577325.6	30.00	2376386.5	1.009	1.054	1.212	0.203	0.050	0.390	0.393	
164	5	89.16	6577125.6	32.00	2376386.5	1.057	1.053	1.206	0.149	0.210	0.340	0.400	
165	5	89.16	6576925.6	34.00	2376386.5	1.118	1.109	1.199	0.081	0.300	0.260	0.397	
166	5	89.16	6576725.6	36.00	2376386.5	1.082	1.076	1.198	0.116	0.250	0.190	0.314	
167	5	89.16	6576525.6	38.00	2376386.5	1.100	1.170	1.197	0.097	0.250	0.080	0.262	
168	5	89.16	6576325.6	40.00	2376386.5	1.095	1.072	1.192	0.097	0.300	0.010	0.300	
169	5	89.16	6576125.6	42.00	2376386.5	1.109	1.096	1.192	0.083	0.360	0.190	0.407	
170	4	91.16	6577625.6	27.00	2376186.5	1.143	1.143	N/A	N/A	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.162	1.162	N/A	N/A	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.990	0.974	1.210	0.220	0.150	0.300	0.335	
173	4	91.16	6577125.6	32.00	2376186.5	0.980	0.985	1.204	0.224	0.150	0.290	0.326	
174	4	91.16	6576925.6	34.00	2376186.5	1.028	0.994	1.197	0.169	0.100	0.280	0.297	
175	4	91.16	6576725.6	36.00	2376186.5	1.087	1.083	1.196	0.109	N/A	N/A	N/A	
176	4	91.16	6576525.6	38.00	2376186.5	1.099	1.095	1.195	0.096	N/A	N/A	N/A	
177	4	91.16	6576325.6	40.00	2376186.5	1.126	1.110	1.194	0.068	N/A	N/A	N/A	
178	4	91.16	6576125.6	42.00	2376186.5	1.192	1.170	N/A	N/A	N/A	N/A	N/A	
179	3	93.36	6577425.6	29.00	2375966.5	1.191	1.191	N/A	N/A	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.227	1.160	N/A	N/A	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.966	0.972	1.208	0.242	0.400	0.150	0.427	
182	3	93.36	6576925.6	34.00	2375966.5	0.962	0.968	1.202	0.240	0.300	0.220	0.372	
183	3	93.36	6576725.6	36.00	2375966.5	0.990	0.985	1.199	0.209	0.350	0.210	0.408	
184	3	93.36	6576525.6	38.00	2375966.5	0.991	0.996	1.199	0.208	0.100	0.120	0.156	
185	3	93.36	6576325.6	40.00	2375966.5	1.012	1.020	1.197	0.185	0.200	0.100	0.224	
186	3	93.36	6576125.6	42.00	2375966.5	0.999	1.014	1.200	0.201	N/A	N/A	N/A	
187	2	95.36	6577225.6	31.00	2375766.5	1.155	1.155	N/A	N/A	N/A	N/A	N/A	
188	2	95.36	6577125.6	32.00	2375766.5	1.168	1.168	N/A	N/A	N/A	N/A	N/A	
189	2	95.36	6576925.6	34.00	2375766.5	1.192	1.192	N/A	N/A	N/A	N/A	N/A	
190	2	95.36	6576725.6	36.00	2375766.5	0.971	0.969	1.202	0.231	0.220	0.200	0.297	
191	2	95.36	6576525.6	38.00	2375766.5	0.939	0.940	1.200	0.261	0.300	0.150	0.335	
192	2	95.36	6576325.6	40.00	2375766.5	0.934	0.924	1.201	0.267	0.210	0.080	0.225	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
193	2	95.36	6576125.6	42.00	2375766.5	0.958	0.921	1.205	0.247	0.220	0.080	0.234	
194	1	97.36	6577125.6	32.00	2375566.5	1.113	1.113	N/A	N/A	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.148	N/A	N/A	N/A	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.158	1.158	N/A	N/A	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.232	1.201	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.018	1.000	1.214	0.196	0.100	0.100	0.141	
Additional data-collection points at the current pump-intake location and alternative pump locations													
200	Current	59.01	6578160.6	21.65	2379401.5	0.952	0.948	1.203	0.251	0.130	0.290	0.318	
201	Current	59.30	6578231.6	20.94	2379372.2	1.181	1.181	1.203	0.022	N/A	N/A	N/A	concrete
202	Current	59.30	6578089.6	22.36	2379372.2	0.929	0.933	1.206	0.277	0.070	0.300	0.308	
203	Current	59.51	6578160.6	21.65	2379351.5	0.940	0.950	1.203	0.263	0.180	0.290	0.341	concrete
204	Current	60.01	6578260.6	20.65	2379301.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	concrete
205	Current	60.01	6578210.6	21.15	2379301.5	1.125	1.125	1.196	0.071	N/A	N/A	N/A	concrete
206	Current	60.01	6578160.6	21.65	2379301.5	0.942	0.946	1.198	0.256	N/A	N/A	N/A	concrete
207	Current	60.01	6578110.6	22.15	2379301.5	0.920	0.921	1.200	0.280	N/A	0.320	0.512	
208	Current	60.01	6578060.6	22.65	2379301.5	0.924	0.921	1.200	0.276	0.130	0.410	0.430	
209	Current	60.51	6578160.6	21.65	2379251.5	0.958	0.962	1.198	0.240	0.120	0.430	0.446	concrete
210	Current	60.72	6578231.6	20.94	2379230.5	1.218	1.218	N/A	N/A	N/A	N/A	N/A	concrete
211	Current	60.72	6578089.6	22.36	2379230.5	0.917	0.915	1.197	0.280	0.060	0.330	0.335	
212	Current	61.01	6578160.6	21.65	2379201.5	0.971	0.973	1.200	0.229	N/A	N/A	N/A	concrete
213	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.942	0.940	1.209	0.267	0.150	0.390	0.418	
214	Alt. 1	77.33	6578097.6	22.28	2377569.5	1.004	1.004	1.209	0.205	N/A	N/A	N/A	concrete
215	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.922	0.924	1.209	0.287	0.120	0.390	0.408	
216	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.935	0.931	1.209	0.274	0.170	0.320	0.362	
217	Alt. 1	78.04	6578126.6	21.99	2377498.5	1.195	1.195	1.208	0.013	N/A	N/A	N/A	concrete
218	Alt. 1	78.04	6578076.6	22.49	2377498.5	1.073	1.073	1.208	0.135	0.120	0.170	0.208	concrete
219	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.930	0.930	1.210	0.280	0.210	0.240	0.319	
220	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.901	0.910	1.209	0.308	0.140	0.400	0.424	
221	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.902	0.896	1.208	0.306	0.210	0.400	0.452	
222	Alt. 1	78.54	6578026.6	22.99	2377448.5	1.048	1.048	1.204	0.156	N/A	N/A	N/A	concrete
223	Alt. 1	78.75	6578097.6	22.28	2377427.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	concrete
224	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.891	0.890	1.205	0.314	0.130	0.340	0.364	
225	Alt. 1	79.04	6578026.6	22.99	2377398.5	1.200	1.200	1.206	0.006	N/A	N/A	N/A	concrete
226	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.963	0.968	1.212	0.249	0.280	0.230	0.362	
227	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.971	0.972	1.214	0.243	0.090	0.180	0.201	
228	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.952	0.960	1.210	0.258	0.240	0.190	0.306	
229	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.962	0.968	1.213	0.251	0.120	0.300	0.323	
230	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.222	1.222	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
231	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.050	1.012	1.214	0.164	N/A	N/A	N/A	
232	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.980	0.969	1.214	0.234	0.120	0.120	0.170	
233	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.972	0.972	1.213	0.241	0.070	0.110	0.130	
234	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.962	0.969	1.210	0.248	0.120	0.180	0.216	
235	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.137	1.117	1.218	0.081	N/A	N/A	N/A	
236	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	
237	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.067	1.022	1.213	0.146	0.150	0.110	0.186	
238	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.272	1.272	N/A	N/A	N/A	N/A	N/A	

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	10/28/2010		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Baseline	**Start Time:**	8:30 AM
Discharge:	145,000 cfs	**End Time:**	4:00 PM

Table F-3: Data measurements for 145,000-cfs Baseline configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.022	N/A	1.285	0.263	-0.100	0.530	0.539	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.047	N/A	1.286	0.239	0.050	0.520	0.522	
3	23	32.91	6577325.6	30.00	2382011.5	1.040	N/A	1.283	0.243	-0.050	0.550	0.552	
4	23	32.91	6577125.6	32.00	2382011.5	1.021	N/A	1.280	0.259	-0.100	0.520	0.530	
5	23	32.91	6576925.6	34.00	2382011.5	1.241	N/A	1.265	0.024	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.121	N/A	1.274	0.153	-0.200	N/A	0.200	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.127	N/A	1.272	0.145	0.100	0.120	0.156	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.060	N/A	1.269	0.209	-0.100	0.490	0.500	
10	22	37.91	6577525.6	28.00	2381511.5	1.023	N/A	1.271	0.248	0.050	0.680	0.682	
11	22	37.91	6577325.6	30.00	2381511.5	1.010	N/A	1.268	0.258	-0.050	0.550	0.552	
12	22	37.91	6577225.6	31.00	2381511.5	0.978	N/A	1.263	0.285	-0.100	0.600	0.608	
14	21	42.91	6577925.6	24.00	2381011.5	1.132	N/A	1.261	0.129	-0.100	0.420	0.432	
15	21	42.91	6577725.6	26.00	2381011.5	1.030	N/A	1.260	0.230	-0.050	0.600	0.602	
16	21	42.91	6577525.6	28.00	2381011.5	1.048	N/A	1.262	0.214	0.050	0.610	0.612	
17	21	42.91	6577325.6	30.00	2381011.5	0.988	N/A	1.261	0.273	0.050	0.700	0.702	
18	21	42.91	6577225.6	31.00	2381011.5	0.985	N/A	1.258	0.273	0.100	0.680	0.687	
19	20	45.91	6577925.6	24.00	2380711.5	1.131	N/A	1.268	0.137	-0.050	0.500	0.502	
20	20	45.91	6577725.6	26.00	2380711.5	1.071	N/A	1.265	0.194	0.050	0.600	0.602	
21	20	45.91	6577525.6	28.00	2380711.5	1.015	N/A	1.270	0.255	0.050	0.520	0.522	
22	20	45.91	6577325.6	30.00	2380711.5	1.012	N/A	1.267	0.255	0.050	0.600	0.602	
23	20	45.91	6577125.6	32.00	2380711.5	0.990	N/A	1.262	0.272	0.020	0.650	0.650	
24	19	47.91	6577925.6	24.00	2380511.5	1.139	N/A	1.268	0.129	0.050	0.550	0.552	
25	19	47.91	6577725.6	26.00	2380511.5	1.031	N/A	1.268	0.237	-0.100	0.580	0.589	
26	19	47.91	6577525.6	28.00	2380511.5	1.014	N/A	1.272	0.258	0.100	0.500	0.510	
27	19	47.91	6577325.6	30.00	2380511.5	1.022	N/A	1.270	0.248	-0.100	0.550	0.559	
28	19	47.91	6577125.6	32.00	2380511.5	1.030	N/A	1.265	0.235	0.050	0.550	0.552	
32	18	49.91	6577925.6	24.00	2380311.5	1.114	N/A	1.264	0.150	-0.050	0.320	0.324	tree
33	18	49.91	6577725.6	26.00	2380311.5	1.035	N/A	1.268	0.233	-0.100	0.550	0.559	
34	18	49.91	6577525.6	28.00	2380311.5	1.019	N/A	1.267	0.248	-0.050	0.520	0.522	
35	18	49.91	6577325.6	30.00	2380311.5	1.006	N/A	1.270	0.264	-0.050	0.480	0.483	
36	18	49.91	6577125.6	32.00	2380311.5	1.006	N/A	1.265	0.259	N/A	0.450	0.450	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
37	17	51.91	6578275.6	20.50	2380111.5	1.054	N/A	1.255	0.201	0.050	0.450	0.453	
38	17	51.91	6578125.6	22.00	2380111.5	0.987	N/A	1.260	0.273	0.050	0.390	0.393	
39	17	51.91	6577925.6	24.00	2380111.5	1.078	N/A	1.261	0.183	-0.050	0.590	0.592	
40	17	51.91	6577725.6	26.00	2380111.5	1.026	N/A	1.260	0.234	-0.100	0.550	0.559	
41	17	51.91	6577525.6	28.00	2380111.5	1.006	N/A	1.263	0.257	-0.200	0.510	0.548	
42	17	51.91	6577325.6	30.00	2380111.5	0.992	N/A	1.262	0.270	-0.150	0.500	0.522	
43	16	56.91	6578125.6	22.00	2379611.5	0.999		1.266	0.267	-0.050	0.610	0.612	
44	16	56.91	6577925.6	24.00	2379611.5	1.029	N/A	1.266	0.237	0.100	0.790	0.796	
45	16	56.91	6577725.6	26.00	2379611.5	1.016	N/A	1.266	0.250	-0.100	0.680	0.687	
46	16	56.91	6577525.6	28.00	2379611.5	1.146	N/A	1.270	0.124	N/A	0.530	0.530	
47	16	56.91	6577325.6	30.00	2379611.5	1.233	N/A	1.263	0.030	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.250	N/A	1.265	0.015	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.205	N/A	1.255	0.050	N/A	0.380	0.380	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.217	N/A	1.258	0.041	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.157	N/A	1.253	0.096	0.100	0.310	0.326	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.162	N/A	1.251	0.089	N/A	N/A	N/A	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.210	N/A	1.256	0.046	N/A	N/A	N/A	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.915	N/A	1.261	0.346	0.120	0.730	0.740	
55	15	61.91	6577925.6	24.00	2379111.5	0.945	N/A	1.261	0.316	0.100	0.800	0.806	
56	15	61.91	6577725.6	26.00	2379111.5	1.077	N/A	1.259	0.182	N/A	0.910	0.910	
57	15	61.91	6577525.6	28.00	2379111.5	1.162	N/A	1.261	0.099	N/A	0.390	0.390	
58	15	61.91	6577325.6	30.00	2379111.5	1.169	N/A	1.261	0.092	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.199	N/A	1.258	0.059	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.193	N/A	1.251	0.058	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.150	N/A	1.253	0.103	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.163	N/A	1.253	0.090	N/A	N/A	N/A	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.165	N/A	1.252	0.087	0.120	0.260	0.286	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.168	N/A	1.258	0.090	0.030	0.030	0.042	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.874	N/A	1.255	0.381	-0.120	1.050	1.057	
66	14	66.91	6577925.6	24.00	2378611.5	0.932	N/A	1.255	0.323	0.050	0.980	0.981	
67	14	66.91	6577725.6	26.00	2378611.5	1.047	N/A	1.250	0.203	-0.100	0.790	0.796	measured @ 25.6
68	14	66.91	6577503.6	28.22	2378611.5	1.182	N/A	1.253	0.071	N/A	N/A	N/A	trees
69	14	66.91	6577325.6	30.00	2378611.5	1.203	N/A	1.250	0.047	-0.100	0.580	0.589	trees
70	14	66.91	6577125.6	32.00	2378611.5	1.232	N/A	1.245	0.013	N/A	N/A	N/A	trees
71	14	66.91	6576925.6	34.00	2378611.5	1.224	N/A	1.249	0.025	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.200	N/A	1.245	0.045	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.231	N/A	1.239	0.008	-0.200	0.200	0.283	trees
74	14	66.91	6576325.6	40.00	2378611.5	1.169	N/A	1.237	0.068	N/A	N/A	N/A	
75	14	66.91	6576125.6	42.00	2378611.5	1.172	N/A	1.240	0.068	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
76	13	71.91	6578125.6	22.00	2378111.5	0.905	N/A	1.239	0.334	0.100	0.880	0.886	
77	13	71.91	6577925.6	24.00	2378111.5	0.942	N/A	1.240	0.298	0.150	0.820	0.834	
78	13	71.91	6577725.6	26.00	2378111.5	1.033	N/A	1.236	0.203	0.250	0.680	0.724	
79	13	71.91	6577525.6	28.00	2378111.5	1.120	N/A	1.234	0.114	0.250	0.280	0.375	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.159	N/A	1.233	0.074	0.100	0.380	0.393	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.147	N/A	1.229	0.082	N/A	N/A	N/A	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.210	N/A	1.221	0.011	N/A	N/A	N/A	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.225	N/A	N/A	N/A	N/A	N/A	N/A	trees
84	13	71.91	6576525.6	38.00	2378111.5	1.198	N/A	1.220	0.022	N/A	N/A	N/A	trees
85	13	71.91	6576325.6	40.00	2378111.5	1.164	N/A	1.232	0.068	N/A	N/A	N/A	trees
86	13	71.91	6576125.6	42.00	2378111.5	1.203	N/A	1.237	0.034	N/A	N/A	N/A	trees
87	12	73.91	6578225.6	21.00	2377911.5	0.989	N/A	1.241	0.252	0.020	-0.010	0.022	
88	12	73.91	6578125.6	22.00	2377911.5	0.938	N/A	1.243	0.305	0.060	0.550	0.553	
89	12	73.91	6577925.6	24.00	2377911.5	0.947	N/A	1.241	0.294	0.080	0.520	0.526	
90	12	73.91	6577725.6	26.00	2377911.5	1.032	N/A	1.240	0.208	0.150	0.320	0.353	
91	12	73.91	6577525.6	28.00	2377911.5	1.087	N/A	1.230	0.143	0.140	0.140	0.198	trees
92	12	73.91	6577325.6	30.00	2377911.5	1.141	N/A	1.236	0.095	0.060	0.230	0.238	trees
93	12	73.91	6577125.6	32.00	2377911.5	1.150	N/A	1.229	0.079	0.180	0.220	0.284	trees
94	12	73.91	6576925.6	34.00	2377911.5	1.187	N/A	1.221	0.034	N/A	N/A	N/A	
95	12	73.91	6576725.6	36.00	2377911.5	1.199	N/A	1.221	0.022	N/A	N/A	N/A	
96	12	73.91	6576525.6	38.00	2377911.5	1.179	N/A	1.221	0.042	N/A	N/A	N/A	
97	12	73.91	6576325.6	40.00	2377911.5	1.185	N/A	1.230	0.045	-0.200	0.180	0.269	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.190	N/A	1.232	0.042	N/A	N/A	N/A	
99	11	75.91	6578125.6	22.00	2377711.5	0.992	N/A	1.243	0.251	0.190	0.500	0.535	
100	11	75.91	6577925.6	24.00	2377711.5	0.941	N/A	1.240	0.299	0.140	0.400	0.424	
101	11	75.91	6577725.6	26.00	2377711.5	1.024	N/A	1.237	0.213	0.120	0.420	0.437	
102	11	75.91	6577525.6	28.00	2377711.5	1.090	N/A	1.234	0.144	0.180	0.210	0.277	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.100	N/A	1.230	0.130	0.210	0.180	0.277	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.123	N/A	1.224	0.101	0.160	0.130	0.206	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.103	N/A	1.214	0.111	0.080	0.100	0.128	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.158	N/A	1.213	0.055	N/A	N/A	N/A	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.130	N/A	1.211	0.081	N/A	N/A	N/A	trees
108	11	75.91	6576325.6	40.00	2377711.5	1.185	N/A	1.208	0.023	N/A	0.040	0.040	trees
109	11	75.91	6576125.6	42.00	2377711.5	1.175	N/A	1.21	0.035	-0.030	0.020	0.036	trees
110	10	78.91	6577925.6	24.00	2377411.5	0.888	N/A	1.239	0.351	0.420	0.380	0.566	
111	10	78.91	6577725.6	26.00	2377411.5	0.928	N/A	1.237	0.309	0.290	0.340	0.447	
112	10	78.91	6577525.6	28.00	2377411.5	1.101	N/A	1.235	0.134	0.280	0.260	0.382	
113	10	78.91	6577325.6	30.00	2377411.5	1.126	N/A	1.231	0.105	0.300	0.230	0.378	
114	10	78.91	6577125.6	32.00	2377411.5	1.130	N/A	1.224	0.094	0.230	0.200	0.305	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.141	N/A	1.218	0.077	0.280	0.140	0.313	
116	10	78.91	6576725.6	36.00	2377411.5	1.130	N/A	1.211	0.081	0.100	0.100	0.141	
117	10	78.91	6576525.6	38.00	2377411.5	1.127	N/A	1.209	0.082	0.080	0.110	0.136	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.127	N/A	1.210	0.083	0.040	0.060	0.072	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.131	N/A	1.212	0.081	0.060	N/A	0.060	trees
120	9	80.66	6577725.6	26.00	2377236.5	0.887	N/A	1.235	0.348	0.370	0.430	0.567	
121	9	80.66	6577525.6	28.00	2377236.5	1.028	N/A	1.238	0.210	0.330	0.300	0.446	
122	9	80.66	6577325.6	30.00	2377236.5	1.102	N/A	1.232	0.130	0.160	0.200	0.256	
123	9	80.66	6577125.6	32.00	2377236.5	1.111	N/A	1.228	0.117	0.240	0.150	0.283	
124	9	80.66	6576925.6	34.00	2377236.5	1.123	N/A	1.212	0.089	0.320	0.800	0.862	
125	9	80.66	6576725.6	36.00	2377236.5	1.119	N/A	1.213	0.094	0.290	0.160	0.331	
126	9	80.66	6576525.6	38.00	2377236.5	1.128	N/A	1.210	0.082	0.220	0.160	0.272	
127	9	80.66	6576325.6	40.00	2377236.5	1.095	N/A	1.208	0.113	0.030	0.080	0.085	trees
128	9	80.66	6576125.6	42.00	2377236.5	1.136	N/A	1.210	0.074	0.030	0.070	0.076	trees
129	8	82.41	6578125.6	22.00	2377061.5	1.212	N/A	1.238	0.026	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.972	N/A	1.238	0.266	-0.030	-0.020	0.036	
131	8	82.41	6577725.6	26.00	2377061.5	0.908	N/A	1.238	0.330	0.310	0.600	0.675	
132	8	82.41	6577525.6	28.00	2377061.5	1.031	N/A	1.241	0.210	0.340	0.420	0.540	
133	8	82.41	6577325.6	30.00	2377061.5	1.112	N/A	1.233	0.121	0.300	0.320	0.439	
134	8	82.41	6577125.6	32.00	2377061.5	1.157	N/A	1.225	0.068	0.290	0.360	0.462	
135	8	82.41	6576925.6	34.00	2377061.5	1.138	N/A	1.217	0.079	0.190	0.210	0.283	
136	8	82.41	6576725.6	36.00	2377061.5	1.120	N/A	1.214	0.094	0.240	0.200	0.312	
137	8	82.41	6576525.6	38.00	2377061.5	1.123	N/A	1.210	0.087	0.130	0.190	0.230	
138	8	82.41	6576325.6	40.00	2377061.5	1.137	N/A	1.208	0.071	0.140	0.210	0.252	
139	8	82.41	6576125.6	42.00	2377061.5	1.133	N/A	1.206	0.073	0.090	0.210	0.228	
140	7	84.16	6578025.6	23.00	2376886.5	1.159	N/A	1.239	0.080	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	0.989	N/A	1.235	0.246	-0.050	-0.090	0.103	
142	7	84.16	6577725.6	26.00	2376886.5	1.000	N/A	1.238	0.238	0.140	0.590	0.606	
143	7	84.16	6577525.6	28.00	2376886.5	0.970	N/A	1.237	0.267	0.250	0.450	0.515	
144	7	84.16	6577325.6	30.00	2376886.5	1.083	N/A	1.232	0.149	0.190	0.350	0.398	
145	7	84.16	6577125.6	32.00	2376886.5	1.134	N/A	1.222	0.088	0.170	0.230	0.286	
146	7	84.16	6576925.6	34.00	2376886.5	1.100	N/A	1.212	0.112	0.170	0.060	0.180	
147	7	84.16	6576725.6	36.00	2376886.5	1.101	N/A	1.208	0.107	0.210	0.140	0.252	
148	7	84.16	6576525.6	38.00	2376886.5	1.102	N/A	1.205	0.103	0.260	0.210	0.334	
149	7	84.16	6576325.6	40.00	2376886.5	1.134	N/A	1.197	0.063	0.180	0.310	0.358	
150	7	84.16	6576125.6	42.00	2376886.5	1.123	N/A	1.197	0.074	N/A	N/A	N/A	
151	6	86.66	6577925.6	24.00	2376636.5	1.174	N/A	1.238	0.064	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.991	N/A	1.238	0.247	0.240	0.310	0.392	
153	6	86.66	6577525.6	28.00	2376636.5	0.980	N/A	1.238	0.258	0.230	0.430	0.488	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
154	6	86.66	6577325.6	30.00	2376636.5	1.036	N/A	1.310	0.274	0.250	0.410	0.480	
155	6	86.66	6577125.6	32.00	2376636.5	1.122	N/A	1.222	0.100	0.240	0.240	0.339	
156	6	86.66	6576925.6	34.00	2376636.5	1.126	N/A	1.212	0.086	0.140	0.150	0.205	
157	6	86.66	6576725.6	36.00	2376636.5	1.130	N/A	1.205	0.075	0.260	0.260	0.368	
158	6	86.66	6576525.6	38.00	2376636.5	1.120	N/A	1.202	0.082	0.280	0.210	0.350	
159	6	86.66	6576325.6	40.00	2376636.5	1.113	N/A	1.198	0.085	0.380	0.290	0.478	
160	6	86.66	6576125.6	42.00	2376636.5	1.121	N/A	1.192	0.071	N/A	N/A	N/A	
161	5	89.16	6577725.6	26.00	2376386.5	1.191	N/A	1.238	0.047	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.974	N/A	1.239	0.265	0.290	0.330	0.439	
163	5	89.16	6577325.6	30.00	2376386.5	1.002	N/A	1.234	0.232	0.400	0.340	0.525	
164	5	89.16	6577125.6	32.00	2376386.5	1.052	N/A	1.229	0.177	0.390	0.290	0.486	
165	5	89.16	6576925.6	34.00	2376386.5	1.121	N/A	1.213	0.092	0.390	0.180	0.430	
166	5	89.16	6576725.6	36.00	2376386.5	1.100	N/A	1.213	0.113	0.220	0.110	0.246	
167	5	89.16	6576525.6	38.00	2376386.5	1.108	N/A	1.210	0.102	0.280	0.060	0.286	
168	5	89.16	6576325.6	40.00	2376386.5	1.111	N/A	1.208	0.097	0.310	0.040	0.313	
169	5	89.16	6576125.6	42.00	2376386.5	1.091	N/A	1.201	0.110	0.410	0.040	0.412	
170	4	91.16	6577625.6	27.00	2376186.5	1.152	N/A	1.232	0.080	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.162	N/A	1.239	0.077	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.980	N/A	1.232	0.252	0.420	0.240	0.484	
173	4	91.16	6577125.6	32.00	2376186.5	0.987	N/A	1.227	0.240	0.440	0.180	0.475	
174	4	91.16	6576925.6	34.00	2376186.5	1.023	N/A	1.216	0.193	0.490	0.130	0.507	
175	4	91.16	6576725.6	36.00	2376186.5	1.091	N/A	1.212	0.121	0.430	0.130	0.449	
176	4	91.16	6576525.6	38.00	2376186.5	1.110	N/A	1.209	0.099	0.390	0.120	0.408	
177	4	91.16	6576325.6	40.00	2376186.5	1.131	N/A	1.203	0.072	N/A	N/A	N/A	
178	4	91.16	6576125.6	42.00	2376186.5	1.187	N/A	1.196	0.009	N/A	N/A	N/A	
179	3	93.36	6577425.6	29.00	2375966.5	1.179	N/A	1.237	0.058	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.221	N/A	1.238	0.017	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.972	N/A	1.231	0.259	0.390	0.080	0.398	
182	3	93.36	6576925.6	34.00	2375966.5	0.975	N/A	1.218	0.243	0.490	0.080	0.496	
183	3	93.36	6576725.6	36.00	2375966.5	0.982	N/A	1.217	0.235	0.480	0.060	0.484	
184	3	93.36	6576525.6	38.00	2375966.5	0.986	N/A	1.214	0.228	0.470	0.040	0.472	
185	3	93.36	6576325.6	40.00	2375966.5	1.005	N/A	1.209	0.204	0.460	N/A	0.460	
186	3	93.36	6576125.6	42.00	2375966.5	0.995	N/A	1.218	0.223	0.320	-0.100	0.335	
187	2	95.36	6577225.6	31.00	2375766.5	1.162	N/A	1.237	0.075	N/A	N/A	N/A	
188	2	95.36	6577125.6	32.00	2375766.5	1.177	N/A	1.230	0.053	N/A	N/A	N/A	
189	2	95.36	6576925.6	34.00	2375766.5	1.192	N/A	1.221	0.029	0.460	0.120	0.475	
190	2	95.36	6576725.6	36.00	2375766.5	0.992	N/A	N/A	N/A	N/A	N/A	N/A	
191	2	95.36	6576525.6	38.00	2375766.5	0.946	N/A	1.219	0.273	0.520	0.080	0.526	
192	2	95.36	6576325.6	40.00	2375766.5	0.938	N/A	1.219	0.281	0.420	N/A	0.420	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
193	2	95.36	6576125.6	42.00	2375766.5	0.921	N/A	1.222	0.301	0.420	N/A	0.420	
194	1	97.36	6577125.6	32.00	2375566.5	1.132	N/A	1.237	0.105	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.132	N/A	1.230	0.098	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.157	N/A	1.223	0.066	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.164	N/A	N/A	N/A	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.240	N/A	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.162	N/A	1.222	0.060	0.450	0.020	0.450	
200	0	99.36	6576725.6	36.00	2375366.5	1.172	N/A	1.219	0.047	N/A	N/A	N/A	
201	0	99.36	6576525.6	38.00	2375366.5	1.090	N/A	1.199	0.109	N/A	N/A	N/A	
202	0	99.36	6576325.6	40.00	2375366.5	1.094	N/A	1.191	0.097	N/A	N/A	N/A	
203	0	99.36	6576125.6	42.00	2375366.5	1.106	N/A	1.193	0.087	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.959	N/A	1.261	0.302	0.100	0.620	0.628	
205	Current	59.30	6578231.6	20.94	2379372.2	1.181	N/A	1.259	0.078	N/A	N/A	N/A	concrete
206	Current	59.30	6578089.6	22.36	2379372.2	0.937	N/A	1.263	0.326	0.050	0.610	0.612	
207	Current	59.51	6578160.6	21.65	2379351.5	0.954	N/A	1.262	0.308	0.100	0.620	0.628	
208	Current	60.01	6578260.6	20.65	2379301.5	1.232	N/A	1.253	0.021	N/A	N/A	N/A	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.125	N/A	1.255	0.130	N/A	N/A	N/A	concrete
210	Current	60.01	6578160.6	21.65	2379301.5	0.953	N/A	1.256	0.303	0.050	0.620	0.622	
211	Current	60.01	6578110.6	22.15	2379301.5	0.938	N/A	1.258	0.320	0.100	0.590	0.598	
212	Current	60.01	6578060.6	22.65	2379301.5	0.928	N/A	1.259	0.331	0.050	0.720	0.722	
213	Current	60.51	6578160.6	21.65	2379251.5	0.961	N/A	1.254	0.293	0.100	0.650	0.658	
214	Current	60.72	6578231.6	20.94	2379230.5	1.218	N/A	1.251	0.033	N/A	N/A	N/A	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.918	N/A	1.255	0.337	0.050	0.600	0.602	
216	Current	61.01	6578160.6	21.65	2379201.5	0.980	N/A	1.255	0.275	0.050	0.590	0.592	
217	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.948	N/A	1.251	0.303	0.250	0.610	0.659	
218	Alt. 1	77.33	6578097.6	22.28	2377569.5	1.004	N/A	1.253	0.249	N/A	N/A	N/A	concrete
219	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.928	N/A	1.250	0.322	0.350	0.570	0.669	
220	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.933	N/A	1.250	0.317	0.350	0.510	0.619	
221	Alt. 1	78.04	6578126.6	21.99	2377498.5	1.195	N/A	1.251	0.056	N/A	N/A	N/A	concrete
222	Alt. 1	78.04	6578076.6	22.49	2377498.5	1.073	N/A	1.252	0.179	N/A	N/A	N/A	concrete
223	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.935	N/A	1.250	0.315	0.550	0.580	0.799	
224	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.899	N/A	1.247	0.348	0.510	0.550	0.750	
225	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.895	N/A	1.246	0.351	0.400	0.530	0.664	
226	Alt. 1	78.54	6578026.6	22.99	2377448.5	1.048	N/A	1.245	0.197	N/A	N/A	N/A	concrete
227	Alt. 1	78.75	6578097.6	22.28	2377427.5	1.210	N/A	1.250	0.040	N/A	N/A	N/A	concrete
228	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.892	N/A	1.242	0.350	0.500	0.600	0.781	
229	Alt. 1	79.04	6578026.6	22.99	2377398.5	1.200	N/A	1.240	0.040	N/A	N/A	N/A	concrete
230	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.971	N/A	1.238	0.267	0.450	0.200	0.492	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
231	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.978	N/A	1.240	0.262	0.480	0.300	0.566	
232	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.960	N/A	1.236	0.276	0.450	0.200	0.492	
233	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.971	N/A	1.240	0.269	0.450	0.270	0.525	
234	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.225	N/A	1.243	0.018	N/A	N/A	N/A	bank
235	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.079	N/A	1.242	0.163	N/A	N/A	N/A	bank
236	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.892	N/A	1.241	0.349	0.520	0.220	0.565	
237	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.980	N/A	1.239	0.259	0.500	0.220	0.546	
238	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.973	N/A	1.235	0.262	0.130	0.500	0.517	
239	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.131	N/A	1.242	0.111	N/A	N/A	N/A	bank
240	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.240	N/A	1.239	N/A	N/A	N/A	N/A	bank
241	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.032	N/A	1.239	0.207	N/A	N/A	N/A	bank
242	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.262	N/A	N/A	N/A	N/A	N/A	N/A	

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	11/5/2010		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Gravel-stockpile	**Start Time:**	10:30 AM
Discharge:	145,000 cfs	**End Time:**	6:00 PM

Table F-4: Data measurements for 145,000-cfs Gravel-stockpile configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.052	1.031	1.283	0.231	-0.050	0.700	0.702	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.050	1.038	1.283	0.233	N/A	0.700	0.700	
3	23	32.91	6577325.6	30.00	2382011.5	1.049	1.028	1.280	0.231	-0.100	0.700	0.707	
4	23	32.91	6577125.6	32.00	2382011.5	1.000	0.967	1.273	0.273	-0.150	0.700	0.716	
5	23	32.91	6576925.6	34.00	2382011.5	1.238	1.234	1.263	0.025	N/A	0.700	0.700	
7	22	37.91	6578025.6	23.00	2381511.5	1.100	1.100	1.265	0.165	N/A	0.700	0.700	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.120	1.119	1.263	0.143	-0.050	0.700	0.702	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.047	1.032	1.268	0.221	-0.100	0.700	0.707	
10	22	37.91	6577525.6	28.00	2381511.5	1.032	1.022	1.269	0.237	-0.050	0.700	0.702	
11	22	37.91	6577325.6	30.00	2381511.5	0.990	1.000	1.263	0.273	-0.100	0.700	0.707	
12	22	37.91	6577225.6	31.00	2381511.5	0.970	0.987	1.260	0.290	-0.050	0.700	0.702	
14	21	42.91	6577925.6	24.00	2381011.5	1.130	1.120	1.261	0.131	-0.150	0.700	0.716	
15	21	42.91	6577725.6	26.00	2381011.5	1.002	1.018	1.260	0.258	-0.050	0.700	0.702	
16	21	42.91	6577525.6	28.00	2381011.5	1.032	1.030	1.261	0.229	-0.150	0.700	0.716	
17	21	42.91	6577325.6	30.00	2381011.5	0.975	0.989	1.260	0.285	-0.200	0.700	0.728	
18	21	42.91	6577225.6	31.00	2381011.5	0.972	0.972	1.256	0.284	N/A	0.700	0.700	
19	20	45.91	6577925.6	24.00	2380711.5	1.135	1.131	1.261	0.126	-0.300	0.700	0.762	
20	20	45.91	6577725.6	26.00	2380711.5	1.033	1.043	1.262	0.229	-0.050	0.700	0.702	
21	20	45.91	6577525.6	28.00	2380711.5	1.114	1.023	1.264	0.150	-0.050	0.700	0.702	
22	20	45.91	6577325.6	30.00	2380711.5	1.001	0.998	1.266	0.265	-0.100	0.700	0.707	
23	20	45.91	6577125.6	32.00	2380711.5	0.982	0.988	1.257	0.275	-0.100	0.700	0.707	
24	19	47.91	6577925.6	24.00	2380511.5	1.132	1.135	1.270	0.138	-0.100	0.700	0.707	
25	19	47.91	6577725.6	26.00	2380511.5	1.008	1.011	1.272	0.264	-0.150	0.700	0.716	
26	19	47.91	6577525.6	28.00	2380511.5	1.001	1.000	1.271	0.270	-0.050	0.700	0.702	
27	19	47.91	6577325.6	30.00	2380511.5	1.017	1.017	1.270	0.253	-0.100	0.700	0.707	
28	19	47.91	6577125.6	32.00	2380511.5	1.015	1.012	1.261	0.246	N/A	0.700	0.700	
32	18	49.91	6577925.6	24.00	2380311.5	1.110	1.116	1.261	0.151	0.150	0.700	0.716	tree
33	18	49.91	6577725.6	26.00	2380311.5	1.020	1.022	1.263	0.243	-0.100	0.700	0.707	
34	18	49.91	6577525.6	28.00	2380311.5	1.018	1.016	1.270	0.252	-0.150	0.700	0.716	
35	18	49.91	6577325.6	30.00	2380311.5	1.030	1.033	1.267	0.237	-0.150	0.700	0.716	
36	18	49.91	6577125.6	32.00	2380311.5	1.002	1.005	1.262	0.260	0.050	0.700	0.702	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
37	17	51.91	6578275.6	20.50	2380111.5	1.048	1.041	1.245	0.197	N/A	0.700	0.700	
38	17	51.91	6578125.6	22.00	2380111.5	0.963	0.972	1.258	0.295	-0.050	0.700	0.702	
39	17	51.91	6577925.6	24.00	2380111.5	1.062	1.060	1.257	0.195	-0.250	0.700	0.743	
40	17	51.91	6577725.6	26.00	2380111.5	1.010	1.018	1.258	0.248	-0.150	0.700	0.716	
41	17	51.91	6577525.6	28.00	2380111.5	0.998	0.996	1.260	0.262	-0.200	0.700	0.728	
42	17	51.91	6577325.6	30.00	2380111.5	0.992	0.900	1.259	0.267	-0.150	0.700	0.716	
43	16	56.91	6578125.6	22.00	2379611.5	0.992	0.988	1.262	0.270	-0.050	0.700	0.702	
44	16	56.91	6577925.6	24.00	2379611.5	1.010	0.996	1.264	0.254	-0.200	0.700	0.728	
45	16	56.91	6577725.6	26.00	2379611.5	1.039	1.036	1.264	0.225	-0.100	0.700	0.707	
46	16	56.91	6577525.6	28.00	2379611.5	1.106	1.071	1.267	0.161	-0.250	0.700	0.743	
47	16	56.91	6577325.6	30.00	2379611.5	1.240	1.233	1.257	0.017	N/A	0.700	0.700	
48	16	56.91	6577125.6	32.00	2379611.5	1.258	1.255	1.259	0.001	N/A	0.700	0.700	
49	16	56.91	6576925.6	34.00	2379611.5	1.226	1.198	1.254	0.028	N/A	0.700	0.700	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.221	1.196	1.253	0.032	N/A	0.700	0.700	
51	16	56.91	6576525.6	38.00	2379611.5	1.170	1.176	1.253	0.083	N/A	0.700	0.700	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.186	1.187	1.249	0.063	N/A	0.700	0.700	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.222	1.223	1.258	0.036	N/A	0.700	0.700	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.912	0.919	1.260	0.348	0.050	0.700	0.702	
55	15	61.91	6577925.6	24.00	2379111.5	0.949	0.931	1.257	0.308	-0.100	0.700	0.707	
56	15	61.91	6577725.6	26.00	2379111.5	1.012	0.991	1.255	0.243	-0.100	0.700	0.707	
57	15	61.91	6577525.6	28.00	2379111.5	1.155	1.158	1.261	0.106	-0.150	0.700	0.716	
58	15	61.91	6577325.6	30.00	2379111.5	1.173	1.167	1.261	0.088	N/A	0.700	0.700	
59	15	61.91	6577125.6	32.00	2379111.5	1.203	1.187	1.258	0.055	N/A	0.700	0.700	
60	15	61.91	6576925.6	34.00	2379111.5	1.210	1.209	1.254	0.044	N/A	0.700	0.700	
61	15	61.91	6576725.6	36.00	2379111.5	1.170	1.174	1.252	0.082	N/A	0.700	0.700	
62	15	61.91	6576525.6	38.00	2379111.5	1.170	1.159	1.250	0.080	N/A	0.700	0.700	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.172	1.175	1.250	0.078	-0.100	0.700	0.707	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.179	1.177	1.255	0.076	N/A	0.700	0.700	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.878	0.914	1.252	0.374	0.050	0.700	0.702	
66	14	66.91	6577925.6	24.00	2378611.5	0.906	0.849	1.251	0.345	N/A	0.700	0.700	
67	14	66.91	6577725.6	26.00	2378611.5	1.021	1.013	1.249	0.228	-0.050	0.700	0.702	
68	14	66.91	6577537.6	27.88	2378611.5	1.201	1.205	1.250	0.049	N/A	0.700	0.700	trees
69	14	66.91	6577325.6	30.00	2378611.5	1.198	1.199	1.243	0.045	N/A	0.700	0.700	
70	14	66.91	6577125.6	32.00	2378611.5	1.263	1.266	N/A	N/A	N/A	0.700	0.700	stockpile
71	14	66.91	6576925.6	34.00	2378611.5	1.234	1.234	1.251	0.017	N/A	0.700	0.700	
72	14	66.91	6576725.6	36.00	2378611.5	1.202	1.205	1.246	0.044	N/A	0.700	0.700	
73	14	66.91	6576525.6	38.00	2378611.5	1.222	1.210	1.238	0.016	N/A	0.700	0.700	
74	14	66.91	6576317.6	40.08	2378611.5	1.200	1.200	1.233	0.033	N/A	0.700	0.700	trees
75	14	66.91	6576125.6	42.00	2378611.5	1.188	1.194	1.240	0.052	N/A	0.700	0.700	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
76	13	71.91	6578125.6	22.00	2378111.5	0.882	0.863	1.240	0.358	-0.050	0.700	0.702	
77	13	71.91	6577925.6	24.00	2378111.5	0.949	0.917	1.241	0.292	0.100	0.700	0.707	
78	13	71.91	6577725.6	26.00	2378111.5	1.025	1.049	1.237	0.212	0.200	0.700	0.728	
79	13	71.91	6577525.6	28.00	2378111.5	1.121	1.128	1.224	0.103	0.050	0.700	0.702	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.167	1.160	1.233	0.066	N/A	0.700	0.700	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.153	1.155	1.230	0.077	0.200	0.700	0.728	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.200	1.201	N/A	N/A	N/A	0.700	0.700	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.221	1.227	1.214	-0.007	N/A	0.700	0.700	
84	13	71.91	6576525.6	38.00	2378111.5	1.202	1.198	1.226	0.024	N/A	0.700	0.700	
85	13	71.91	6576325.6	40.00	2378111.5	1.174	1.175	1.232	0.058	N/A	0.700	0.700	
86	13	71.91	6576125.6	42.00	2378111.5	1.207	1.215	1.234	0.027	N/A	0.700	0.700	
87	12	73.91	6578225.6	21.00	2377911.5	0.970	0.985	1.242	0.272	0.060	0.700	0.703	
88	12	73.91	6578125.6	22.00	2377911.5	0.946	0.937	1.245	0.299	-0.050	0.700	0.702	
89	12	73.91	6577925.6	24.00	2377911.5	0.953	0.982	1.242	0.289	-0.140	0.700	0.714	
90	12	73.91	6577725.6	26.00	2377911.5	1.009	1.021	1.241	0.232	0.180	0.700	0.723	
91	12	73.91	6577525.6	28.00	2377911.5	1.079	1.087	1.240	0.161	0.220	0.700	0.734	
92	12	73.91	6577325.6	30.00	2377911.5	1.124	1.131	1.234	0.110	0.120	0.700	0.710	
93	12	73.91	6577125.6	32.00	2377911.5	1.161	1.150	1.230	0.069	0.220	0.700	0.734	
94	12	73.91	6576925.6	34.00	2377911.5	1.175	1.170	1.225	0.050	0.340	0.700	0.778	
95	12	73.91	6576725.6	36.00	2377911.5	1.198	1.197	1.223	0.025	N/A	0.700	0.700	
96	12	73.91	6576525.6	38.00	2377911.5	1.173	1.170	1.225	0.052	N/A	0.700	0.700	
97	12	73.91	6576333.6	39.92	2377911.5	1.168	1.155	1.225	0.057	N/A	0.700	0.700	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.210	1.210	1.229	0.019	N/A	0.700	0.700	
99	11	75.91	6578125.6	22.00	2377711.5	0.977	0.912	1.247	0.270	0.080	0.700	0.705	
100	11	75.91	6577925.6	24.00	2377711.5	0.939	0.949	1.242	0.303	0.160	0.700	0.718	
101	11	75.91	6577725.6	26.00	2377711.5	1.032	1.031	1.240	0.208	0.050	0.700	0.702	
102	11	75.91	6577525.6	28.00	2377711.5	1.073	1.060	1.241	0.168	0.180	0.700	0.723	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.100	1.100	1.235	0.135	0.140	0.700	0.714	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.122	1.123	1.229	0.107	0.320	0.700	0.770	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.102	1.111	1.222	0.120	0.140	0.700	0.714	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.163	1.170	1.219	0.056	N/A	0.700	0.700	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.188	1.183	1.214	0.026	N/A	0.700	0.700	trees
108	11	75.91	6576335.6	39.90	2377711.5	1.183	1.176	1.215	0.032	N/A	0.700	0.700	trees
109	11	75.91	6576116.6	42.09	2377711.5	1.177	1.168	1.218	0.041	0.240	0.700	0.740	trees
110	10	78.91	6577925.6	24.00	2377411.5	0.871	0.844	1.242	0.371	0.240	0.700	0.740	
111	10	78.91	6577725.6	26.00	2377411.5	0.930	0.971	1.239	0.309	0.120	0.700	0.710	
112	10	78.91	6577525.6	28.00	2377411.5	1.089	1.084	1.241	0.152	0.350	0.700	0.783	
113	10	78.91	6577325.6	30.00	2377411.5	1.114	1.110	1.232	0.118	0.580	0.700	0.909	
114	10	78.91	6577125.6	32.00	2377411.5	1.106	1.104	1.230	0.124	0.380	0.700	0.796	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.129	1.120	1.221	0.092	0.320	0.700	0.770	
116	10	78.91	6576738.6	35.87	2377411.5	1.121	1.129	1.219	0.098	0.120	0.700	0.710	
117	10	78.91	6576525.6	38.00	2377411.5	1.128	1.133	1.216	0.088	0.180	0.700	0.723	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.130	1.135	1.216	0.086	0.250	0.700	0.743	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.131	1.133	1.219	0.088	0.240	0.700	0.740	trees
120	9	80.66	6577725.6	26.00	2377236.5	0.829	0.868	1.243	0.414	0.120	0.700	0.710	
121	9	80.66	6577525.6	28.00	2377236.5	1.032	1.046	1.242	0.210	0.090	0.700	0.706	
122	9	80.66	6577325.6	30.00	2377236.5	1.092	1.084	1.238	0.146	0.050	0.700	0.702	
123	9	80.66	6577125.6	32.00	2377236.5	1.106	1.107	1.232	0.126	0.200	0.700	0.728	
124	9	80.66	6576925.6	34.00	2377236.5	1.117	1.104	1.223	0.106	0.150	0.700	0.716	
125	9	80.66	6576725.6	36.00	2377236.5	1.110	1.110	1.221	0.111	0.140	0.700	0.714	
126	9	80.66	6576525.6	38.00	2377236.5	1.118	1.120	1.219	0.101	0.520	0.700	0.872	
127	9	80.66	6576325.6	40.00	2377236.5	1.093	1.098	1.218	0.125	0.150	0.700	0.716	trees
128	9	80.66	6576134.6	41.91	2377236.5	1.142	1.148	1.220	0.078	0.520	0.700	0.872	trees
129	8	82.41	6578125.6	22.00	2377061.5	1.197	1.204	1.242	0.045	N/A	0.700	0.700	
130	8	82.41	6577925.6	24.00	2377061.5	0.992	0.994	1.242	0.250	-0.100	0.700	0.707	
131	8	82.41	6577725.6	26.00	2377061.5	0.892	0.889	1.244	0.352	0.100	0.700	0.707	
132	8	82.41	6577525.6	28.00	2377061.5	1.032	1.031	1.242	0.210	0.100	0.700	0.707	
133	8	82.41	6577325.6	30.00	2377061.5	1.091	1.093	1.240	0.149	0.050	0.700	0.702	
134	8	82.41	6577125.6	32.00	2377061.5	1.115	1.106	1.232	0.117	0.150	0.700	0.716	
135	8	82.41	6576925.6	34.00	2377061.5	1.129	1.110	1.225	0.096	0.150	0.700	0.716	
136	8	82.41	6576725.6	36.00	2377061.5	1.083	1.088	1.227	0.144	0.050	0.700	0.702	
137	8	82.41	6576525.6	38.00	2377061.5	1.107	1.101	1.223	0.116	0.050	0.700	0.702	
138	8	82.41	6576325.6	40.00	2377061.5	1.110	1.112	1.219	0.109	N/A	0.700	0.700	
139	8	82.41	6576125.6	42.00	2377061.5	1.118	1.117	1.222	0.104	0.050	0.700	0.702	
140	7	84.16	6578025.6	23.00	2376886.5	1.163	1.263	1.242	0.079	N/A	0.700	0.700	too shallow
141	7	84.16	6577925.6	24.00	2376886.5	0.990	0.990	1.240	0.250	-0.050	0.700	0.702	
142	7	84.16	6577725.6	26.00	2376886.5	0.992	0.988	1.239	0.247	0.050	0.700	0.702	
143	7	84.16	6577525.6	28.00	2376886.5	0.966	0.948	1.240	0.274	0.100	0.700	0.707	
144	7	84.16	6577325.6	30.00	2376886.5	1.069	1.065	1.236	0.167	0.220	0.700	0.734	
145	7	84.16	6577125.6	32.00	2376886.5	1.114	1.083	1.228	0.114	N/A	0.700	0.700	
146	7	84.16	6576925.6	34.00	2376886.5	1.090	1.092	1.220	0.130	0.100	0.700	0.707	
147	7	84.16	6576725.6	36.00	2376886.5	1.086	1.089	1.214	0.128	N/A	0.700	0.700	
148	7	84.16	6576525.6	38.00	2376886.5	1.085	1.093	1.212	0.127	0.100	0.700	0.707	
149	7	84.16	6576325.6	40.00	2376886.5	1.101	1.099	1.209	0.108	0.200	0.700	0.728	
150	7	84.16	6576125.6	42.00	2376886.5	1.092	1.092	1.210	0.118	-0.100	0.700	0.707	
151	6	86.66	6577925.6	24.00	2376636.5	1.163	1.158	1.247	0.084	N/A	0.700	0.700	
152	6	86.66	6577725.6	26.00	2376636.5	0.974	0.982	1.247	0.273	0.200	0.700	0.728	
153	6	86.66	6577525.6	28.00	2376636.5	0.979	1.000	1.247	0.268	-0.200	0.700	0.728	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
154	6	86.66	6577325.6	30.00	2376636.5	1.042	1.029	1.241	0.199	0.100	0.700	0.707	
155	6	86.66	6577125.6	32.00	2376636.5	1.092	1.124	1.232	0.140	0.100	0.700	0.707	
156	6	86.66	6576925.6	34.00	2376636.5	1.101	1.108	1.223	0.122	0.200	0.700	0.728	
157	6	86.66	6576725.6	36.00	2376636.5	1.119	1.122	1.219	0.100	-0.300	0.700	0.762	
158	6	86.66	6576525.6	38.00	2376636.5	1.091	1.091	1.216	0.125	0.100	0.700	0.707	
159	6	86.66	6576325.6	40.00	2376636.5	1.082	1.083	1.213	0.131	0.100	0.700	0.707	
160	6	86.66	6576125.6	42.00	2376636.5	1.100	1.102	1.213	0.113	-0.100	0.700	0.707	
161	5	89.16	6577725.6	26.00	2376386.5	1.158	1.167	1.247	0.089	N/A	0.700	0.700	
162	5	89.16	6577525.6	28.00	2376386.5	0.977	0.963	1.249	0.272	0.300	0.700	0.762	
163	5	89.16	6577325.6	30.00	2376386.5	1.003	1.019	1.247	0.244	-0.100	0.700	0.707	
164	5	89.16	6577125.6	32.00	2376386.5	1.047	1.042	1.240	0.193	0.100	0.700	0.707	
165	5	89.16	6576925.6	34.00	2376386.5	1.103	1.111	1.231	0.128	0.100	0.700	0.707	
166	5	89.16	6576725.6	36.00	2376386.5	1.088	1.090	1.229	0.141	N/A	0.700	0.700	
167	5	89.16	6576525.6	38.00	2376386.5	1.072	1.080	1.229	0.157	N/A	0.700	0.700	
168	5	89.16	6576325.6	40.00	2376386.5	1.070	1.074	1.228	0.158	-0.200	0.700	0.728	
169	5	89.16	6576125.6	42.00	2376386.5	1.097	1.093	1.230	0.133	0.100	0.700	0.707	
170	4	91.16	6577625.6	27.00	2376186.5	1.164	1.162	1.248	0.084	N/A	0.700	0.700	
171	4	91.16	6577525.6	28.00	2376186.5	1.152	1.153	1.249	0.097	N/A	0.700	0.700	
172	4	91.16	6577325.6	30.00	2376186.5	0.938	0.939	1.248	0.310	0.200	0.700	0.728	
173	4	91.16	6577125.6	32.00	2376186.5	0.971	0.971	1.239	0.268	0.500	0.700	0.860	
174	4	91.16	6576925.6	34.00	2376186.5	1.027	1.020	1.230	0.203	0.100	0.700	0.707	
175	4	91.16	6576725.6	36.00	2376186.5	1.069	1.063	1.225	0.156	0.100	0.700	0.707	
176	4	91.16	6576525.6	38.00	2376186.5	1.093	1.091	1.223	0.130	0.200	0.700	0.728	
177	4	91.16	6576325.6	40.00	2376186.5	1.124	1.116	1.219	0.095	0.300	0.700	0.762	
178	4	91.16	6576125.6	42.00	2376186.5	1.190	1.140	1.219	0.029	N/A	0.700	0.700	
179	3	93.36	6577425.6	29.00	2375966.5	1.181	1.181	1.249	0.068	N/A	0.700	0.700	
180	3	93.36	6577325.6	30.00	2375966.5	1.222	1.220	1.250	0.028	N/A	0.700	0.700	
181	3	93.36	6577125.6	32.00	2375966.5	0.975	0.975	1.242	0.267	0.200	0.700	0.728	
182	3	93.36	6576925.6	34.00	2375966.5	0.954	0.966	1.232	0.278	0.300	0.700	0.762	
183	3	93.36	6576725.6	36.00	2375966.5	0.974	0.970	1.229	0.255	0.200	0.700	0.728	
184	3	93.36	6576525.6	38.00	2375966.5	0.984	0.979	1.229	0.245	0.200	0.700	0.728	
185	3	93.36	6576325.6	40.00	2375966.5	1.000	1.000	1.225	0.225	0.100	0.700	0.707	
186	3	93.36	6576125.6	42.00	2375966.5	0.982	0.980	1.231	0.249	0.100	0.700	0.707	
187	2	95.36	6577225.6	31.00	2375766.5	1.162	1.160	1.244	0.082	N/A	0.700	0.700	
188	2	95.36	6577112.6	32.13	2375766.5	1.180	1.176	1.241	0.061	N/A	0.700	0.700	
189	2	95.36	6576890.6	34.35	2375766.5	1.208	1.206	1.232	0.024	N/A	0.700	0.700	
190	2	95.36	6576725.6	36.00	2375766.5	0.955	0.963	1.232	0.277	0.300	0.700	0.762	
191	2	95.36	6576525.6	38.00	2375766.5	0.932	0.896	1.230	0.298	0.300	0.700	0.762	
192	2	95.36	6576325.6	40.00	2375766.5	0.947	0.945	1.230	0.283	0.200	0.700	0.728	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
193	2	95.36	6576125.6	42.00	2375766.5	0.948	0.949	1.235	0.287	0.100	0.700	0.707	
194	1	97.36	6577125.6	32.00	2375566.5	1.139	1.122	1.244	0.105	N/A	0.700	0.700	
195	1	97.36	6576925.6	34.00	2375566.5	1.145	1.139	1.241	0.096	N/A	0.700	0.700	
196	1	97.36	6576725.6	36.00	2375566.5	1.157	1.157	1.239	0.082	N/A	0.700	0.700	
197	1	97.36	6576525.6	38.00	2375566.5	1.258	1.201	1.222	-0.036	N/A	0.700	0.700	
198	1	97.36	6576325.6	40.00	2375566.5	1.233	1.236	1.247	0.014	N/A	0.700	0.700	
199	1	97.36	6576125.6	42.00	2375566.5	1.042	1.077	1.241	0.199	N/A	0.700	0.700	
200	0	99.36	6576725.6	36.00	2375366.5	1.162	1.153	1.222	0.060	N/A	0.700	0.700	
201	0	99.36	6576525.6	38.00	2375366.5	1.077	1.066	1.212	0.135	N/A	0.700	0.700	
202	0	99.36	6576325.6	40.00	2375366.5	1.074	1.070	1.200	0.126	N/A	0.700	0.700	
203	0	99.36	6576125.6	42.00	2375366.5	1.113	1.095	1.212	0.099	N/A	0.700	0.700	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.951	0.957	1.261	0.310	N/A	0.700	0.700	
205	Current	59.30	6578231.6	20.94	2379372.2	1.164	1.164	1.260	0.096	N/A	0.700	0.700	concrete
206	Current	59.30	6578089.6	22.36	2379372.2	0.929	0.932	1.265	0.336	N/A	0.700	0.700	
207	Current	59.51	6578160.6	21.65	2379351.5	0.946	0.950	1.261	0.315	0.050	0.700	0.702	
208	Current	60.01	6578260.6	20.65	2379301.5	1.227	1.226	1.250	0.023	N/A	0.700	0.700	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.117	1.100	1.260	0.143	N/A	0.700	0.700	concrete
210	Current	60.01	6578160.6	21.65	2379301.5	0.942	0.945	1.259	0.317	N/A	0.700	0.700	
211	Current	60.01	6578110.6	22.15	2379301.5	0.922	0.930	1.259	0.337	0.050	0.700	0.702	
212	Current	60.01	6578060.6	22.65	2379301.5	0.923	0.896	1.261	0.338	0.050	0.700	0.702	
213	Current	60.51	6578160.6	21.65	2379251.5	0.960	0.963	1.254	0.294	0.150	0.700	0.716	
214	Current	60.72	6578231.6	20.94	2379230.5	1.204	1.203	1.253	0.049	N/A	0.700	0.700	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.908	0.916	1.256	0.348	-0.100	0.700	0.707	
216	Current	61.01	6578160.6	21.65	2379201.5	0.972	0.972	1.255	0.283	0.100	0.700	0.707	
217	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.920	0.918	1.254	0.334	0.250	0.700	0.743	
218	Alt. 1	77.33	6578097.6	22.28	2377569.5	1.022	1.014	1.256	0.234	0.250	0.700	0.743	concrete
219	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.921	0.926	1.253	0.332	0.290	0.700	0.758	
220	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.911	0.900	1.254	0.343	0.220	0.700	0.734	
221	Alt. 1	78.04	6578126.6	21.99	2377498.5	1.198	1.199	1.251	0.053	N/A	0.700	0.700	concrete
222	Alt. 1	78.04	6578076.6	22.49	2377498.5	1.068	1.065	1.255	0.187	0.220	0.700	0.734	concrete
223	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.902	0.898	1.252	0.350	0.350	0.700	0.783	
224	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.897	0.863	1.251	0.354	0.350	0.700	0.783	
225	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.883	0.892	1.250	0.367	0.250	0.700	0.743	
226	Alt. 1	78.54	6578026.6	22.99	2377448.5	1.043	1.096	1.251	0.208	0.550	0.700	0.890	concrete
227	Alt. 1	78.75	6578097.6	22.28	2377427.5	1.210	1.210	1.256	0.046	N/A	0.700	0.700	concrete
228	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.875	0.826	1.248	0.373	0.420	0.700	0.816	
229	Alt. 1	79.04	6578026.6	22.99	2377398.5	1.199	1.200	1.246	0.047	N/A	0.700	0.700	concrete
230	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.951	0.950	1.250	0.299	0.410	0.700	0.811	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
231	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.958	0.962	1.250	0.292	0.330	0.700	0.774	
232	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.955	0.954	1.247	0.292	0.420	0.700	0.816	
233	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.961	0.962	1.249	0.288	0.390	0.700	0.801	
234	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.231	1.223	1.250	0.019	N/A	0.700	0.700	bank
235	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.088	1.071	1.252	0.164	0.380	0.700	0.796	bank
236	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.972	0.975	1.255	0.283	0.350	0.700	0.783	
237	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.971	0.973	1.251	0.280	0.400	0.700	0.806	
238	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.967	0.972	1.250	0.283	0.500	0.700	0.860	
239	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.162	1.156	1.252	0.090	N/A	0.700	0.700	bank
240	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.221	1.218	1.250	0.029	N/A	0.700	0.700	bank
241	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.071	1.080	1.256	0.185	0.420	0.700	0.816	bank
242	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.269	1.290	1.200	-0.069	N/A	0.700	0.700	

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	11/17/2010			
Name(s):	J. Beeby	B. Johnson		
Configuration:	Realigned-bank		**Start Time:**	9:00 AM
Discharge:	10,000 cfs		**End Time:**	1:30 PM

Table F-5: Data measurements for 10,000-cfs Realigned-bank configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.052	1.056	1.074	0.022	N/A	N/A	N/A	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.035	1.039	1.078	0.043	N/A	N/A	N/A	
3	23	32.91	6577325.6	30.00	2382011.5	1.036	1.038	1.072	0.036	N/A	N/A	N/A	
4	23	32.91	6577125.6	32.00	2382011.5	1.005	1.007	1.069	0.064	-0.260	0.300	0.397	
5	23	32.91	6576925.6	34.00	2382011.5	1.234	1.234	N/A	N/A	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.100	1.100	N/A	N/A	N/A	N/A	N/A	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.119	1.119	N/A	N/A	N/A	N/A	N/A	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.036	1.036	1.070	0.034	N/A	N/A	N/A	
10	22	37.91	6577525.6	28.00	2381511.5	1.009	1.013	1.071	0.062	-0.390	0.240	0.458	
11	22	37.91	6577325.6	30.00	2381511.5	0.989	0.989	1.062	0.073	-0.130	0.280	0.309	
12	22	37.91	6577225.6	31.00	2381511.5	0.959	0.963	1.062	0.103	-0.190	0.310	0.364	
14	21	42.91	6577925.6	24.00	2381011.5	1.120	1.120	N/A	N/A	N/A	N/A	N/A	
15	21	42.91	6577725.6	26.00	2381011.5	1.003	1.008	1.058	0.055	-0.420	0.120	0.437	
16	21	42.91	6577525.6	28.00	2381011.5	1.032	1.040	1.059	0.027	N/A	N/A	N/A	
17	21	42.91	6577325.6	30.00	2381011.5	0.979	0.983	1.057	0.078	0.060	0.380	0.385	
18	21	42.91	6577225.6	31.00	2381011.5	0.962	0.972	1.058	0.096	0.020	0.350	0.351	
19	20	45.91	6577925.6	24.00	2380711.5	1.128	1.128	N/A	N/A	N/A	N/A	N/A	
20	20	45.91	6577725.6	26.00	2380711.5	1.012	1.015	1.059	0.047	N/A	N/A	N/A	
21	20	45.91	6577525.6	28.00	2380711.5	1.028	1.037	1.062	0.034	N/A	N/A	N/A	
22	20	45.91	6577325.6	30.00	2380711.5	0.988	0.995	1.062	0.074	-0.150	0.330	0.362	
23	20	45.91	6577125.6	32.00	2380711.5	0.986	0.992	1.058	0.072	-0.130	0.320	0.345	
24	19	47.91	6577925.6	24.00	2380511.5	1.133	1.133	N/A	N/A	N/A	N/A	N/A	
25	19	47.91	6577725.6	26.00	2380511.5	1.003	1.008	1.066	0.063	0.390	0.180	0.430	
26	19	47.91	6577525.6	28.00	2380511.5	1.009	1.020	1.070	0.061	-0.080	0.110	0.136	
27	19	47.91	6577325.6	30.00	2380511.5	1.016	1.024	1.067	0.051	-0.230	0.280	0.362	
28	19	47.91	6577125.6	32.00	2380511.5	1.017	1.024	1.062	0.045	0.140	0.210	0.252	
32	18	49.91	6577925.6	24.00	2380311.5	1.052	1.052	N/A	N/A	N/A	N/A	N/A	tree
33	18	49.91	6577725.6	26.00	2380311.5	1.012	1.027	1.062	0.050	-0.210	0.410	0.461	
34	18	49.91	6577525.6	28.00	2380311.5	1.015	1.026	1.066	0.051	0.230	0.190	0.298	
35	18	49.91	6577325.6	30.00	2380311.5	1.019	1.029	1.061	0.042	-0.120	0.370	0.389	
36	18	49.91	6577125.6	32.00	2380311.5	0.992	0.991	1.060	0.068	-0.280	0.180	0.333	
37	17	51.91	6578275.6	20.50	2380111.5	1.041	1.041	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
38	17	51.91	6578125.6	22.00	2380111.5	0.966	0.966	1.040	0.074	-0.320	0.050	0.324	
39	17	51.91	6577925.6	24.00	2380111.5	1.052	1.052	N/A	N/A	N/A	N/A	N/A	
40	17	51.91	6577725.6	26.00	2380111.5	0.993	1.000	1.053	0.060	-0.380	0.340	0.510	
41	17	51.91	6577525.6	28.00	2380111.5	0.995	1.002	1.059	0.064	-0.260	0.270	0.375	
42	17	51.91	6577325.6	30.00	2380111.5	0.983	0.990	1.055	0.072	-0.290	0.280	0.403	
43	16	56.91	6578125.6	22.00	2379611.5	0.988	0.992	1.047	0.059	-0.280	0.420	0.505	
44	16	56.91	6577925.6	24.00	2379611.5	1.010	1.015	1.042	0.032	N/A	N/A	N/A	
45	16	56.91	6577725.6	26.00	2379611.5	1.003	1.015	1.044	0.041	N/A	N/A	N/A	
46	16	56.91	6577525.6	28.00	2379611.5	1.118	1.118	N/A	N/A	N/A	N/A	N/A	
47	16	56.91	6577325.6	30.00	2379611.5	1.223	1.223	N/A	N/A	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.255	1.255	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.198	1.198	N/A	N/A	N/A	N/A	N/A	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.196	1.196	N/A	N/A	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.187	1.187	N/A	N/A	N/A	N/A	N/A	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.223	1.223	N/A	N/A	N/A	N/A	N/A	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.910	0.916	1.042	0.132	-0.120	0.490	0.504	
55	15	61.91	6577925.6	24.00	2379111.5	0.947	0.953	1.044	0.097	-0.130	0.130	0.184	
56	15	61.91	6577725.6	26.00	2379111.5	1.032	1.030	1.046	0.014	N/A	N/A	N/A	
57	15	61.91	6577525.6	28.00	2379111.5	1.148	1.148	N/A	N/A	N/A	N/A	N/A	
58	15	61.91	6577325.6	30.00	2379111.5	1.167	1.167	N/A	N/A	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.187	1.187	N/A	N/A	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.209	1.209	N/A	N/A	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.174	1.174	N/A	N/A	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.159	1.159	N/A	N/A	N/A	N/A	N/A	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.175	1.175	N/A	N/A	N/A	N/A	N/A	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.177	1.177	N/A	N/A	N/A	N/A	N/A	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.863	0.871	1.050	0.187	-0.080	0.330	0.340	
66	14	66.91	6577925.6	24.00	2378611.5	0.884	0.888	1.047	0.163	-0.230	0.200	0.305	
67	14	66.91	6577725.6	26.00	2378611.5	1.035	1.034	1.046	0.011	N/A	N/A	N/A	
68	14	66.91	6577537.6	27.88	2378611.5	1.205	1.205	N/A	N/A	N/A	N/A	N/A	trees
69	14	66.91	6577325.6	30.00	2378611.5	1.199	1.199	N/A	N/A	N/A	N/A	N/A	
70	14	66.91	6577125.6	32.00	2378611.5	1.266	1.266	N/A	N/A	N/A	N/A	N/A	stockpile
71	14	66.91	6576925.6	34.00	2378611.5	1.234	1.234	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.205	1.205	N/A	N/A	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	
74	14	66.91	6576317.6	40.08	2378611.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	trees
75	14	66.91	6576125.6	42.00	2378611.5	1.194	1.194	N/A	N/A	N/A	N/A	N/A	
76	13	71.91	6578125.6	22.00	2378111.5	0.891	0.897	1.039	0.148	-0.120	0.280	0.305	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
77	13	71.91	6577925.6	24.00	2378111.5	0.933	0.938	1.039	0.106	-0.140	0.210	0.252	
78	13	71.91	6577725.6	26.00	2378111.5	1.018	1.022	1.038	0.020	N/A	N/A	N/A	
79	13	71.91	6577525.6	28.00	2378111.5	1.128	1.128	N/A	N/A	N/A	N/A	N/A	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.160	1.160	N/A	N/A	N/A	N/A	N/A	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.155	1.155	N/A	N/A	N/A	N/A	N/A	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.227	1.227	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.198	1.198	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.175	1.175	N/A	N/A	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.215	1.215	N/A	N/A	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	0.981	0.981	1.040	0.059	N/A	N/A	N/A	
88	12	73.91	6578125.6	22.00	2377911.5	0.931	0.937	1.045	0.114	-0.050	0.380	0.383	
89	12	73.91	6577925.6	24.00	2377911.5	0.944	0.941	1.046	0.102	-0.150	0.230	0.275	
90	12	73.91	6577725.6	26.00	2377911.5	1.004	1.012	1.048	0.044	-0.200	0.100	0.224	
91	12	73.91	6577525.6	28.00	2377911.5	1.087	1.087	N/A	N/A	N/A	N/A	N/A	
92	12	73.91	6577325.6	30.00	2377911.5	1.131	1.131	N/A	N/A	N/A	N/A	N/A	
93	12	73.91	6577125.6	32.00	2377911.5	1.150	1.150	N/A	N/A	N/A	N/A	N/A	
94	12	73.91	6576925.6	34.00	2377911.5	1.170	1.170	N/A	N/A	N/A	N/A	N/A	
95	12	73.91	6576725.6	36.00	2377911.5	1.197	1.197	N/A	N/A	N/A	N/A	N/A	
96	12	73.91	6576525.6	38.00	2377911.5	1.170	1.170	N/A	N/A	N/A	N/A	N/A	
97	12	73.91	6576333.6	39.92	2377911.5	1.155	1.155	N/A	N/A	N/A	N/A	N/A	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	
99	11	75.91	6578125.6	22.00	2377711.5	0.927	0.913	1.045	0.118	0.270	0.250	0.368	
100	11	75.91	6577925.6	24.00	2377711.5	0.903	0.900	1.045	0.142	0.130	0.180	0.222	
101	11	75.91	6577725.6	26.00	2377711.5	1.023	1.021	1.045	0.022	N/A	N/A	N/A	
102	11	75.91	6577525.6	28.00	2377711.5	1.060	1.060	N/A	N/A	N/A	N/A	N/A	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.100	1.100	N/A	N/A	N/A	N/A	N/A	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.123	1.123	N/A	N/A	N/A	N/A	N/A	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.111	1.111	N/A	N/A	N/A	N/A	N/A	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.170	1.170	N/A	N/A	N/A	N/A	N/A	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.183	1.183	N/A	N/A	N/A	N/A	N/A	trees
108	11	75.91	6576335.6	39.90	2377711.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	trees
109	11	75.91	6576116.6	42.09	2377711.5	1.168	1.168	N/A	N/A	N/A	N/A	N/A	trees
110a	10	78.91	6578025.6	23.00	2377411.5	0.854	0.860	1.044	0.190	0.060	0.270	0.277	
110	10	78.91	6577925.6	24.00	2377411.5	0.829	0.823	1.050	0.221	0.130	0.150	0.198	
111	10	78.91	6577725.6	26.00	2377411.5	0.910	0.910	1.044	0.134	0.090	N/A	0.090	
112	10	78.91	6577525.6	28.00	2377411.5	1.068	1.068	N/A	N/A	N/A	N/A	N/A	
113	10	78.91	6577325.6	30.00	2377411.5	1.096	1.096	N/A	N/A	N/A	N/A	N/A	
114	10	78.91	6577125.6	32.00	2377411.5	1.101	1.101	N/A	N/A	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.120	1.120	N/A	N/A	N/A	N/A	N/A	
116	10	78.91	6576738.6	35.87	2377411.5	1.129	1.129	N/A	N/A	N/A	N/A	N/A	
117	10	78.91	6576525.6	38.00	2377411.5	1.133	1.133	N/A	N/A	N/A	N/A	N/A	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.135	1.135	N/A	N/A	N/A	N/A	N/A	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.133	1.133	N/A	N/A	N/A	N/A	N/A	trees
120a	9	80.66	6577925.6	24.00	2377236.5	0.769	0.770	1.046	0.277	0.120	0.210	0.242	
120	9	80.66	6577725.6	26.00	2377236.5	0.857	0.861	1.046	0.189	0.080	0.040	0.089	
121	9	80.66	6577525.6	28.00	2377236.5	1.037	1.039	1.048	0.011	N/A	N/A	N/A	
122	9	80.66	6577325.6	30.00	2377236.5	1.054	1.054	N/A	N/A	N/A	N/A	N/A	
123	9	80.66	6577125.6	32.00	2377236.5	1.108	1.108	N/A	N/A	N/A	N/A	N/A	
124	9	80.66	6576925.6	34.00	2377236.5	1.104	1.104	N/A	N/A	N/A	N/A	N/A	
125	9	80.66	6576725.6	36.00	2377236.5	1.110	1.110	N/A	N/A	N/A	N/A	N/A	
126	9	80.66	6576525.6	38.00	2377236.5	1.120	1.120	N/A	N/A	N/A	N/A	N/A	
127	9	80.66	6576325.6	40.00	2377236.5	1.098	1.098	N/A	N/A	N/A	N/A	N/A	trees
128	9	80.66	6576134.6	41.91	2377236.5	1.148	1.148	N/A	N/A	N/A	N/A	N/A	trees
129	8	82.41	6578125.6	22.00	2377061.5	1.197	1.197	N/A	N/A	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.933	0.918	1.052	0.119	0.260	0.220	0.341	
131	8	82.41	6577725.6	26.00	2377061.5	0.902	0.888	1.052	0.150	0.050	0.210	0.216	
132	8	82.41	6577525.6	28.00	2377061.5	1.040	1.043	1.052	0.012	N/A	N/A	N/A	
133	8	82.41	6577325.6	30.00	2377061.5	1.087	1.087	N/A	N/A	N/A	N/A	N/A	
134	8	82.41	6577125.6	32.00	2377061.5	1.113	1.113	N/A	N/A	N/A	N/A	N/A	
135	8	82.41	6576925.6	34.00	2377061.5	1.115	1.115	N/A	N/A	N/A	N/A	N/A	
136	8	82.41	6576725.6	36.00	2377061.5	1.088	1.088	N/A	N/A	N/A	N/A	N/A	
137	8	82.41	6576525.6	38.00	2377061.5	1.101	1.101	N/A	N/A	N/A	N/A	N/A	
138	8	82.41	6576325.6	40.00	2377061.5	1.112	1.112	N/A	N/A	N/A	N/A	N/A	
139	8	82.41	6576125.6	42.00	2377061.5	1.117	1.117	N/A	N/A	N/A	N/A	N/A	
140	7	84.16	6578025.6	23.00	2376886.5	1.184	1.184	N/A	N/A	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	1.180	1.180	N/A	N/A	N/A	N/A	N/A	
142	7	84.16	6577725.6	26.00	2376886.5	0.933	0.928	1.053	0.120	0.080	0.220	0.234	
143	7	84.16	6577525.6	28.00	2376886.5	0.973	0.974	1.052	0.079	0.030	0.230	0.232	
144	7	84.16	6577325.6	30.00	2376886.5	1.065	1.065	N/A	N/A	N/A	N/A	N/A	
145	7	84.16	6577125.6	32.00	2376886.5	1.102	1.102	N/A	N/A	N/A	N/A	N/A	
146	7	84.16	6576925.6	34.00	2376886.5	1.079	1.079	N/A	N/A	N/A	N/A	N/A	
147	7	84.16	6576725.6	36.00	2376886.5	1.089	1.089	N/A	N/A	N/A	N/A	N/A	
148	7	84.16	6576525.6	38.00	2376886.5	1.093	1.093	N/A	N/A	N/A	N/A	N/A	
149	7	84.16	6576325.6	40.00	2376886.5	1.099	1.099	N/A	N/A	N/A	N/A	N/A	
150	7	84.16	6576125.6	42.00	2376886.5	1.092	1.092	N/A	N/A	N/A	N/A	N/A	
151	6	86.66	6577925.6	24.00	2376636.5	1.158	1.158	N/A	N/A	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.965	0.965	1.052	0.087	0.150	0.300	0.335	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
153	6	86.66	6577525.6	28.00	2376636.5	0.982	0.976	1.052	0.070	0.230	0.250	0.340	
154	6	86.66	6577325.6	30.00	2376636.5	1.038	1.036	1.049	0.011	N/A	N/A	N/A	
155	6	86.66	6577125.6	32.00	2376636.5	1.091	1.091	N/A	N/A	N/A	N/A	N/A	
156	6	86.66	6576925.6	34.00	2376636.5	1.093	1.093	N/A	N/A	N/A	N/A	N/A	
157	6	86.66	6576725.6	36.00	2376636.5	1.122	1.122	N/A	N/A	N/A	N/A	N/A	
158	6	86.66	6576525.6	38.00	2376636.5	1.091	1.091	N/A	N/A	N/A	N/A	N/A	
159	6	86.66	6576325.6	40.00	2376636.5	1.083	1.083	N/A	N/A	N/A	N/A	N/A	
160	6	86.66	6576125.6	42.00	2376636.5	1.102	1.102	N/A	N/A	N/A	N/A	N/A	
161	5	89.16	6577725.6	26.00	2376386.5	1.167	1.167	N/A	N/A	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.948	0.940	1.056	0.108	0.210	0.390	0.443	
163	5	89.16	6577325.6	30.00	2376386.5	1.003	1.002	1.049	0.046	0.250	0.220	0.333	
164	5	89.16	6577125.6	32.00	2376386.5	1.055	1.055	N/A	N/A	N/A	N/A	N/A	
165	5	89.16	6576925.6	34.00	2376386.5	1.112	1.112	N/A	N/A	N/A	N/A	N/A	
166	5	89.16	6576725.6	36.00	2376386.5	1.090	1.090	N/A	N/A	N/A	N/A	N/A	
167	5	89.16	6576525.6	38.00	2376386.5	1.080	1.080	N/A	N/A	N/A	N/A	N/A	
168	5	89.16	6576325.6	40.00	2376386.5	1.074	1.074	N/A	N/A	N/A	N/A	N/A	
169	5	89.16	6576125.6	42.00	2376386.5	1.093	1.093	N/A	N/A	N/A	N/A	N/A	
170	4	91.16	6577625.6	27.00	2376186.5	1.162	1.162	N/A	N/A	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.188	1.188	N/A	N/A	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.932	0.938	1.047	0.115	0.300	0.250	0.391	
173	4	91.16	6577125.6	32.00	2376186.5	0.953	0.956	1.040	0.087	0.050	0.040	0.064	
174	4	91.16	6576925.6	34.00	2376186.5	1.020	1.026	1.037	0.017	N/A	N/A	N/A	
175	4	91.16	6576725.6	36.00	2376186.5	1.063	1.063	N/A	N/A	N/A	N/A	N/A	
176	4	91.16	6576525.6	38.00	2376186.5	1.091	1.091	N/A	N/A	N/A	N/A	N/A	
177	4	91.16	6576325.6	40.00	2376186.5	1.116	1.116	N/A	N/A	N/A	N/A	N/A	
178	4	91.16	6576125.6	42.00	2376186.5	1.177	1.177	N/A	N/A	N/A	N/A	N/A	
179	3	93.36	6577425.6	29.00	2375966.5	1.181	1.181	N/A	N/A	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.957	0.955	1.043	0.086	0.430	0.020	0.430	
182	3	93.36	6576925.6	34.00	2375966.5	0.948	0.944	1.037	0.089	0.230	0.120	0.259	
183	3	93.36	6576725.6	36.00	2375966.5	0.961	0.950	1.032	0.071	0.250	0.190	0.314	
184	3	93.36	6576525.6	38.00	2375966.5	0.975	0.974	1.032	0.057	-0.030	0.050	0.058	
185	3	93.36	6576325.6	40.00	2375966.5	1.000	0.998	1.032	0.032	0.110	0.110	0.156	
186	3	93.36	6576125.6	42.00	2375966.5	0.981	0.986	1.035	0.054	-0.060	0.090	0.108	
187	2	95.36	6577225.6	31.00	2375766.5	1.160	1.160	N/A	N/A	N/A	N/A	N/A	
188	2	95.36	6577112.6	32.13	2375766.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	
189	2	95.36	6576890.6	34.35	2375766.5	1.206	1.206	N/A	N/A	N/A	N/A	N/A	
190	2	95.36	6576725.6	36.00	2375766.5	0.949	0.948	1.034	0.085	0.280	0.030	0.282	
191	2	95.36	6576525.6	38.00	2375766.5	0.922	0.917	1.032	0.110	0.320	0.080	0.330	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
192	2	95.36	6576325.6	40.00	2375766.5	0.944	0.932	1.033	0.089	0.280	0.020	0.281	
193	2	95.36	6576125.6	42.00	2375766.5	0.953	0.934	1.040	0.087	0.350	0.010	0.350	
194	1	97.36	6577125.6	32.00	2375566.5	1.122	1.122	N/A	N/A	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.139	1.139	N/A	N/A	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.157	1.157	N/A	N/A	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.236	1.236	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.077	1.077	N/A	N/A	N/A	N/A	N/A	
200	0	99.36	6576725.6	36.00	2375366.5	1.153	1.153	N/A	N/A	N/A	N/A	N/A	
201	0	99.36	6576525.6	38.00	2375366.5	1.066	1.066	N/A	N/A	N/A	N/A	N/A	
202	0	99.36	6576325.6	40.00	2375366.5	1.070	1.070	N/A	N/A	N/A	N/A	N/A	
203	0	99.36	6576125.6	42.00	2375366.5	1.095	1.095	N/A	N/A	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.934	0.934	1.044	0.110	-0.130	0.610	0.624	
205	Current	59.30	6578231.6	20.94	2379372.2	1.180	1.180	N/A	N/A	N/A	N/A	N/A	concrete
206	Current	59.30	6578089.6	22.36	2379372.2	0.935	0.935	1.044	0.109	-0.020	0.350	0.351	
207	Current	59.51	6578160.6	21.65	2379351.5	0.940	0.940	1.043	0.103	-0.100	0.530	0.539	
208	Current	60.01	6578260.6	20.65	2379301.5	1.225	1.225	N/A	N/A	N/A	N/A	N/A	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.118	1.118	N/A	N/A	N/A	N/A	N/A	concrete
210	Current	60.01	6578160.6	21.65	2379301.5	0.931	0.931	1.039	0.108	N/A	N/A	N/A	
211	Current	60.01	6578110.6	22.15	2379301.5	0.932	0.932	1.041	0.109	-0.240	0.420	0.484	
212	Current	60.01	6578060.6	22.65	2379301.5	0.930	0.930	1.041	0.111	0.270	0.230	0.355	
213	Current	60.51	6578160.6	21.65	2379251.5	0.951	0.951	1.038	0.087	N/A	N/A	N/A	
214	Current	60.72	6578231.6	20.94	2379230.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.918	0.918	1.041	0.123	-0.210	0.380	0.434	
216	Current	61.01	6578160.6	21.65	2379201.5	0.968	0.968	1.040	0.072	N/A	N/A	N/A	
217	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.867	0.867	1.049	0.182	-0.160	0.240	0.288	
218	Alt. 1	77.33	6578097.6	22.28	2377569.5	0.857	0.857	1.047	0.190	-0.040	0.210	0.214	
219	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.870	0.870	1.048	0.178	-0.090	0.230	0.247	
220	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.865	0.865	1.049	0.184	0.090	0.230	0.247	
221	Alt. 1	78.04	6578126.6	21.99	2377498.5	0.910	0.910	1.046	0.136	-0.070	0.120	0.139	
222	Alt. 1	78.04	6578076.6	22.49	2377498.5	0.862	0.862	1.048	0.186	-0.130	0.250	0.282	
223	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.843	0.843	1.048	0.205	0.090	0.190	0.210	
224	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.848	0.848	1.048	0.200	0.080	0.200	0.215	
225	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.852	0.852	1.049	0.197	0.060	0.190	0.199	
226	Alt. 1	78.54	6578026.6	22.99	2377448.5	0.824	0.824	1.047	0.223	-0.110	0.270	0.292	
227	Alt. 1	78.75	6578097.6	22.28	2377427.5	0.912	0.912	1.045	0.133	N/A	N/A	N/A	
228	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.839	0.839	1.045	0.206	-0.070	0.220	0.231	
229	Alt. 2	79.04	6578026.6	22.99	2377398.5	0.863	0.863	1.048	0.185	0.090	0.180	0.201	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
230	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.943	0.943	1.047	0.104	0.440	0.300	0.533	
231	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.957	0.957	1.047	0.090	0.240	0.260	0.354	
232	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.949	0.949	1.043	0.094	0.260	0.190	0.322	
233	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.949	0.949	1.047	0.098	0.440	0.210	0.488	
234	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.229	1.229	N/A	N/A	N/A	N/A	N/A	bank
235	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.081	1.081	N/A	N/A	N/A	N/A	N/A	bank
236	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.991	0.991	1.044	0.053	N/A	N/A	N/A	bank
237	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.962	0.962	1.044	0.082	0.450	0.190	0.488	
238	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.961	0.961	1.045	0.084	0.490	0.110	0.502	
239	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.132	1.132	N/A	N/A	N/A	N/A	N/A	bank
240	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.238	1.238	N/A	N/A	N/A	N/A	N/A	bank
241	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.248	1.248	N/A	N/A	N/A	N/A	N/A	bank
242	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.260	1.260	N/A	N/A	N/A	N/A	N/A	bank

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	11/18/2010 - 11/24/2010		
Name(s):	J. Beeby B. Johnson		
Configuration:	Realigned-bank	**Start Time:**	10:30 AM
Discharge:	90,000 cfs	**End Time:**	3:30 PM

Table F-6: Data measurements for 90,000-cfs Realigned-bank configuration test.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.056	1.054	1.209	0.153	0.130	0.500	0.517	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.039	1.048	1.209	0.170	-0.120	0.590	0.602	
3	23	32.91	6577325.6	30.00	2382011.5	1.038	1.036	1.204	0.166	-0.210	0.710	0.740	
4	23	32.91	6577125.6	32.00	2382011.5	1.007	1.008	1.198	0.191	-0.130	0.410	0.430	
5	23	32.91	6576925.6	34.00	2382011.5	1.234	1.234	N/A	N/A	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.100	1.113	1.205	0.105	N/A	N/A	N/A	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.119	1.122	1.200	0.081	N/A	N/A	N/A	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.036	1.034	1.200	0.164	-0.140	0.200	0.244	
10	22	37.91	6577525.6	28.00	2381511.5	1.013	1.015	1.200	0.187	-0.190	0.530	0.563	
11	22	37.91	6577325.6	30.00	2381511.5	0.989	0.995	1.194	0.205	-0.130	0.580	0.594	
12	22	37.91	6577225.6	31.00	2381511.5	0.963	0.968	1.191	0.228	-0.060	0.460	0.464	
14	21	42.91	6577925.6	24.00	2381011.5	1.120	1.135	1.193	0.073	N/A	N/A	N/A	
15	21	42.91	6577725.6	26.00	2381011.5	1.008	1.014	1.193	0.185	-0.130	0.440	0.459	
16	21	42.91	6577525.6	28.00	2381011.5	1.040	1.036	1.193	0.153	-0.130	0.520	0.536	
17	21	42.91	6577325.6	30.00	2381011.5	0.983	0.983	1.192	0.209	-0.160	0.480	0.506	
18	21	42.91	6577225.6	31.00	2381011.5	0.972	0.968	1.189	0.217	-0.090	0.410	0.420	
19	20	45.91	6577925.6	24.00	2380711.5	1.128	1.149	1.196	0.068	-0.190	0.280	0.338	
20	20	45.91	6577725.6	26.00	2380711.5	1.015	1.015	1.195	0.180	-0.110	0.440	0.454	
21	20	45.91	6577525.6	28.00	2380711.5	1.037	1.036	1.198	0.161	-0.250	0.510	0.568	
22	20	45.91	6577325.6	30.00	2380711.5	0.995	0.992	1.195	0.200	-0.090	0.460	0.469	
23	20	45.91	6577125.6	32.00	2380711.5	0.992	0.996	1.189	0.197	-0.060	0.110	0.125	
24	19	47.91	6577925.6	24.00	2380511.5	1.133	1.136	1.198	0.065	-0.240	0.280	0.369	
25	19	47.91	6577725.6	26.00	2380511.5	1.008	1.010	1.201	0.193	-0.180	0.400	0.439	
26	19	47.91	6577525.6	28.00	2380511.5	1.020	1.018	1.203	0.183	-0.220	0.460	0.510	
27	19	47.91	6577325.6	30.00	2380511.5	1.024	1.020	1.203	0.179	-0.070	0.390	0.396	
28	19	47.91	6577125.6	32.00	2380511.5	1.024	1.024	1.198	0.174	0.030	0.160	0.163	
32	18	49.91	6577925.6	24.00	2380311.5	1.052	1.106	1.198	0.146	N/A	N/A	N/A	tree
33	18	49.91	6577725.6	26.00	2380311.5	1.027	1.014	1.197	0.170	-0.220	0.430	0.483	
34	18	49.91	6577525.6	28.00	2380311.5	1.026	1.023	1.200	0.174	-0.190	0.440	0.479	
35	18	49.91	6577325.6	30.00	2380311.5	1.029	1.025	1.200	0.171	-0.140	0.360	0.386	
36	18	49.91	6577125.6	32.00	2380311.5	0.991	0.995	1.193	0.202	0.070	0.050	0.086	
37	17	51.91	6578275.6	20.50	2380111.5	1.041	1.051	1.184	0.143	-0.170	0.200	0.262	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
38	17	51.91	6578125.6	22.00	2380111.5	0.966	0.968	1.190	0.224	-0.090	0.270	0.285	
39	17	51.91	6577925.6	24.00	2380111.5	1.052	1.059	1.190	0.138	-0.280	0.440	0.522	
40	17	51.91	6577725.6	26.00	2380111.5	1.000	0.995	1.191	0.191	-0.240	0.430	0.492	
41	17	51.91	6577525.6	28.00	2380111.5	1.002	0.995	1.194	0.192	-0.180	0.410	0.448	
42	17	51.91	6577325.6	30.00	2380111.5	0.990	0.991	1.093	0.103	-0.190	0.220	0.291	
43	16	56.91	6578125.6	22.00	2379611.5	0.992	0.984	1.200	0.208	-0.090	0.360	0.371	
44	16	56.91	6577925.6	24.00	2379611.5	1.015	1.026	1.200	0.185	-0.210	0.520	0.561	
45	16	56.91	6577725.6	26.00	2379611.5	1.015	0.994	1.199	0.184	-0.210	0.510	0.552	
46	16	56.91	6577525.6	28.00	2379611.5	1.118	1.138	1.200	0.082	-0.390	0.340	0.517	
47	16	56.91	6577325.6	30.00	2379611.5	1.223	1.223	N/A	N/A	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.255	1.255	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.198	1.198	N/A	N/A	N/A	N/A	N/A	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.196	1.196	N/A	N/A	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.187	1.187	N/A	N/A	N/A	N/A	N/A	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.223	1.223	N/A	N/A	N/A	N/A	N/A	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.916	0.931	1.196	0.280	-0.090	0.380	0.391	
55	15	61.91	6577925.6	24.00	2379111.5	0.953	0.953	1.196	0.243	-0.050	0.510	0.512	
56	15	61.91	6577725.6	26.00	2379111.5	1.030	1.040	1.196	0.166	-0.130	0.520	0.536	
57	15	61.91	6577525.6	28.00	2379111.5	1.148	1.168	1.199	0.051	N/A	N/A	N/A	
58	15	61.91	6577325.6	30.00	2379111.5	1.167	1.184	1.197	0.030	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.187	1.187	N/A	N/A	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.209	1.209	N/A	N/A	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.174	1.174	N/A	N/A	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.159	1.159	N/A	N/A	N/A	N/A	N/A	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.175	1.175	N/A	N/A	N/A	N/A	N/A	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.177	1.177	N/A	N/A	N/A	N/A	N/A	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.871	0.868	1.199	0.328	-0.120	0.480	0.495	
66	14	66.91	6577925.6	24.00	2378611.5	0.888	0.886	1.199	0.311	-0.120	0.560	0.573	
67	14	66.91	6577725.6	26.00	2378611.5	1.034	1.037	1.198	0.164	-0.120	0.440	0.456	
68	14	66.91	6577537.6	27.88	2378611.5	N/A	1.219	1.198	N/A	N/A	N/A	N/A	bed mismeasured
69	14	66.91	6577325.6	30.00	2378611.5	1.199	1.199	N/A	N/A	N/A	N/A	N/A	
70	14	66.91	6577125.6	32.00	2378611.5	1.266	1.266	N/A	N/A	N/A	N/A	N/A	stockpile
71	14	66.91	6576925.6	34.00	2378611.5	1.234	1.234	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.205	1.205	N/A	N/A	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	
74	14	66.91	6576317.6	40.08	2378611.5	1.200	1.200	N/A	N/A	N/A	N/A	N/A	trees
75	14	66.91	6576125.6	42.00	2378611.5	1.194	1.194	N/A	N/A	N/A	N/A	N/A	
76	13	71.91	6578125.6	22.00	2378111.5	0.897	0.900	1.190	0.293	0.100	0.420	0.432	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
77	13	71.91	6577925.6	24.00	2378111.5	0.938	0.939	1.191	0.253	0.070	0.520	0.525	
78	13	71.91	6577725.6	26.00	2378111.5	1.022	0.921	1.191	0.169	0.100	0.450	0.461	
79	13	71.91	6577525.6	28.00	2378111.5	1.128	1.128	1.194	0.066	N/A	0.100	0.100	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.160	1.161	1.192	0.032	N/A	N/A	N/A	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.155	1.152	1.188	0.033	N/A	N/A	N/A	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.227	1.227	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.198	1.198	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.175	1.175	N/A	N/A	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.215	1.215	N/A	N/A	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	0.981	0.992	1.192	0.211	-0.050	0.050	0.071	
88	12	73.91	6578125.6	22.00	2377911.5	0.937	0.932	1.196	0.259	0.100	0.410	0.422	
89	12	73.91	6577925.6	24.00	2377911.5	0.941	0.949	1.198	0.257	0.100	0.510	0.520	
90	12	73.91	6577725.6	26.00	2377911.5	1.012	1.012	1.197	0.185	0.050	0.470	0.473	
91	12	73.91	6577525.6	28.00	2377911.5	1.087	1.084	1.200	0.113	0.050	0.050	0.071	
92	12	73.91	6577325.6	30.00	2377911.5	1.131	1.144	1.197	0.066	N/A	N/A	N/A	
93	12	73.91	6577125.6	32.00	2377911.5	1.150	1.163	1.193	0.043	N/A	N/A	N/A	
94	12	73.91	6576925.6	34.00	2377911.5	1.170	1.174	1.187	0.017	N/A	N/A	N/A	
95	12	73.91	6576725.6	36.00	2377911.5	1.197	1.197	N/A	N/A	N/A	N/A	N/A	
96	12	73.91	6576525.6	38.00	2377911.5	1.170	1.170	N/A	N/A	N/A	N/A	N/A	
97	12	73.91	6576333.6	39.92	2377911.5	1.155	1.155	N/A	N/A	N/A	N/A	N/A	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.210	1.210	N/A	N/A	N/A	N/A	N/A	
99	11	75.91	6578125.6	22.00	2377711.5	0.913	0.903	1.195	0.282	0.050	0.150	0.158	
100	11	75.91	6577925.6	24.00	2377711.5	0.900	0.899	1.195	0.295	0.150	0.500	0.522	
101	11	75.91	6577725.6	26.00	2377711.5	1.021	1.024	1.195	0.174	0.050	0.520	0.522	
102	11	75.91	6577525.6	28.00	2377711.5	1.060	1.074	1.197	0.137	-0.100	0.120	0.156	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.100	1.106	1.195	0.095	0.050	0.120	0.130	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.123	1.130	1.19	0.067	N/A	N/A	N/A	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.111	1.115	1.186	0.075	-0.200	0.110	0.228	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.170	1.178	1.182	0.012	N/A	N/A	N/A	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.183	1.183	N/A	N/A	N/A	N/A	N/A	trees
108	11	75.91	6576335.6	39.90	2377711.5	1.176	1.176	N/A	N/A	N/A	N/A	N/A	trees
109	11	75.91	6576116.6	42.09	2377711.5	1.168	1.168	N/A	N/A	N/A	N/A	N/A	trees
110a	10	78.91	6578025.6	23.00	2377411.5	0.860	0.861	1.196	0.336	0.100	0.290	0.307	
110	10	78.91	6577925.6	24.00	2377411.5	0.823	0.819	1.193	0.370	0.100	0.410	0.422	
111	10	78.91	6577725.6	26.00	2377411.5	0.910	0.909	1.195	0.285	0.100	0.400	0.412	
112	10	78.91	6577525.6	28.00	2377411.5	1.068	1.073	1.197	0.129	0.400	0.200	0.447	
113	10	78.91	6577325.6	30.00	2377411.5	1.096	1.102	1.192	0.096	0.300	N/A	0.300	
114	10	78.91	6577125.6	32.00	2377411.5	1.101	1.109	1.189	0.088	0.450	N/A	0.450	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.120	1.128	1.182	0.062	N/A	N/A	N/A	
116	10	78.91	6576738.6	35.87	2377411.5	1.129	1.130	1.180	0.051	N/A	N/A	N/A	
117	10	78.91	6576525.6	38.00	2377411.5	1.133	1.138	1.179	0.046	N/A	N/A	N/A	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.135	1.136	1.177	0.042	N/A	N/A	N/A	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.133	1.138	1.182	0.049	N/A	N/A	N/A	trees
120a	9	80.66	6577925.6	24.00	2377236.5	0.770	0.768	1.199	0.429	0.050	0.350	0.354	
120	9	80.66	6577725.6	26.00	2377236.5	0.861	0.858	1.200	0.339	0.150	0.350	0.381	
121	9	80.66	6577525.6	28.00	2377236.5	1.039	1.038	1.201	0.162	0.220	0.300	0.372	
122	9	80.66	6577325.6	30.00	2377236.5	1.054	1.060	1.198	0.144	0.200	0.120	0.233	
123	9	80.66	6577125.6	32.00	2377236.5	1.108	1.112	1.191	0.083	0.250	N/A	0.250	
124	9	80.66	6576925.6	34.00	2377236.5	1.104	1.110	1.185	0.081	0.250	N/A	0.250	
125	9	80.66	6576725.6	36.00	2377236.5	1.110	1.110	1.180	0.070	0.200	0.030	0.202	
126	9	80.66	6576525.6	38.00	2377236.5	1.120	1.121	1.182	0.062	N/A	N/A	N/A	
127	9	80.66	6576325.6	40.00	2377236.5	1.098	1.100	1.180	0.082	N/A	N/A	N/A	trees
128	9	80.66	6576134.6	41.91	2377236.5	1.148	1.147	1.180	0.032	N/A	N/A	N/A	trees
129	8	82.41	6578125.6	22.00	2377061.5	1.197	1.202	N/A	N/A	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.918	0.915	1.202	0.284	0.050	0.270	0.275	
131	8	82.41	6577725.6	26.00	2377061.5	0.888	0.881	1.202	0.314	0.100	0.420	0.432	
132	8	82.41	6577525.6	28.00	2377061.5	1.043	1.044	1.203	0.160	0.250	0.320	0.406	
133	8	82.41	6577325.6	30.00	2377061.5	1.087	1.091	1.200	0.113	0.100	0.250	0.269	
134	8	82.41	6577125.6	32.00	2377061.5	1.113	1.118	1.194	0.081	0.450	0.140	0.471	
135	8	82.41	6576925.6	34.00	2377061.5	1.115	1.116	1.186	0.071	N/A	0.150	0.150	
136	8	82.41	6576725.6	36.00	2377061.5	1.088	1.087	1.184	0.096	0.100	0.100	0.141	
137	8	82.41	6576525.6	38.00	2377061.5	1.101	1.107	1.183	0.082	0.200	0.100	0.224	
138	8	82.41	6576325.6	40.00	2377061.5	1.112	1.118	1.180	0.068	-0.150	0.150	0.212	
139	8	82.41	6576125.6	42.00	2377061.5	1.117	1.117	1.184	0.067	0.200	0.050	0.206	
140	7	84.16	6578025.6	23.00	2376886.5	1.184	1.189	N/A	N/A	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	1.180	1.180	N/A	N/A	N/A	N/A	N/A	
142	7	84.16	6577725.6	26.00	2376886.5	0.928	0.930	1.203	0.275	0.200	0.380	0.429	
143	7	84.16	6577525.6	28.00	2376886.5	0.974	0.973	1.203	0.229	0.150	0.350	0.381	
144	7	84.16	6577325.6	30.00	2376886.5	1.065	1.069	1.201	0.136	0.300	0.220	0.372	
145	7	84.16	6577125.6	32.00	2376886.5	1.102	1.114	1.192	0.090	0.300	0.220	0.372	
146	7	84.16	6576925.6	34.00	2376886.5	1.079	1.087	1.185	0.106	0.250	0.130	0.282	
147	7	84.16	6576725.6	36.00	2376886.5	1.089	1.088	1.182	0.093	0.100	0.150	0.180	
148	7	84.16	6576525.6	38.00	2376886.5	1.093	1.090	1.179	0.086	0.250	0.130	0.282	
149	7	84.16	6576325.6	40.00	2376886.5	1.099	1.115	1.175	0.076	0.050	0.190	0.196	
150	7	84.16	6576125.6	42.00	2376886.5	1.092	1.107	1.180	0.088	0.250	0.080	0.262	
151	6	86.66	6577925.6	24.00	2376636.5	1.158	1.152	N/A	N/A	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.965	0.968	1.206	0.241	0.250	0.300	0.391	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
153	6	86.66	6577525.6	28.00	2376636.5	0.976	0.986	1.206	0.230	0.350	0.350	0.495	
154	6	86.66	6577325.6	30.00	2376636.5	1.036	1.039	1.202	0.166	0.200	0.350	0.403	
155	6	86.66	6577125.6	32.00	2376636.5	1.091	1.100	1.195	0.104	0.300	0.200	0.361	
156	6	86.66	6576925.6	34.00	2376636.5	1.093	1.100	1.188	0.095	0.220	0.180	0.284	
157	6	86.66	6576725.6	36.00	2376636.5	1.122	1.123	1.172	0.050	0.050	0.200	0.206	
158	6	86.66	6576525.6	38.00	2376636.5	1.091	1.095	1.181	0.090	0.150	0.120	0.192	
159	6	86.66	6576325.6	40.00	2376636.5	1.083	1.087	1.180	0.097	0.200	0.110	0.228	
160	6	86.66	6576125.6	42.00	2376636.5	1.102	1.105	1.185	0.083	N/A	0.200	0.200	
161	5	89.16	6577725.6	26.00	2376386.5	1.167	1.172	N/A	N/A	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.940	0.951	1.209	0.269	0.250	0.400	0.472	
163	5	89.16	6577325.6	30.00	2376386.5	1.002	1.006	1.206	0.204	0.290	0.350	0.455	
164	5	89.16	6577125.6	32.00	2376386.5	1.055	1.061	1.200	0.145	0.200	0.320	0.377	
165	5	89.16	6576925.6	34.00	2376386.5	1.112	1.118	1.194	0.082	0.300	0.280	0.410	
166	5	89.16	6576725.6	36.00	2376386.5	1.090	1.097	1.190	0.100	0.450	0.120	0.466	
167	5	89.16	6576525.6	38.00	2376386.5	1.080	1.091	1.190	0.110	0.280	0.120	0.305	
168	5	89.16	6576325.6	40.00	2376386.5	1.074	1.078	1.189	0.115	0.350	0.150	0.381	
169	5	89.16	6576125.6	42.00	2376386.5	1.093	1.103	1.190	0.097	0.450	0.100	0.461	
170	4	91.16	6577625.6	27.00	2376186.5	1.162	1.170	N/A	N/A	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.188	1.193	N/A	N/A	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.938	0.938	1.205	0.267	0.250	0.270	0.368	
173	4	91.16	6577125.6	32.00	2376186.5	0.956	0.958	1.200	0.244	0.250	0.250	0.354	
174	4	91.16	6576925.6	34.00	2376186.5	1.026	1.022	1.193	0.167	0.300	0.220	0.372	
175	4	91.16	6576725.6	36.00	2376186.5	1.063	1.078	1.190	0.127	0.450	0.110	0.463	
176	4	91.16	6576525.6	38.00	2376186.5	1.091	1.096	1.190	0.099	0.300	0.200	0.361	
177	4	91.16	6576325.6	40.00	2376186.5	1.116	1.182	1.187	0.071	N/A	N/A	N/A	
178	4	91.16	6576125.6	42.00	2376186.5	1.177	1.186	N/A	N/A	N/A	N/A	N/A	
179	3	93.36	6577425.6	29.00	2375966.5	1.181	1.185	N/A	N/A	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.232	1.235	N/A	N/A	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.955	0.961	1.203	0.248	0.120	0.200	0.233	
182	3	93.36	6576925.6	34.00	2375966.5	0.944	0.950	1.196	0.252	0.250	0.210	0.326	
183	3	93.36	6576725.6	36.00	2375966.5	0.950	0.973	1.193	0.243	0.320	0.210	0.383	
184	3	93.36	6576525.6	38.00	2375966.5	0.974	0.980	1.192	0.218	0.390	0.150	0.418	
185	3	93.36	6576325.6	40.00	2375966.5	0.998	0.998	1.190	0.192	0.360	0.110	0.376	
186	3	93.36	6576125.6	42.00	2375966.5	0.986	0.982	1.194	0.208	0.350	N/A	0.350	
187	2	95.36	6577225.6	31.00	2375766.5	1.160	1.166	N/A	N/A	N/A	N/A	N/A	
188	2	95.36	6577112.6	32.13	2375766.5	1.176	1.180	N/A	N/A	N/A	N/A	N/A	
189	2	95.36	6576890.6	34.35	2375766.5	1.206	1.209	N/A	N/A	N/A	N/A	N/A	
190	2	95.36	6576725.6	36.00	2375766.5	0.948	0.964	1.196	0.248	0.300	0.200	0.361	
191	2	95.36	6576525.6	38.00	2375766.5	0.917	0.923	1.193	0.276	0.300	0.190	0.355	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
192	2	95.36	6576325.6	40.00	2375766.5	0.932	0.943	1.193	0.261	0.320	0.120	0.342	
193	2	95.36	6576125.6	42.00	2375766.5	0.934	0.951	1.197	0.263	0.300	0.050	0.304	
194	1	97.36	6577125.6	32.00	2375566.5	1.122	1.139	N/A	N/A	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.139	1.153	N/A	N/A	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.157	1.168	N/A	N/A	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.201	1.216	N/A	N/A	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.236	1.239	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.077	1.053	1.208	0.131	0.100	0.100	0.141	
200	0	99.36	6576725.6	36.00	2375366.5	1.153	1.171	N/A	N/A	N/A	N/A	N/A	
201	0	99.36	6576525.6	38.00	2375366.5	1.066	1.094	N/A	N/A	N/A	N/A	N/A	
202	0	99.36	6576325.6	40.00	2375366.5	1.070	1.074	N/A	N/A	N/A	N/A	N/A	
203	0	99.36	6576125.6	42.00	2375366.5	1.095	1.112	N/A	N/A	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.934	0.949	1.199	0.265	-0.060	0.340	0.345	
205	Current	59.30	6578231.6	20.94	2379372.2	1.180	1.170	1.193	0.013	N/A	N/A	N/A	
206	Current	59.30	6578089.6	22.36	2379372.2	0.935	0.945	1.199	0.264	-0.070	0.370	0.377	
207	Current	59.51	6578160.6	21.65	2379351.5	0.940	0.947	1.194	0.254	0.040	0.350	0.352	
208	Current	60.01	6578260.6	20.65	2379301.5	1.225	1.225	N/A	N/A	N/A	N/A	N/A	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.118	1.133	1.188	0.070	N/A	N/A	N/A	
210	Current	60.01	6578160.6	21.65	2379301.5	0.931	0.948	1.193	0.262	0.030	0.310	0.311	
211	Current	60.01	6578110.6	22.15	2379301.5	0.932	0.940	1.193	0.261	0.110	0.380	0.396	
212	Current	60.01	6578060.6	22.65	2379301.5	0.930	0.935	1.194	0.264	-0.020	0.390	0.391	
213	Current	60.51	6578160.6	21.65	2379251.5	0.951	0.960	1.190	0.239	-0.050	0.410	0.413	
214	Current	60.72	6578231.6	20.94	2379230.5	1.201	1.201	N/A	N/A	N/A	N/A	N/A	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.918	0.944	1.193	0.275	-0.060	0.380	0.385	
216	Current	61.01	6578160.6	21.65	2379201.5	0.968	0.977	1.193	0.225	-0.110	0.380	0.396	
217	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.867	0.883	1.203	0.336	0.070	0.350	0.357	
218	Alt. 1	77.33	6578097.6	22.28	2377569.5	0.857	0.883	1.200	0.343	-0.030	0.170	0.173	
219	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.870	0.872	1.201	0.331	0.030	0.410	0.411	
220	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.865	0.858	1.201	0.336	0.040	0.380	0.382	
221	Alt. 1	78.04	6578126.6	21.99	2377498.5	0.910	0.904	1.200	0.290	-0.040	N/A	0.040	
222	Alt. 1	78.04	6578076.6	22.49	2377498.5	0.862	0.868	1.200	0.338	-0.020	0.190	0.191	
223	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.843	0.866	1.201	0.358	0.060	0.420	0.424	
224	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.848	0.857	1.200	0.352	0.120	0.410	0.427	
225	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.852	0.854	1.200	0.348	-0.020	0.450	0.450	
226	Alt. 1	78.54	6578026.6	22.99	2377448.5	0.824	0.831	1.199	0.375	-0.030	0.300	0.301	
227	Alt. 1	78.75	6578097.6	22.28	2377427.5	0.912	0.954	1.199	0.287	-0.060	N/A	0.060	
228	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.839	0.832	1.200	0.361	0.050	0.360	0.363	
229	Alt. 1	79.04	6578026.6	22.99	2377398.5	0.863	0.861	1.200	0.337	0.070	0.250	0.260	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
230	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.943	0.951	1.205	0.262	0.210	0.140	0.252	
231	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.957	0.951	1.208	0.251	0.270	0.250	0.368	
232	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.949	0.952	1.204	0.255	0.280	0.160	0.322	
233	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.949	0.954	1.206	0.257	0.260	0.200	0.328	
234	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.229	1.227	N/A	N/A	N/A	N/A	N/A	bank
235	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.081	1.080	1.208	0.127	N/A	N/A	N/A	bank
236	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.991	0.977	1.207	0.216	0.150	0.190	0.242	
237	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.962	0.964	1.206	0.244	0.210	0.180	0.277	
238	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.961	0.965	1.204	0.243	0.240	0.180	0.300	
239	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.132	1.139	1.209	0.077	N/A	N/A	N/A	bank
240	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.238	1.232	N/A	N/A	N/A	N/A	N/A	bank
241	Alt. 2	93.80	6577179.6	31.46	2375922.5	N/A	1.051	1.205	N/A	N/A	N/A	N/A	bed mismeasured
242	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.260	1.250	N/A	N/A	N/A	N/A	N/A	bank

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	12/1/2010		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Realigned-bank	**Start Time:**	10:30 AM
Discharge:	145,000 cfs	**End Time:**	4:15 PM

Table F-7: Data measurements for 145,000-cfs Realigned-bank Configuration Test 1.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.054	1.027	1.278	0.224	-0.130	0.740	0.751	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.048	1.042	1.275	0.227	-0.140	0.690	0.704	
3	23	32.91	6577325.6	30.00	2382011.5	1.036	1.029	1.272	0.236	-0.210	0.580	0.617	
4	23	32.91	6577125.6	32.00	2382011.5	1.008	1.006	1.265	0.257	-0.260	0.700	0.747	
5	23	32.91	6576925.6	34.00	2382011.5	1.234	1.238	1.257	0.023	N/A	N/A	N/A	
7	22	37.91	6578025.6	23.00	2381511.5	1.113	1.111	1.265	0.152	0.030	-0.020	0.036	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.122	1.125	1.262	0.140	0.060	0.030	0.067	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.034	1.037	1.260	0.226	-0.150	0.490	0.512	
10	22	37.91	6577525.6	28.00	2381511.5	1.015	1.038	1.262	0.247	-0.340	0.680	0.760	
11	22	37.91	6577325.6	30.00	2381511.5	0.995	1.017	1.258	0.263	-0.210	0.710	0.740	
12	22	37.91	6577225.6	31.00	2381511.5	0.968	0.909	1.253	0.285	-0.180	0.810	0.830	
14	21	42.91	6577925.6	24.00	2381011.5	1.135	1.132	1.252	0.117	-0.210	0.400	0.452	
15	21	42.91	6577725.6	26.00	2381011.5	1.014	1.016	1.251	0.237	-0.180	0.650	0.674	
16	21	42.91	6577525.6	28.00	2381011.5	1.036	1.047	1.253	0.217	-0.170	0.640	0.662	
17	21	42.91	6577325.6	30.00	2381011.5	0.983	0.984	1.249	0.266	-0.030	0.630	0.631	
18	21	42.91	6577225.6	31.00	2381011.5	0.968	0.992	1.249	0.281	-0.240	0.730	0.768	
19	20	45.91	6577925.6	24.00	2380711.5	1.149	1.133	1.255	0.106	-0.160	0.520	0.544	
20	20	45.91	6577725.6	26.00	2380711.5	1.015	1.019	1.255	0.240	-0.140	0.680	0.694	
21	20	45.91	6577525.6	28.00	2380711.5	1.036	1.039	1.258	0.222	-0.170	0.230	0.286	outlier, removed
22	20	45.91	6577325.6	30.00	2380711.5	0.992	1.000	1.256	0.264	-0.200	0.560	0.595	
23	20	45.91	6577125.6	32.00	2380711.5	0.996	0.994	1.250	0.254	0.020	0.290	0.291	
24	19	47.91	6577925.6	24.00	2380511.5	1.136	1.128	1.257	0.121	-0.250	0.550	0.604	
25	19	47.91	6577725.6	26.00	2380511.5	1.010	1.004	1.259	0.249	-0.220	0.590	0.630	
26	19	47.91	6577525.6	28.00	2380511.5	1.018	1.023	1.263	0.245	-0.170	0.590	0.614	
27	19	47.91	6577325.6	30.00	2380511.5	1.020	0.968	1.260	0.240	-0.270	0.620	0.676	
28	19	47.91	6577125.6	32.00	2380511.5	1.024	1.027	1.255	0.231	0.060	0.380	0.385	
32	18	49.91	6577925.6	24.00	2380311.5	1.106	1.100	1.258	0.152	-0.170	0.580	0.604	tree
33	18	49.91	6577725.6	26.00	2380311.5	1.014	1.018	1.257	0.243	-0.250	0.610	0.659	
34	18	49.91	6577525.6	28.00	2380311.5	1.023	1.023	1.260	0.237	-0.130	0.620	0.633	
35	18	49.91	6577325.6	30.00	2380311.5	1.025	1.023	1.259	0.234	-0.120	0.550	0.563	
36	18	49.91	6577125.6	32.00	2380311.5	0.995	0.996	1.254	0.259	0.090	0.230	0.247	
37	17	51.91	6578275.6	20.50	2380111.5	1.051	1.054	1.243	0.192	0.020	0.310	0.311	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
38	17	51.91	6578125.6	22.00	2380111.5	0.968	0.977	1.248	0.280	-0.080	0.260	0.272	
39	17	51.91	6577925.6	24.00	2380111.5	1.059	1.057	1.250	0.191	-0.280	0.610	0.671	
40	17	51.91	6577725.6	26.00	2380111.5	0.995	0.996	1.249	0.254	-0.250	0.590	0.641	
41	17	51.91	6577525.6	28.00	2380111.5	0.995	1.000	1.252	0.257	-0.210	0.600	0.636	
42	17	51.91	6577325.6	30.00	2380111.5	0.991	0.989	1.252	0.261	-0.160	0.430	0.459	
43	16	56.91	6578125.6	22.00	2379611.5	0.984	0.992	1.255	0.271	-0.090	0.580	0.587	
44	16	56.91	6577925.6	24.00	2379611.5	1.026	1.010	1.255	0.229	-0.200	0.690	0.718	
45	16	56.91	6577725.6	26.00	2379611.5	0.994	0.989	1.256	0.262	-0.230	0.710	0.746	
46	16	56.91	6577525.6	28.00	2379611.5	1.138	1.051	1.258	0.120	-0.300	0.650	0.716	trees
47	16	56.91	6577325.6	30.00	2379611.5	1.223	1.237	1.252	0.029	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.255	1.262	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.198	1.188	1.249	0.051	-0.240	0.050	0.245	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.196	1.217	1.249	0.053	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.176	1.183	1.243	0.067	0.090	0.280	0.294	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.187	1.190	1.241	0.054	N/A	0.130	0.130	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.223	1.219	1.249	0.026	N/A	N/A	N/A	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.931	0.897	1.248	0.317	-0.080	0.790	0.794	
55	15	61.91	6577925.6	24.00	2379111.5	0.953	0.951	1.246	0.293	-0.210	0.780	0.808	
56	15	61.91	6577725.6	26.00	2379111.5	1.040	0.989	1.244	0.204	-0.340	0.920	0.981	
57	15	61.91	6577525.6	28.00	2379111.5	1.168	1.159	1.248	0.080	-0.180	0.490	0.522	
58	15	61.91	6577325.6	30.00	2379111.5	1.184	1.190	1.250	0.066	-0.180	0.290	0.341	
59	15	61.91	6577125.6	32.00	2379111.5	1.187	1.205	1.245	0.058	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.209	1.205	1.240	0.031	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.174	1.174	1.245	0.071	0.110	0.050	0.121	
62	15	61.91	6576525.6	38.00	2379111.5	1.159	1.163	1.244	0.085	0.050	0.010	0.051	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.175	1.170	1.245	0.070	-0.050	0.090	0.103	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.177	1.186	1.248	0.071	0.040	0.050	0.064	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.868	0.840	1.242	0.374	-0.210	0.980	1.002	
66	14	66.91	6577925.6	24.00	2378611.5	0.886	0.873	1.240	0.354	-0.120	0.840	0.849	
67	14	66.91	6577725.6	26.00	2378611.5	1.037	1.002	1.238	0.201	N/A	0.670	0.670	
68	14	66.91	6577525.6	28.00	2378611.5	1.219	1.202	1.242	0.023	N/A	N/A	N/A	trees
69	14	66.91	6577325.6	30.00	2378611.5	1.199	1.187	1.235	0.036	-0.110	0.410	0.424	
70	14	66.91	6577125.6	32.00	2378611.5	1.266	1.225	1.228	-0.038	N/A	N/A	N/A	
71	14	66.91	6576925.6	34.00	2378611.5	1.234	1.232	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.205	1.203	1.234	0.029	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.210	1.229	1.231	0.021	N/A	N/A	N/A	
74	14	66.91	6576317.6	40.08	2378611.5	1.200	1.199	1.226	0.026	N/A	N/A	N/A	trees
75	14	66.91	6576125.6	42.00	2378611.5	1.194	1.195	1.232	0.038	N/A	N/A	N/A	
76	13	71.91	6578125.6	22.00	2378111.5	0.900	0.908	1.227	0.327	-0.290	0.910	0.955	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
77	13	71.91	6577925.6	24.00	2378111.5	0.939	0.932	1.228	0.289	-0.130	0.740	0.751	
78	13	71.91	6577725.6	26.00	2378111.5	0.921	1.003	1.224	0.303	0.070	0.280	0.289	
79	13	71.91	6577525.6	28.00	2378111.5	1.128	1.131	1.228	0.100	0.110	0.200	0.228	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.161	1.163	1.226	0.065	-0.080	0.190	0.206	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.152	1.159	1.221	0.069	N/A	N/A	N/A	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.201	1.211	N/A	N/A	N/A	N/A	N/A	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.227	1.223	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.198	1.211	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.175	1.187	1.224	0.049	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.215	1.211	1.232	0.017	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	0.992	0.982	1.233	0.241	N/A	0.150	0.150	
88	12	73.91	6578125.6	22.00	2377911.5	0.932	0.967	1.233	0.301	-0.200	0.750	0.776	
89	12	73.91	6577925.6	24.00	2377911.5	0.949	0.961	1.232	0.283	N/A	0.820	0.820	
90	12	73.91	6577725.6	26.00	2377911.5	1.012	1.058	1.231	0.219	0.110	0.690	0.699	
91	12	73.91	6577525.6	28.00	2377911.5	1.084	1.088	1.231	0.147	0.070	0.010	0.071	trees
92	12	73.91	6577325.6	30.00	2377911.5	1.144	1.147	1.228	0.084	0.120	0.200	0.233	trees
93	12	73.91	6577125.6	32.00	2377911.5	1.163	1.168	1.222	0.059	0.020	0.210	0.211	trees
94	12	73.91	6576925.6	34.00	2377911.5	1.174	1.181	1.217	0.043	N/A	N/A	N/A	trees
95	12	73.91	6576725.6	36.00	2377911.5	1.197	1.206	1.218	0.021	N/A	N/A	N/A	trees
96	12	73.91	6576525.6	38.00	2377911.5	1.170	1.181	1.220	0.050	N/A	N/A	N/A	trees
97	12	73.91	6576333.6	39.92	2377911.5	1.155	1.187	1.219	0.064	N/A	N/A	N/A	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.210	1.216	1.223	0.013	N/A	N/A	N/A	trees
99	11	75.91	6578125.6	22.00	2377711.5	0.903	0.907	1.234	0.331	0.020	0.830	0.830	
100	11	75.91	6577925.6	24.00	2377711.5	0.899	0.935	1.231	0.332	0.050	0.720	0.722	
101	11	75.91	6577725.6	26.00	2377711.5	1.024	1.020	1.228	0.204	0.120	0.710	0.720	
102	11	75.91	6577525.6	28.00	2377711.5	1.074	1.078	1.231	0.157	0.150	0.340	0.372	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.106	1.109	1.228	0.122	0.120	0.150	0.192	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.130	1.133	1.222	0.092	0.200	0.150	0.250	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.115	1.116	1.216	0.101	N/A	N/A	N/A	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.178	1.180	1.213	0.035	N/A	N/A	N/A	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.183	1.177	1.212	0.029	N/A	N/A	N/A	trees
108	11	75.91	6576335.6	39.90	2377711.5	1.176	1.191	1.210	0.034	N/A	N/A	N/A	trees
109	11	75.91	6576116.6	42.09	2377711.5	1.168	1.178	1.214	0.046	N/A	N/A	N/A	trees
110a	10	78.91	6578025.6	23.00	2377411.5	0.861	0.863	1.233	0.372	0.300	0.750	0.808	
110	10	78.91	6577925.6	24.00	2377411.5	0.819	0.866	1.232	0.413	0.250	0.690	0.734	
111	10	78.91	6577725.6	26.00	2377411.5	0.909	0.917	1.232	0.323	0.120	0.480	0.495	
112	10	78.91	6577525.6	28.00	2377411.5	1.073	1.078	1.231	0.158	0.300	0.390	0.492	
113	10	78.91	6577325.6	30.00	2377411.5	1.102	1.110	1.227	0.125	0.400	0.250	0.472	
114	10	78.91	6577125.6	32.00	2377411.5	1.109	1.113	1.220	0.111	0.200	0.100	0.224	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
115	10	78.91	6576925.6	34.00	2377411.5	1.128	1.130	1.213	0.085	N/A	N/A	N/A	
116	10	78.91	6576738.6	35.87	2377411.5	1.130	1.133	1.211	0.081	0.150	0.150	0.212	
117	10	78.91	6576525.6	38.00	2377411.5	1.138	1.140	1.209	0.071	N/A	N/A	N/A	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.136	1.139	1.209	0.073	N/A	N/A	N/A	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.138	1.141	1.214	0.076	N/A	N/A	N/A	trees
120a	9	80.66	6577925.6	24.00	2377236.5	0.768	0.781	1.235	0.467	0.250	0.610	0.659	
120	9	80.66	6577725.6	26.00	2377236.5	0.858	0.861	1.234	0.376	0.250	0.390	0.463	
121	9	80.66	6577525.6	28.00	2377236.5	1.038	1.046	1.232	0.194	0.250	0.320	0.406	
122	9	80.66	6577325.6	30.00	2377236.5	1.060	1.066	1.230	0.170	0.350	0.300	0.461	
123	9	80.66	6577125.6	32.00	2377236.5	1.112	1.120	1.222	0.110	0.450	0.150	0.474	
124	9	80.66	6576925.6	34.00	2377236.5	1.110	1.121	1.214	0.104	0.250	0.210	0.326	
125	9	80.66	6576725.6	36.00	2377236.5	1.110	1.114	1.212	0.102	0.300	0.050	0.304	
126	9	80.66	6576525.6	38.00	2377236.5	1.121	1.124	1.210	0.089	0.150	0.120	0.192	
127	9	80.66	6576325.6	40.00	2377236.5	1.100	1.104	1.208	0.108	N/A	N/A	N/A	trees
128	9	80.66	6576134.6	41.91	2377236.5	1.147	1.148	1.214	0.067	N/A	N/A	N/A	trees
129	8	82.41	6578125.6	22.00	2377061.5	1.202	1.214	1.238	0.036	N/A	N/A	N/A	
130	8	82.41	6577925.6	24.00	2377061.5	0.915	0.890	1.239	0.324	0.150	0.850	0.863	
131	8	82.41	6577725.6	26.00	2377061.5	0.881	0.897	1.237	0.356	0.320	0.650	0.724	
132	8	82.41	6577525.6	28.00	2377061.5	1.044	1.048	1.236	0.192	0.380	0.450	0.589	
133	8	82.41	6577325.6	30.00	2377061.5	1.091	1.091	1.231	0.140	0.450	0.320	0.552	
134	8	82.41	6577125.6	32.00	2377061.5	1.118	1.111	1.221	0.103	0.550	0.300	0.626	
135	8	82.41	6576925.6	34.00	2377061.5	1.116	1.118	1.216	0.100	0.450	0.200	0.492	
136	8	82.41	6576725.6	36.00	2377061.5	1.087	1.089	1.212	0.125	0.200	0.150	0.250	
137	8	82.41	6576525.6	38.00	2377061.5	1.107	1.111	1.209	0.102	0.200	0.120	0.233	
138	8	82.41	6576325.6	40.00	2377061.5	1.118	1.117	1.208	0.090	0.200	0.220	0.297	
139	8	82.41	6576125.6	42.00	2377061.5	1.117	1.118	1.212	0.095	0.100	0.210	0.233	
140	7	84.16	6578025.6	23.00	2376886.5	1.189	1.192	1.239	0.050	N/A	N/A	N/A	
141	7	84.16	6577925.6	24.00	2376886.5	1.180	1.167	1.239	0.059	N/A	N/A	N/A	
142	7	84.16	6577725.6	26.00	2376886.5	0.930	0.950	1.236	0.306	0.320	0.710	0.779	
143	7	84.16	6577525.6	28.00	2376886.5	0.973	0.969	1.235	0.262	0.490	0.490	0.693	
144	7	84.16	6577325.6	30.00	2376886.5	1.069	1.070	1.230	0.161	0.450	0.400	0.602	
145	7	84.16	6577125.6	32.00	2376886.5	1.114	1.113	1.221	0.107	0.450	0.310	0.546	
146	7	84.16	6576925.6	34.00	2376886.5	1.087	1.086	1.215	0.128	0.350	0.320	0.474	
147	7	84.16	6576725.6	36.00	2376886.5	1.088	1.092	1.211	0.123	0.390	0.220	0.448	
148	7	84.16	6576525.6	38.00	2376886.5	1.090	1.095	1.207	0.117	0.400	0.220	0.457	
149	7	84.16	6576325.6	40.00	2376886.5	1.115	1.112	1.202	0.087	0.240	0.380	0.449	
150	7	84.16	6576125.6	42.00	2376886.5	1.107	1.107	1.205	0.098	0.210	0.400	0.452	
151	6	86.66	6577925.6	24.00	2376636.5	1.152	1.166	1.238	0.086	N/A	N/A	N/A	
152	6	86.66	6577725.6	26.00	2376636.5	0.968	0.968	1.239	0.271	0.300	0.800	0.854	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
153	6	86.66	6577525.6	28.00	2376636.5	0.986	1.005	1.239	0.253	0.420	0.700	0.816	
154	6	86.66	6577325.6	30.00	2376636.5	1.039	1.042	1.232	0.193	0.350	0.520	0.627	
155	6	86.66	6577125.6	32.00	2376636.5	1.100	1.113	1.224	0.124	0.300	0.450	0.541	
156	6	86.66	6576925.6	34.00	2376636.5	1.100	1.100	1.216	0.116	0.450	0.400	0.602	
157	6	86.66	6576725.6	36.00	2376636.5	1.123	1.132	1.207	0.084	0.500	0.410	0.647	
158	6	86.66	6576525.6	38.00	2376636.5	1.095	1.102	1.209	0.114	0.450	0.310	0.546	
159	6	86.66	6576325.6	40.00	2376636.5	1.087	1.095	1.207	0.120	0.450	0.280	0.530	
160	6	86.66	6576125.6	42.00	2376636.5	1.105	1.106	1.207	0.102	0.420	0.200	0.465	
161	5	89.16	6577725.6	26.00	2376386.5	1.172	1.172	1.239	0.067	N/A	N/A	N/A	
162	5	89.16	6577525.6	28.00	2376386.5	0.951	0.936	1.241	0.290	0.420	0.720	0.834	
163	5	89.16	6577325.6	30.00	2376386.5	1.006	1.007	1.238	0.232	0.480	0.600	0.768	
164	5	89.16	6577125.6	32.00	2376386.5	1.061	1.086	1.231	0.170	0.490	0.480	0.686	
165	5	89.16	6576925.6	34.00	2376386.5	1.118	1.130	1.222	0.104	0.650	0.300	0.716	
166	5	89.16	6576725.6	36.00	2376386.5	1.097	1.099	1.220	0.123	0.500	0.240	0.555	
167	5	89.16	6576525.6	38.00	2376386.5	1.091	1.092	1.220	0.129	0.500	0.190	0.535	
168	5	89.16	6576325.6	40.00	2376386.5	1.078	1.077	1.218	0.140	0.500	0.200	0.539	
169	5	89.16	6576125.6	42.00	2376386.5	1.103	1.104	1.217	0.114	0.650	0.200	0.680	
170	4	91.16	6577625.6	27.00	2376186.5	1.170	1.171	1.238	0.068	N/A	N/A	N/A	
171	4	91.16	6577525.6	28.00	2376186.5	1.193	1.186	1.239	0.046	N/A	N/A	N/A	
172	4	91.16	6577325.6	30.00	2376186.5	0.938	0.947	1.239	0.301	0.450	0.520	0.688	
173	4	91.16	6577125.6	32.00	2376186.5	0.958	0.965	1.231	0.273	0.520	0.390	0.650	
174	4	91.16	6576925.6	34.00	2376186.5	1.022	1.033	1.222	0.200	0.600	0.310	0.675	
175	4	91.16	6576725.6	36.00	2376186.5	1.078	1.074	1.219	0.141	0.550	0.250	0.604	
176	4	91.16	6576525.6	38.00	2376186.5	1.096	1.103	1.218	0.122	0.500	0.250	0.559	
177	4	91.16	6576325.6	40.00	2376186.5	1.182	1.126	1.212	0.030	0.600	0.350	0.695	
178	4	91.16	6576125.6	42.00	2376186.5	1.186	1.093	1.215	0.029	N/A	N/A	N/A	
179	3	93.36	6577425.6	29.00	2375966.5	1.185	1.183	1.241	0.056	N/A	N/A	N/A	
180	3	93.36	6577325.6	30.00	2375966.5	1.235	1.235	1.241	0.006	N/A	N/A	N/A	
181	3	93.36	6577125.6	32.00	2375966.5	0.961	0.956	1.235	0.274	0.600	0.250	0.650	
182	3	93.36	6576925.6	34.00	2375966.5	0.950	0.950	1.227	0.277	0.690	0.250	0.734	
183	3	93.36	6576725.6	36.00	2375966.5	0.973	0.929	1.222	0.249	0.670	0.250	0.715	
184	3	93.36	6576525.6	38.00	2375966.5	0.980	0.988	1.222	0.242	0.640	0.200	0.671	
185	3	93.36	6576325.6	40.00	2375966.5	0.998	1.013	1.219	0.221	0.600	0.150	0.618	
186	3	93.36	6576125.6	42.00	2375966.5	0.982	0.992	1.226	0.244	0.580	-0.020	0.580	
187	2	95.36	6577225.6	31.00	2375766.5	1.166	1.169	1.238	0.072	N/A	N/A	N/A	
188	2	95.36	6577112.6	32.13	2375766.5	1.180	1.182	1.233	0.053	N/A	N/A	N/A	
189	2	95.36	6576890.6	34.35	2375766.5	1.209	1.208	1.228	0.019	N/A	N/A	N/A	
190	2	95.36	6576725.6	36.00	2375766.5	0.964	0.950	1.225	0.261	0.590	0.250	0.641	
191	2	95.36	6576525.6	38.00	2375766.5	0.923	0.938	1.223	0.300	0.450	0.350	0.570	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
192	2	95.36	6576325.6	40.00	2375766.5	0.943	0.943	1.222	0.279	0.500	0.120	0.514	
193	2	95.36	6576125.6	42.00	2375766.5	0.951	0.948	1.230	0.279	0.500	0.010	0.500	
194	1	97.36	6577125.6	32.00	2375566.5	1.139	1.132	1.239	0.100	N/A	N/A	N/A	
195	1	97.36	6576925.6	34.00	2375566.5	1.153	1.138	1.233	0.080	N/A	N/A	N/A	
196	1	97.36	6576725.6	36.00	2375566.5	1.168	1.161	1.231	0.063	N/A	N/A	N/A	
197	1	97.36	6576525.6	38.00	2375566.5	1.216	1.213	1.218	0.002	N/A	N/A	N/A	
198	1	97.36	6576325.6	40.00	2375566.5	1.239	1.234	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576125.6	42.00	2375566.5	1.053	1.019	1.238	0.185	0.250	0.180	0.308	
200	0	99.36	6576725.6	36.00	2375366.5	1.171	1.181	1.225	0.054	N/A	N/A	N/A	
201	0	99.36	6576525.6	38.00	2375366.5	1.094	1.107	1.218	0.124	N/A	N/A	N/A	
202	0	99.36	6576325.6	40.00	2375366.5	1.074	1.101	1.213	0.139	N/A	N/A	N/A	
203	0	99.36	6576125.6	42.00	2375366.5	1.112	1.103	1.223	0.111	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
204	Current	59.01	6578160.6	21.65	2379401.5	0.949	0.940	1.252	0.303	-0.010	0.660	0.660	
205	Current	59.30	6578231.6	20.94	2379372.2	1.170	1.184	1.249	0.079	N/A	N/A	N/A	
206	Current	59.30	6578089.6	22.36	2379372.2	0.945	0.951	1.253	0.308	-0.080	0.670	0.675	
207	Current	59.51	6578160.6	21.65	2379351.5	0.947	0.928	1.248	0.301	0.040	0.660	0.661	
208	Current	60.01	6578260.6	20.65	2379301.5	1.225	1.223	1.240	0.015	N/A	N/A	N/A	concrete
209	Current	60.01	6578210.6	21.15	2379301.5	1.133	1.112	1.241	0.108	N/A	N/A	N/A	
210	Current	60.01	6578160.6	21.65	2379301.5	0.948	0.936	1.243	0.295	-0.040	0.710	0.711	
211	Current	60.01	6578110.6	22.15	2379301.5	0.940	0.964	1.246	0.306	0.020	0.680	0.680	
212	Current	60.01	6578060.6	22.65	2379301.5	0.935	0.940	1.248	0.313	-0.050	0.740	0.742	
213	Current	60.51	6578160.6	21.65	2379251.5	0.960	0.950	1.243	0.283	0.020	0.750	0.750	
214	Current	60.72	6578231.6	20.94	2379230.5	1.201	1.198	1.238	0.037	N/A	N/A	N/A	concrete
215	Current	60.72	6578089.6	22.36	2379230.5	0.944	0.920	1.243	0.299	0.020	0.720	0.720	
216	Current	61.01	6578160.6	21.65	2379201.5	0.977	0.966	1.244	0.267	0.070	0.690	0.694	
217	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.883	0.870	1.241	0.358	0.170	0.720	0.740	
218	Alt. 1	77.33	6578097.6	22.28	2377569.5	0.883	0.887	1.241	0.358	0.250	0.740	0.781	
219	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.872	0.920	1.240	0.368	0.170	0.670	0.691	
220	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.858	0.872	1.238	0.380	0.340	0.710	0.787	
221	Alt. 1	78.04	6578126.6	21.99	2377498.5	0.904	0.856	1.239	0.335	0.150	0.580	0.599	
222	Alt. 1	78.04	6578076.6	22.49	2377498.5	0.868	0.889	1.238	0.370	0.280	0.840	0.885	
223	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.866	0.861	1.238	0.372	0.150	0.610	0.628	
224	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.857	0.857	1.238	0.381	0.230	0.710	0.746	
225	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.854	0.881	1.236	0.382	0.220	0.690	0.724	
226	Alt. 1	78.54	6578026.6	22.99	2377448.5	0.831	0.880	1.236	0.405	0.320	0.710	0.779	
227	Alt. 1	78.75	6578097.6	22.28	2377427.5	0.954	0.880	1.238	0.284	0.310	0.710	0.775	
228	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.832	0.850	1.233	0.401	0.260	0.690	0.737	
229	Alt. 1	79.04	6578026.6	22.99	2377398.5	0.861	0.828	1.237	0.376	0.360	0.740	0.823	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
230	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.951	0.942	1.241	0.290	0.410	0.320	0.520	
231	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.951	0.952	1.241	0.290	0.410	0.410	0.580	
232	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.952	0.947	1.239	0.287	0.390	0.380	0.545	
233	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.954	0.942	1.241	0.287	0.400	0.250	0.472	
234	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.227	1.231	N/A	N/A	N/A	N/A	N/A	bank
235	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.080	1.033	1.242	0.162	0.210	0.190	0.283	bank
236	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.977	0.964	1.242	0.265	0.480	0.470	0.672	
237	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.964	0.964	1.242	0.278	0.680	0.310	0.747	
238	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.965	0.956	1.239	0.274	0.410	0.290	0.502	
239	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.139	1.063	1.247	0.108	0.340	0.230	0.410	bank
240	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.232	1.232	N/A	N/A	N/A	N/A	N/A	bank
241	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.051	0.993	1.244	0.193	0.490	0.220	0.537	
242	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.250	1.253	N/A	N/A	N/A	N/A	N/A	bank

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section

Date:	1/10/2011		
Name(s):	J. Beeby	B. Johnson	
Configuration:	Additional Realigned-bank	**Start Time:**	8:30 AM
Discharge:	145,000 cfs	**End Time:**	4:30 PM

Table F-8: Data measurements for 145,000-cfs Realigned-bank configuration Test 2.

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	|V| (ft/s)	Notes
1	23	32.91	6577625.6	27.00	2382011.5	1.058	1.046	1.268	0.210	0.130	0.690	0.702	trees
2	23	32.91	6577525.6	28.00	2382011.5	1.050	1.046	1.270	0.220	-0.120	0.790	0.799	
3	23	32.91	6577325.6	30.00	2382011.5	1.037	1.039	1.270	0.233	0.020	0.700	0.700	
4	23	32.91	6577125.6	32.00	2382011.5	0.989	0.988	1.260	0.271	-0.030	0.800	0.801	
5	23	32.91	6576925.6	34.00	2382011.5	1.238	1.239	1.255	0.017	N/A	N/A	N/A	concrete
7	22	37.91	6578025.6	23.00	2381511.5	1.104	1.096	1.260	0.156	-0.070	0.030	0.076	trees
8	22	37.91	6577925.6	24.00	2381511.5	1.110	1.115	1.254	0.144	0.020	0.110	0.112	trees
9	22	37.91	6577725.6	26.00	2381511.5	1.039	1.069	1.255	0.216	-0.040	0.520	0.522	
10	22	37.91	6577525.6	28.00	2381511.5	0.998	1.014	1.253	0.255	-0.100	0.680	0.687	
11	22	37.91	6577325.6	30.00	2381511.5	0.979	0.953	1.251	0.272	-0.120	0.790	0.799	
12	22	37.91	6577225.6	31.00	2381511.5	0.955	0.933	1.250	0.295	-0.120	0.830	0.839	
14	21	42.91	6577925.6	24.00	2381011.5	1.132	1.133	1.250	0.118	0.050	0.480	0.483	
15	21	42.91	6577725.6	26.00	2381011.5	1.022	1.017	1.258	0.236	-0.030	0.550	0.551	
16	21	42.91	6577525.6	28.00	2381011.5	1.021	1.004	1.249	0.228	-0.090	0.620	0.626	
17	21	42.91	6577325.6	30.00	2381011.5	0.994	1.009	1.246	0.252	0.030	0.610	0.611	
18	21	42.91	6577225.6	31.00	2381011.5	0.977	0.970	1.243	0.266	-0.090	0.620	0.626	
19	20	45.91	6577925.6	24.00	2380711.5	1.123	1.128	1.251	0.128	-0.020	0.640	0.640	
20	20	45.91	6577725.6	26.00	2380711.5	1.012	1.027	1.251	0.239	0.190	0.530	0.563	
21	20	45.91	6577525.6	28.00	2380711.5	1.017	1.008	1.252	0.235	-0.220	0.610	0.648	
22	20	45.91	6577325.6	30.00	2380711.5	0.999	1.018	1.253	0.254	-0.070	0.610	0.614	
23	20	45.91	6577125.6	32.00	2380711.5	0.985	0.979	1.248	0.263	0.020	0.470	0.470	
24	19	47.91	6577925.6	24.00	2380511.5	1.131	1.132	1.255	0.124	-0.190	0.620	0.648	
25	19	47.91	6577725.6	26.00	2380511.5	1.010	1.016	1.257	0.247	-0.080	0.550	0.556	
26	19	47.91	6577525.6	28.00	2380511.5	0.993	0.997	1.260	0.267	-0.030	0.530	0.531	
27	19	47.91	6577325.6	30.00	2380511.5	1.019	1.024	1.257	0.238	-0.080	0.620	0.625	
28	19	47.91	6577125.6	32.00	2380511.5	1.009	0.987	1.243	0.234	0.080	0.420	0.428	
32	18	49.91	6577925.6	24.00	2380311.5	1.102	1.105	1.256	0.154	-0.310	0.540	0.623	tree
33	18	49.91	6577725.6	26.00	2380311.5	0.997	1.004	1.256	0.259	-0.130	0.550	0.565	
34	18	49.91	6577525.6	28.00	2380311.5	1.012	1.014	1.260	0.248	-0.180	0.570	0.598	
35	18	49.91	6577325.6	30.00	2380311.5	1.023	1.037	1.253	0.230	-0.150	0.630	0.648	
36	18	49.91	6577125.6	32.00	2380311.5	0.987	0.996	1.250	0.263	0.180	0.290	0.341	
37	17	51.91	6578275.6	20.50	2380111.5	1.052	1.052	1.238	0.186	-0.060	0.340	0.345	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
38	17	51.91	6578125.6	22.00	2380111.5	0.973	0.961	1.247	0.274	0.030	0.390	0.391	
39	17	51.91	6577925.6	24.00	2380111.5	1.037	1.046	1.249	0.212	-0.130	0.520	0.536	
40	17	51.91	6577725.6	26.00	2380111.5	0.992	1.007	1.247	0.255	-0.150	0.580	0.599	
41	17	51.91	6577525.6	28.00	2380111.5	0.980	0.992	1.249	0.269	-0.260	0.550	0.608	
42	17	51.91	6577325.6	30.00	2380111.5	0.998	0.980	1.249	0.251	-0.400	0.490	0.633	
43	16	56.91	6578125.6	22.00	2379611.5	0.967	0.994	1.254	0.287	-0.060	0.650	0.653	
44	16	56.91	6577925.6	24.00	2379611.5	1.001	1.017	1.255	0.254	-0.160	0.590	0.611	
45	16	56.91	6577725.6	26.00	2379611.5	1.012	0.984	1.255	0.243	-0.230	0.710	0.746	
46	16	56.91	6577525.6	28.00	2379611.5	1.107	1.102	1.253	0.146	-0.190	0.660	0.687	trees
47	16	56.91	6577325.6	30.00	2379611.5	1.227	1.224	1.250	0.023	N/A	N/A	N/A	
48	16	56.91	6577125.6	32.00	2379611.5	1.262	1.266	N/A	N/A	N/A	N/A	N/A	
49	16	56.91	6576925.6	34.00	2379611.5	1.212	1.202	1.246	0.034	N/A	N/A	N/A	trees
50	16	56.91	6576725.6	36.00	2379611.5	1.237	1.233	1.243	0.006	N/A	N/A	N/A	
51	16	56.91	6576525.6	38.00	2379611.5	1.192	1.194	1.239	0.047	N/A	N/A	N/A	trees
52	16	56.91	6576325.6	40.00	2379611.5	1.185	1.197	1.240	0.055	N/A	N/A	N/A	trees
53	16	56.91	6576125.6	42.00	2379611.5	1.234	1.235	1.244	0.010	N/A	N/A	N/A	trees
54	15	61.91	6578125.6	22.00	2379111.5	0.923	0.908	1.246	0.323	0.070	0.810	0.813	
55	15	61.91	6577925.6	24.00	2379111.5	0.923	0.930	1.245	0.322	0.060	0.780	0.782	
56	15	61.91	6577725.6	26.00	2379111.5	1.020	1.023	1.242	0.222	-0.240	0.710	0.749	
57	15	61.91	6577525.6	28.00	2379111.5	1.159	1.183	1.248	0.089	-0.170	0.460	0.490	
58	15	61.91	6577325.6	30.00	2379111.5	1.200	1.204	1.243	0.043	N/A	N/A	N/A	
59	15	61.91	6577125.6	32.00	2379111.5	1.203	1.217	1.244	0.041	N/A	N/A	N/A	
60	15	61.91	6576925.6	34.00	2379111.5	1.219	1.212	1.242	0.023	N/A	N/A	N/A	
61	15	61.91	6576725.6	36.00	2379111.5	1.192	1.188	1.245	0.053	N/A	N/A	N/A	
62	15	61.91	6576525.6	38.00	2379111.5	1.165	1.181	1.241	0.076	N/A	N/A	N/A	trees
63	15	61.91	6576325.6	40.00	2379111.5	1.188	1.181	1.241	0.053	N/A	N/A	N/A	trees
64	15	61.91	6576125.6	42.00	2379111.5	1.192	1.190	1.246	0.054	N/A	N/A	N/A	trees
65	14	66.91	6578025.6	23.00	2378611.5	0.868	0.852	1.240	0.372	-0.300	1.090	1.131	
66	14	66.91	6577925.6	24.00	2378611.5	0.890	0.931	1.240	0.350	-0.110	1.010	1.016	
67	14	66.91	6577725.6	26.00	2378611.5	1.039	1.060	1.238	0.199	0.080	0.620	0.625	
68	14	66.91	6577525.6	28.00	2378611.5	1.222	1.202	1.240	0.018	N/A	N/A	N/A	trees
69	14	66.91	6577325.6	30.00	2378611.5	1.194	1.198	1.238	0.044	N/A	N/A	N/A	
70	14	66.91	6577125.6	32.00	2378611.5	0.224	1.231	N/A	N/A	N/A	N/A	N/A	
71	14	66.91	6576925.6	34.00	2378611.5	1.238	1.237	N/A	N/A	N/A	N/A	N/A	
72	14	66.91	6576725.6	36.00	2378611.5	1.199	1.207	1.234	0.035	N/A	N/A	N/A	
73	14	66.91	6576525.6	38.00	2378611.5	1.215	1.230	1.230	0.015	N/A	N/A	N/A	
74	14	66.91	6576317.6	40.08	2378611.5	1.205	1.217	1.227	0.022	N/A	N/A	N/A	trees
75	14	66.91	6576125.6	42.00	2378611.5	1.200	1.204	1.234	0.034	N/A	N/A	N/A	
76	13	71.91	6578125.6	22.00	2378111.5	0.893	0.902	1.223	0.330	-0.280	0.850	0.895	
77	13	71.91	6577925.6	24.00	2378111.5	0.931	0.990	1.227	0.296	-0.150	0.920	0.932	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
78	13	71.91	6577725.6	26.00	2378111.5	1.037	1.025	1.226	0.189	0.170	0.840	0.857	
79	13	71.91	6577525.6	28.00	2378111.5	1.130	1.124	1.220	0.090	-0.190	0.190	0.269	trees
80	13	71.91	6577325.6	30.00	2378111.5	1.165	1.165	1.220	0.055	N/A	N/A	N/A	trees
81	13	71.91	6577125.6	32.00	2378111.5	1.159	1.165	1.210	0.051	N/A	N/A	N/A	trees
82	13	71.91	6576925.6	34.00	2378111.5	1.208	1.215	N/A	N/A	N/A	N/A	N/A	trees
83	13	71.91	6576725.6	36.00	2378111.5	1.234	1.237	N/A	N/A	N/A	N/A	N/A	
84	13	71.91	6576525.6	38.00	2378111.5	1.217	1.222	N/A	N/A	N/A	N/A	N/A	
85	13	71.91	6576325.6	40.00	2378111.5	1.195	1.203	1.224	0.029	N/A	N/A	N/A	
86	13	71.91	6576125.6	42.00	2378111.5	1.217	1.214	1.232	0.015	N/A	N/A	N/A	
87	12	73.91	6578225.6	21.00	2377911.5	1.011	1.025	1.227	0.216	0.080	0.220	0.234	
88	12	73.91	6578125.6	22.00	2377911.5	0.940	0.962	1.231	0.291	-0.060	0.850	0.852	
89	12	73.91	6577925.6	24.00	2377911.5	0.942	0.890	1.230	0.288	0.080	0.830	0.834	
90	12	73.91	6577725.6	26.00	2377911.5	1.011	1.058	1.225	0.214	0.120	0.620	0.632	
91	12	73.91	6577525.6	28.00	2377911.5	1.078	1.083	1.223	0.145	0.230	0.100	0.251	trees
92	12	73.91	6577325.6	30.00	2377911.5	1.130	1.137	1.222	0.092	0.130	0.190	0.230	trees
93	12	73.91	6577125.6	32.00	2377911.5	1.146	1.149	1.217	0.071	N/A	N/A	N/A	trees
94	12	73.91	6576925.6	34.00	2377911.5	1.170	1.190	1.212	0.042	N/A	N/A	N/A	trees
95	12	73.91	6576725.6	36.00	2377911.5	1.209	1.209	1.216	0.007	N/A	N/A	N/A	trees
96	12	73.91	6576525.6	38.00	2377911.5	1.196	1.195	1.218	0.022	N/A	N/A	N/A	trees
97	12	73.91	6576333.6	39.92	2377911.5	1.187	1.198	1.217	0.030	N/A	N/A	N/A	trees
98	12	73.91	6576125.6	42.00	2377911.5	1.202	1.220	N/A	N/A	N/A	N/A	N/A	trees
99	11	75.91	6578125.6	22.00	2377711.5	0.919	0.910	1.230	0.311	0.070	0.900	0.903	
100	11	75.91	6577925.6	24.00	2377711.5	0.917	0.980	1.228	0.311	0.160	0.710	0.728	
101	11	75.91	6577725.6	26.00	2377711.5	1.023	1.005	1.226	0.203	0.090	0.690	0.696	
102	11	75.91	6577525.6	28.00	2377711.5	1.077	1.085	1.223	0.146	0.210	0.440	0.488	trees
103	11	75.91	6577325.6	30.00	2377711.5	1.105	1.106	1.222	0.117	0.030	0.120	0.124	trees
104	11	75.91	6577125.6	32.00	2377711.5	1.112	1.115	1.218	0.106	-0.030	0.090	0.095	trees
105	11	75.91	6576925.6	34.00	2377711.5	1.104	1.107	1.208	0.104	0.120	0.030	0.124	trees
106	11	75.91	6576725.6	36.00	2377711.5	1.153	1.168	1.205	0.052	N/A	N/A	N/A	trees
107	11	75.91	6576525.6	38.00	2377711.5	1.175	1.180	1.204	0.029	N/A	N/A	N/A	trees
108	11	75.91	6576335.6	39.90	2377711.5	1.198	1.193	1.205	0.007	N/A	N/A	N/A	trees
109	11	75.91	6576116.6	42.09	2377711.5	1.184	1.186	1.208	0.024	N/A	N/A	N/A	trees
110a	10	78.91	6578025.6	23.00	2377411.5	0.864	0.865	1.232	0.368	0.390	0.810	0.899	
110	10	78.91	6577925.6	24.00	2377411.5	0.833	0.864	1.230	0.397	0.290	0.710	0.767	
111	10	78.91	6577725.6	26.00	2377411.5	0.910	0.917	1.229	0.319	0.270	0.520	0.586	
112	10	78.91	6577525.6	28.00	2377411.5	1.075	1.074	1.220	0.145	0.120	0.420	0.437	
113	10	78.91	6577325.6	30.00	2377411.5	1.096	1.100	1.225	0.129	0.110	0.310	0.329	
114	10	78.91	6577125.6	32.00	2377411.5	1.109	1.109	1.214	0.105	0.130	0.100	0.164	
115	10	78.91	6576925.6	34.00	2377411.5	1.124	1.129	1.210	0.086	0.130	0.060	0.143	
116	10	78.91	6576738.6	35.87	2377411.5	1.131	1.127	1.209	0.078	0.060	0.120	0.134	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
117	10	78.91	6576525.6	38.00	2377411.5	1.139	1.142	1.208	0.069	N/A	N/A	N/A	trees
118	10	78.91	6576325.6	40.00	2377411.5	1.138	1.143	1.207	0.069	N/A	N/A	N/A	trees
119	10	78.91	6576125.6	42.00	2377411.5	1.124	1.121	1.205	0.081	0.240	0.090	0.256	trees
120	9	80.66	6577925.6	24.00	2377236.5	0.793	0.796	1.233	0.440	0.240	0.610	0.656	
121	9	80.66	6577725.6	26.00	2377236.5	0.864	0.854	1.231	0.367	0.380	0.540	0.660	
122	9	80.66	6577525.6	28.00	2377236.5	1.038	1.044	1.230	0.192	0.230	0.420	0.479	
123	9	80.66	6577325.6	30.00	2377236.5	1.063	1.067	1.226	0.163	0.400	0.310	0.506	
124	9	80.66	6577125.6	32.00	2377236.5	1.102	1.107	1.218	0.116	0.390	0.220	0.448	
125	9	80.66	6576925.6	34.00	2377236.5	1.107	1.106	1.211	0.104	0.320	0.150	0.353	
126	9	80.66	6576725.6	36.00	2377236.5	1.106	1.112	1.208	0.102	0.230	0.100	0.251	
127	9	80.66	6576525.6	38.00	2377236.5	1.122	1.122	1.212	0.090	N/A	N/A	N/A	
128	9	80.66	6576325.6	40.00	2377236.5	1.097	1.105	1.209	0.112	N/A	N/A	N/A	trees
129	9	80.66	6576134.6	41.91	2377236.5	1.153	1.153	1.209	0.056	N/A	N/A	N/A	trees
130	8	82.41	6578125.6	22.00	2377061.5	1.211	1.207	1.236	0.025	N/A	N/A	N/A	
131	8	82.41	6577925.6	24.00	2377061.5	0.950	0.914	1.239	0.289	0.520	0.820	0.971	
132	8	82.41	6577725.6	26.00	2377061.5	0.895	0.902	1.237	0.342	0.430	0.640	0.771	
133	8	82.41	6577525.6	28.00	2377061.5	1.035	1.034	1.234	0.199	0.580	0.530	0.786	
134	8	82.41	6577325.6	30.00	2377061.5	1.086	1.092	1.232	0.146	0.270	0.360	0.450	
135	8	82.41	6577125.6	32.00	2377061.5	1.108	1.116	1.224	0.116	0.360	0.300	0.469	
136	8	82.41	6576925.6	34.00	2377061.5	1.105	1.117	1.214	0.109	0.360	0.250	0.438	
137	8	82.41	6576725.6	36.00	2377061.5	1.084	1.079	1.216	0.132	0.130	0.190	0.230	
138	8	82.41	6576525.6	38.00	2377061.5	1.105	1.109	1.205	0.100	0.030	0.110	0.114	
139	8	82.41	6576325.6	40.00	2377061.5	1.107	1.114	1.206	0.099	0.210	0.110	0.237	
140	8	82.41	6576125.6	42.00	2377061.5	1.116	1.125	1.216	0.100	0.030	0.180	0.182	
141	7	84.16	6578025.6	23.00	2376886.5	1.195	1.196	1.239	0.044	N/A	N/A	N/A	
142	7	84.16	6577925.6	24.00	2376886.5	1.174	1.170	1.238	0.064	N/A	N/A	N/A	
143	7	84.16	6577725.6	26.00	2376886.5	0.926	0.944	1.234	0.308	0.130	0.720	0.732	
144	7	84.16	6577525.6	28.00	2376886.5	0.972	0.957	1.232	0.260	0.480	0.610	0.776	
145	7	84.16	6577325.6	30.00	2376886.5	1.061	1.064	1.230	0.169	0.350	0.400	0.532	
146	7	84.16	6577125.6	32.00	2376886.5	1.110	1.109	1.220	0.110	0.440	0.390	0.588	
147	7	84.16	6576925.6	34.00	2376886.5	1.072	1.073	1.212	0.140	0.520	0.230	0.569	
148	7	84.16	6576725.6	36.00	2376886.5	1.081	1.084	1.211	0.130	0.320	0.230	0.394	
149	7	84.16	6576525.6	38.00	2376886.5	1.091	1.082	1.210	0.119	0.260	0.250	0.361	
150	7	84.16	6576325.6	40.00	2376886.5	1.092	1.099	1.204	0.112	0.260	0.210	0.334	
151	7	84.16	6576125.6	42.00	2376886.5	1.093	1.112	1.209	0.116	0.190	0.310	0.364	
152	6	86.66	6577925.6	24.00	2376636.5	1.167	1.183	1.238	0.071	N/A	N/A	N/A	
153	6	86.66	6577725.6	26.00	2376636.5	0.975	0.969	1.235	0.260	0.380	0.710	0.805	
154	6	86.66	6577525.6	28.00	2376636.5	0.989	0.990	1.237	0.248	0.440	0.670	0.802	
155	6	86.66	6577325.6	30.00	2376636.5	1.033	1.038	1.230	0.197	0.660	0.580	0.879	
156	6	86.66	6577125.6	32.00	2376636.5	1.113	1.107	1.223	0.110	0.480	0.410	0.631	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
157	6	86.66	6576925.6	34.00	2376636.5	1.098	1.096	1.218	0.120	0.750	0.340	0.823	
158	6	86.66	6576725.6	36.00	2376636.5	1.115	1.087	1.214	0.099	0.140	0.380	0.405	
159	6	86.66	6576525.6	38.00	2376636.5	1.082	1.071	1.211	0.129	0.310	0.290	0.424	
160	6	86.66	6576325.6	40.00	2376636.5	1.065	1.072	1.211	0.146	0.340	0.210	0.400	
161	6	86.66	6576125.6	42.00	2376636.5	1.100	1.087	1.212	0.112	0.430	0.210	0.479	
162	5	89.16	6577725.6	26.00	2376386.5	1.172	1.188	1.232	0.060	N/A	N/A	N/A	
163	5	89.16	6577525.6	28.00	2376386.5	0.972	0.939	1.231	0.259	0.440	0.680	0.810	
164	5	89.16	6577325.6	30.00	2376386.5	1.003	1.005	1.231	0.228	0.560	0.580	0.806	
165	5	89.16	6577125.6	32.00	2376386.5	1.052	1.055	1.224	0.172	0.630	0.460	0.780	
166	5	89.16	6576925.6	34.00	2376386.5	1.118	1.115	1.216	0.098	0.770	0.380	0.859	
167	5	89.16	6576725.6	36.00	2376386.5	1.087	1.080	1.222	0.135	0.560	0.300	0.635	
168	5	89.16	6576525.6	38.00	2376386.5	1.079	1.079	1.221	0.142	0.610	0.230	0.652	
169	5	89.16	6576325.6	40.00	2376386.5	1.071	1.062	1.220	0.149	0.480	0.220	0.528	
170	5	89.16	6576125.6	42.00	2376386.5	1.108	1.108	1.221	0.113	0.510	0.190	0.544	
171	4	91.16	6577625.6	27.00	2376186.5	1.173	1.166	1.232	0.059	N/A	N/A	N/A	
172	4	91.16	6577525.6	28.00	2376186.5	1.189	1.190	1.232	0.043	N/A	N/A	N/A	
173	4	91.16	6577325.6	30.00	2376186.5	0.935	0.941	1.233	0.298	0.590	0.480	0.761	
174	4	91.16	6577125.6	32.00	2376186.5	0.954	0.965	1.228	0.274	0.620	0.400	0.738	
175	4	91.16	6576925.6	34.00	2376186.5	1.012	1.027	1.220	0.208	0.630	0.420	0.757	
176	4	91.16	6576725.6	36.00	2376186.5	1.071	1.078	1.216	0.145	0.610	0.320	0.689	
177	4	91.16	6576525.6	38.00	2376186.5	1.091	1.099	1.214	0.123	0.570	0.280	0.635	
178	4	91.16	6576325.6	40.00	2376186.5	1.107	1.120	1.212	0.105	0.500	0.340	0.605	
179	4	91.16	6576125.6	42.00	2376186.5	1.137	1.127	1.211	0.074	0.520	0.160	0.544	
180	3	93.36	6577425.6	29.00	2375966.5	1.184	1.179	1.235	0.051	N/A	N/A	N/A	
181	3	93.36	6577325.6	30.00	2375966.5	1.242	1.235	N/A	N/A	N/A	N/A	N/A	
182	3	93.36	6577125.6	32.00	2375966.5	0.958	0.950	1.232	0.274	0.530	0.310	0.614	
183	3	93.36	6576925.6	34.00	2375966.5	0.928	0.927	1.224	0.296	0.810	0.310	0.867	
184	3	93.36	6576725.6	36.00	2375966.5	0.956	0.974	1.220	0.264	0.890	0.300	0.939	
185	3	93.36	6576525.6	38.00	2375966.5	0.964	0.969	1.219	0.255	0.760	0.280	0.810	
186	3	93.36	6576325.6	40.00	2375966.5	0.979	0.991	1.217	0.238	0.520	0.170	0.547	
187	3	93.36	6576125.6	42.00	2375966.5	0.973	0.965	1.221	0.248	0.460	0.010	0.460	
188	2	95.36	6577225.6	31.00	2375766.5	1.173	1.176	1.233	0.060	N/A	N/A	N/A	
189	2	95.36	6577112.6	32.13	2375766.5	1.179	1.187	1.232	0.053	N/A	N/A	N/A	
190	2	95.36	6576890.6	34.35	2375766.5	1.206	1.208	1.227	0.021	N/A	N/A	N/A	
191	2	95.36	6576725.6	36.00	2375766.5	0.997	0.962	1.226	0.229	0.710	0.240	0.749	
192	2	95.36	6576525.6	38.00	2375766.5	0.937	0.928	1.224	0.287	0.640	0.230	0.680	
193	2	95.36	6576325.6	40.00	2375766.5	0.931	0.937	1.225	0.294	0.580	0.160	0.602	
194	2	95.36	6576125.6	42.00	2375766.5	0.942	0.953	1.230	0.288	0.500	0.050	0.502	
195	1	97.36	6577125.6	32.00	2375566.5	1.138	1.137	1.238	0.100	N/A	N/A	N/A	
196	1	97.36	6576925.6	34.00	2375566.5	1.163	1.159	1.232	0.069	N/A	N/A	N/A	

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\lvert V \rvert$ (ft/s)	Notes
197	1	97.36	6576725.6	36.00	2375566.5	1.163	1.171	1.230	0.067	N/A	N/A	N/A	
198	1	97.36	6576525.6	38.00	2375566.5	1.241	1.212	N/A	N/A	N/A	N/A	N/A	
199	1	97.36	6576325.6	40.00	2375566.5	1.236	1.241	N/A	N/A	N/A	N/A	N/A	
200	1	97.36	6576125.6	42.00	2375566.5	1.179	1.128	1.237	0.058	0.320	0.120	0.342	
201	0	99.36	6576725.6	36.00	2375366.5	1.186	1.182	1.222	0.036	N/A	N/A	N/A	
202	0	99.36	6576525.6	38.00	2375366.5	1.091	1.092	1.197	0.106	N/A	N/A	N/A	
203	0	99.36	6576325.6	40.00	2375366.5	1.082	1.079	1.195	0.113	N/A	N/A	N/A	
204	0	99.36	6576125.6	42.00	2375366.5	1.098	1.102	1.200	0.102	N/A	N/A	N/A	
Additional data-collection points at the current pump-intake location and alternative pump locations													
205	Current	59.01	6578160.6	21.65	2379401.5	0.941	0.941	1.241	0.300	-0.120	0.730	0.740	
206	Current	59.30	6578231.6	20.94	2379372.2	1.184	1.184	1.248	0.064	N/A	N/A	N/A	
207	Current	59.30	6578089.6	22.36	2379372.2	0.958	0.937	1.250	0.292	-0.110	0.800	0.808	
208	Current	59.51	6578160.6	21.65	2379351.5	0.950	0.953	1.247	0.297	-0.090	0.690	0.696	
209	Current	60.01	6578260.6	20.65	2379301.5	1.226	1.226	1.238	0.012	N/A	N/A	N/A	concrete
210	Current	60.01	6578210.6	21.15	2379301.5	1.135	1.149	1.237	0.102	0.210	0.680	0.712	
211	Current	60.01	6578160.6	21.65	2379301.5	0.948	0.964	1.238	0.290	-0.020	0.780	0.780	
212	Current	60.01	6578110.6	22.15	2379301.5	0.938	0.918	1.249	0.311	-0.040	0.810	0.811	
213	Current	60.01	6578060.6	22.65	2379301.5	0.948	0.935	1.245	0.297	0.720	N/A	0.720	
214	Current	60.51	6578160.6	21.65	2379251.5	0.964	0.961	1.246	0.282	N/A	0.790	0.790	
215	Current	60.72	6578231.6	20.94	2379230.5	1.212	1.212	1.237	0.025	N/A	N/A	N/A	concrete
216	Current	60.72	6578089.6	22.36	2379230.5	0.923	0.949	1.240	0.317	0.080	0.860	0.864	
217	Current	61.01	6578160.6	21.65	2379201.5	0.980	0.972	1.240	0.260	0.080	0.790	0.794	
218	Alt. 1	77.04	6578026.6	22.99	2377598.5	0.892	0.874	1.234	0.342	1.100	0.690	1.298	outlier, removed
219	Alt. 1	77.33	6578097.6	22.28	2377569.5	0.882	0.873	1.236	0.354	0.170	0.700	0.720	
220	Alt. 1	77.33	6577955.6	23.70	2377569.5	0.900	0.936	1.235	0.335	0.010	0.900	0.900	
221	Alt. 1	77.54	6578026.6	22.99	2377548.5	0.901	0.889	1.234	0.333	0.170	0.740	0.759	
222	Alt. 1	78.04	6578126.6	21.99	2377498.5	0.926	0.913	1.233	0.307	0.080	0.710	0.714	
223	Alt. 1	78.04	6578076.6	22.49	2377498.5	0.855	0.872	1.233	0.378	0.380	0.780	0.868	
224	Alt. 1	78.04	6578026.6	22.99	2377498.5	0.875	0.907	1.232	0.357	0.140	0.670	0.684	
225	Alt. 1	78.04	6577976.6	23.49	2377498.5	0.877	0.895	1.231	0.354	0.180	0.780	0.800	
226	Alt. 1	78.04	6577926.6	23.99	2377498.5	0.875	0.921	1.231	0.356	0.170	0.770	0.789	
227	Alt. 1	78.54	6578026.6	22.99	2377448.5	0.866	0.847	1.232	0.366	0.200	0.700	0.728	
228	Alt. 1	78.75	6578097.6	22.28	2377427.5	0.969	0.936	1.229	0.260	0.210	0.690	0.721	
229	Alt. 1	78.75	6577955.6	23.70	2377427.5	0.838	0.924	1.230	0.392	0.210	0.650	0.683	
230	Alt. 1	79.04	6578026.6	22.99	2377398.5	0.858	0.875	1.231	0.373	0.280	0.720	0.773	
231	Alt. 2	92.09	6577250.6	30.75	2376093.5	0.929	0.932	1.233	0.304	0.340	0.460	0.572	
232	Alt. 2	92.38	6577321.6	30.04	2376064.5	0.949	0.947	1.235	0.286	0.390	0.480	0.618	
233	Alt. 2	92.38	6577179.6	31.46	2376064.5	0.948	0.953	1.231	0.283	0.540	0.380	0.660	
234	Alt. 2	92.59	6577250.6	30.75	2376043.5	0.950	0.940	1.238	0.288	0.350	0.410	0.539	
235	Alt. 2	93.09	6577350.6	29.75	2375993.5	1.223	1.230	N/A	N/A	N/A	N/A	N/A	bank

Point ID	XS	X_m (ft)	N_p (ft)	Y_m (ft)	E_p (ft)	$Z_{bed,pre}$ (ft)	$Z_{bed,post}$ (ft)	Z_{WSL} (ft)	Depth (ft)	Marsh V_y (ft/s)	Marsh V_x (ft/s)	$\|V\|$ (ft/s)	Notes
236	Alt. 2	93.09	6577300.6	30.25	2375993.5	1.133	1.094	1.237	0.104	0.490	0.400	0.633	bank
237	Alt. 2	93.09	6577250.6	30.75	2375993.5	0.980	0.962	1.239	0.259	0.490	0.450	0.665	
238	Alt. 2	93.09	6577200.6	31.25	2375993.5	0.962	0.935	1.239	0.277	0.410	0.410	0.580	
239	Alt. 2	93.09	6577150.6	31.75	2375993.5	0.954	0.931	1.234	0.280	0.530	0.390	0.658	
240	Alt. 2	93.59	6577250.6	30.75	2375943.5	1.181	1.079	N/A	N/A	N/A	N/A	N/A	bank
241	Alt. 2	93.80	6577321.6	30.04	2375922.5	1.214	1.249	N/A	N/A	N/A	N/A	N/A	bank
242	Alt. 2	93.80	6577179.6	31.46	2375922.5	1.097	1.033	1.241	0.144	0.530	0.330	0.624	
243	Alt. 2	94.09	6577250.6	30.75	2375893.5	1.254	1.260	N/A	N/A	N/A	N/A	N/A	bank

Note: Alt 1 = Proposed Alternative 1 site, Alt 2 = Proposed Alternative 2 site, Current = current pump-intake location, ID = identification, N/A = not applicable, XS = cross section