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December 21, 2009

Docket Office
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814-5504

Re: Beacon Solar Energy Project (08-AFC-2): Exhibit 321, 60 Percent Design Drawings and supporting Hydrologic and Hydraulic Analysis

Dear Docket Clerk:

Attached are the 60 percent design drawings and associated hydrologic and hydraulic analysis for the rerouted wash. This filing will be an additional exhibit in this proceeding and is numbered Exhibit 321. Exhibit 321 will be presented under the subject area of Hydrology and Hydraulics. Hard copies of Exhibit 321 are being provided to the Hearing Office, California Energy Commission Staff (including two additional hard copies for Casey Weaver and Vince Geronimo), California Unions for Reliable Energy (CURE) and the Docket Office. Electronic copies are being provided to all others on the service list.

Because this filing updates Beacon Solar, LLC's exhibit lists, we have also included revised chronologic and subject matter exhibit lists.

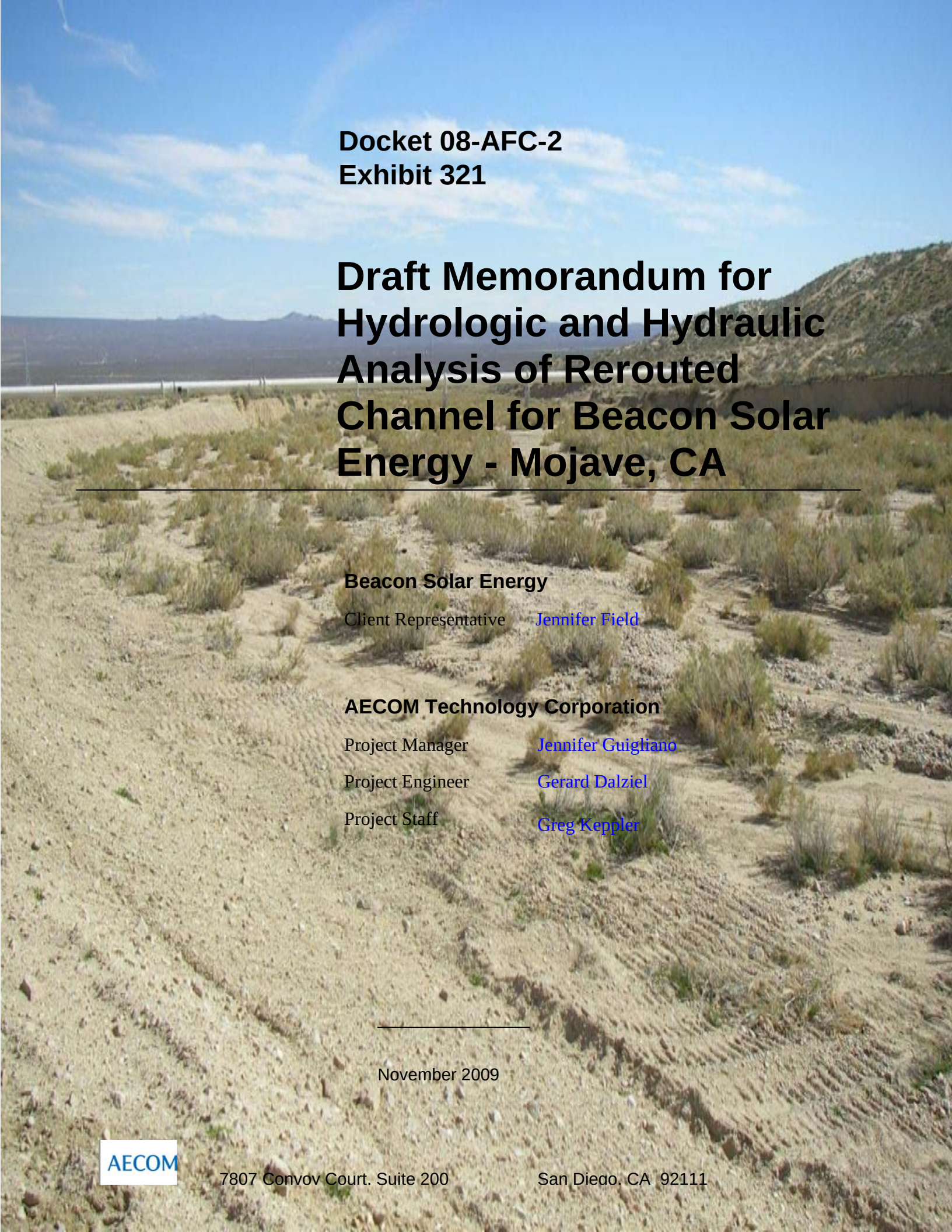
Very truly yours,

DOWNEY BRAND LLP

Jane E. Luckhardt

JEL
1047771.1

cc: Ken Celli (2 hard copies)
Jared Babula (1 electronic copy)
Eric Solario (3 hard copies and 1 electronic copy)
CURE (1 hard copy and 1 electronic copy)
Docket Office (1 hard copy and 2 electronic copies)
Service List (08-AFC-2) (those not specified above, 1 electronic copy)



Docket 08-AFC-2
Exhibit 321

Draft Memorandum for Hydrologic and Hydraulic Analysis of Rerouted Channel for Beacon Solar Energy - Mojave, CA

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November 2009

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1.0 Introduction

This report was prepared to analyze the hydrology and the drainage hydraulics of the Beacon Solar Energy Plant Site in Mojave, CA. This report will:

- Give an overview of the existing Plant Site
- Describe the methodology for ascertaining the drainage boundaries tributary to the Pine Tree Creek Wash and their hydrologic properties
- Determine the Peak Discharge generated by the Pine Tree Creek Wash and tributary areas
- Discuss the existing capacity of the natural transport system through the proposed Plant Site.
- Discuss the preliminary proposed improvements to the Project Area to reroute existing flows

2.0 Project Background

The proposed Beacon Solar Energy Plant site is located northwest of California City adjacent to SR-14, and encompasses approximately 4.0 square miles (Figure 1). Approximately 2.5 square miles are currently proposed for solar arrays and other improvements to generate solar electricity in the Mojave Desert (Plant Site). It is anticipated that the remaining 1.5 square miles of the Plant Site will be left in its existing state. Several decades ago the Plant Site was used for agriculture. However, operations ceased and recently the site was identified as a potential site for solar energy generation. See Exhibits 1d-f for historical aerial imagery. The proposed BSEP site layout is shown in Exhibit 1c.

Currently, the Plant Site is bounded to the west by railroad tracks and state route 14. To the north, south and east are property fence lines. Some of the fences are in varying degrees of disrepair. The natural slope of the site tends from the southwest to the northeast and any runoff is eventually routed Jaw Bone Wash. Jaw Bone Wash ultimately conveys the flows to Koehn Dry Lake, a localized depressed basin or "moist" playa with no discernable outflow point. Koehn Dry Lake is located approximately six miles away to the northeast. Entering the southern boundary of the subject property is an

existing natural desert wash. It is part of the larger Pine Tree Creek Wash and conveys storm water flows across the proposed Plant Site.

3.0 Hydrologic Setting

The majority of the wash is constrained by a long narrow canyon to the southwest known as Pine Tree Canyon. Several offsite drainage areas (approximately 5-7 square miles) discharge large volumes of runoff into Pine Tree Creek which flows through Pine Tree Canyon. The headwaters for Pine Tree Creek reside at the southern limits of the Sierra Nevada Mountains. With exception to the western most reaches of the canyon which can be characterized as having an alpine climate with moderate vegetative coverage, the area in and around Pine Tree Canyon can be described as high desert with relatively poor to fair vegetative coverage. All surface generated runoff from the canyon flows northeast to the Plant Site. The soil for the canyon portion of the wash is generally rocky in nature. In addition to Pine Tree Canyon, the eastern slopes of the eastern ridge of the canyon as well as large alluvial formations bisected by SR-14 generate runoff that is tributary to the Pine Tree Creek Wash as well. Most of this area is similar to Pine Tree Canyon and can be characterized as high desert with poor vegetative coverage. However, because of the large alluvial formations, the soil is generally sandy in this region of the tributary area.

Climate and rainfall are one of the key technical parameters for estimating how much runoff can be expected to flow through the Pine Tree Creek Wash. Mojave's climate is hot during summer where average daily temperatures tend to be in the 80's and cold during winter when temperatures tend to be in the 40's. The warmest month of the year is July with an average maximum temperature of 97degrees Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 33 degrees Fahrenheit. Temperature variations between night and day tend to be relatively large during summer with a difference that can reach 30 degrees Fahrenheit. Temperature variations are somewhat smaller during winter with an average difference of 24 degrees Fahrenheit. The annual average precipitation at Mojave is approximately 6 inches. Rainfall is fairly evenly distributed throughout the year with the wettest month of the

year being February with an average rainfall of 1.25 inches[1]. However, rainfall amounts increase with elevation and slope. The following sections describe the specific methods used to determine rainfall quantities for the Mojave Pine Tree Creek Wash.

4.0 Hydrologic Analysis

The 1986 Kern County Hydrology Manual (KCHM) is used as the basis of design to determine the amount of storm water conveyed to the Plant Site from the Pine Tree Creek Wash. The hydrologic analysis includes identifying the network of existing natural transport systems comprised of mountain creeks and desert washes that eventually transmit storm flows generated within the wash's tributary boundaries to the Plant Site.

Specifically, HEC-HMS which can be found on the United States Army Corps of Engineer's (Corps) website[2] was used to model the wash's tributary area for the Plant Site. The area tributary to the Mojave Plant Site is located on Figure B-54 of the KCHM. This figure depicts an Isohyet Map or expected rainfall depths for the 100-year, 24-Hour Rainfall storm event. Figure B-54 is reproduced for reference in Appendix A.

This model which is more rigorous and produces the most conservative is based on the Multi-Area HEC-HMS method. This model assumes that more rainfall is likely in higher elevations, particularly at the western boundary of the tributary watershed. It also assumes that each sub-basin has its own unique n-value, soil type, curve number, initial abstraction, and lag equation. These are described in Section 5.0.

Drainage Basins

For this model, there are 33 identified sub-basins located within the entire wash's tributary area. In total, the sub-basins cover approximately 88 square miles (3,846,348 acres). The wash's tributary boundaries were delineated using United States Geologic Survey (USGS) quadrangle (quad) sheets. Drainage areas for this project were sequentially numbered and labeled on the exhibit. Exhibit 1A

[1] http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?camoja+sca
[2] http://www.hec.usace.army.mil/software/hec-hms/

depicts the wash's tributary boundary limits overlaid on aerial imagery. Exhibit 1B shows the wash's tributary boundary limits overlaid on USGS Quad Maps.

5.0 Estimated Peak Runoff

The Soil Conservation Service (SCS) Method for determining estimated peak runoff was implemented in the Multi Area HEC-HMS model. All of the contributing offsite areas fall within the limits defined for using the SCS method. The following sections describe the methods for determining the input values into HEC-HMS.

N-Values

N values were taken from Figure E-2 in the KCHM and describe the physical characteristics of the sub-basins. Figure E-2 is reproduced for reference in Appendix A. The descriptions were compared to photo log generated during a recent field visit to the Plant Site and surrounding area and the appropriate N value was applied.

Hydrologic Soil Types

Hydrologic Soil Group (HSG) Type information was obtained from Natural Resource Conservation Service (NRCS) website[1] and soil coverage was determined from a photo log (generated during a field visit) and descriptions given on figure C-2 of the KCHM. Figure C-2 is reproduced for reference in Appendix A. Generally, the areas in and around Pine Tree Canyon are comprised of HSG Type D with small occurrences of Type B and C. Type A soils are found throughout the alluvial formations to the east of Pine Tree Canyon with small occurrences of Type B and C. A weighted average was taken in sub-basins where two or more significant HSG type formations exist.

Curve Numbers

Curve Numbers, which are a parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess, were taken from Figure C-2 and the S values which are used in the lag time computations were calculated from equation C.2 below:

[1] http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

$$S = [1000/CN] - 10$$

Initial Abstraction

Initial Abstraction, I_a, or incident rainfall required for the initiation of runoff, was calculated using equation C.1 of the KCHM:

$$I_a = 0.2S$$

Figure C-2 is reproduced for reference in the Appendix A.

Lag Time

The KCHM prescribes the use of Lag time for large scale catchment studies. Values in minutes were generated from the following equation:

$$T_{lag} = 60[24n(LL_{CA}/S^{0.5)0.38}]$$

Basin Geometry

Basin geometry and the physical characteristics of each reach such as maximum and minimum elevation, length, slope, width, and shape were determined by aerial imagery. A site visit confirmed the physical properties of most of reaches if they were accessible. The geometrical and physical parameters were entered into Table 1 below.

Table 1. Pine Tree Creek Wash Parameter Data Table

Sub-Basin	Area (mi^2)	Combined Areas (mi^2)	n	Weighted Ave. n	Soil Type	CN	Weighted Ave. CN	S = 1000/CN - 10	Ia = 0.2S	T_{lag} (hours) = $24n(LL_{CA}/S^{0.5})^{0.38}$	T_{lag} (MIN) = $60[24n(LL_{CA}/S^{0.5})^{0.38}]$
1	5.09		0.05		D	86		1.628	0.326	0.770	46.23
2	2.63		0.05		D	86		1.628	0.326	0.590	35.41
3	4.44		0.05		D	86		1.628	0.326	0.978	58.70
4	2.42		0.04		D	86		1.628	0.326	0.468	28.08
5.1	0.95	4.29	0.05	0.042	B	72	82	2.138	0.428	0.714	42.83
5.2	0.15		0.03		A	71					
5.3	3.19		0.04		D	86					
6	1.97		0.04		D	83		2.048	0.410	0.519	31.16
7	1.97		0.04		D	83		2.048	0.410	0.452	27.12
8	1.76		0.04		D	83		2.048	0.410	0.418	25.10
9.1	0.10	2.07	0.03	0.049	A	71	82	2.130	0.426	0.537	32.21
9.2	1.97		0.05		D	83					
10.1	0.75	0.89	0.04	0.039	D	83	81	2.304	0.461	0.375	22.50
10.2	0.13		0.03		A	71					
11.1	0.77	1.37	0.04	0.040	A	71	76	3.187	0.637	0.178	10.66
11.2	0.60		0.04		B	82					
12.1	0.76	0.96	0.04	0.038	D	83	81	2.412	0.482	0.269	16.15
12.2	0.19		0.03		A	71					
13.1	0.75	1.15	0.04	0.037	D	83	79	2.675	0.535	0.196	11.73
13.2	0.39		0.03		A	71					
14.1	0.45	0.63	0.04	0.037	D	83	80	2.560	0.512	0.204	12.26
14.2	0.18		0.03		A	71					
15	0.92		0.04		A	71		4.085	0.817	0.246	14.78
16.1	0.50	0.62	0.04	0.038	D	83	81	2.388	0.478	0.153	9.16
16.2	0.12		0.03		A	71					
17	1.41		0.05		A	71		4.085	0.817	0.111	6.68
18.1	1.82	2.00	0.04	0.041	D	83	82	2.128	0.426	0.276	16.57
18.2	0.18		0.05		C	77					
19	1.06		0.04		D	83		2.048	0.410	0.244	14.67
20	2.07		0.04		D	83		2.048	0.410	0.222	13.32
21	0.65		0.04		D	83		2.048	0.410	0.169	10.16
22	2.44		0.04		D	83		2.048	0.410	0.283	16.99
23	1.06		0.04		D	83		2.048	0.410	0.289	17.32
24	1.25		0.04		D	83		2.048	0.410	0.200	11.98
25.1	3.30	3.58	0.03	0.031	A	71	73	3.781	0.756	0.603	36.17
25.2	0.28		0.04		D	91					
26.1	3.14	5.04	0.03	0.030	A	71	79	2.730	0.546	0.098	5.86
26.2	1.22		0.03		C	91					
26.3	0.05		0.03		D	91					
26.4	0.63		0.03		D	91					
27	2.27		0.03		A	71		4.085	0.817	0.551	33.06
28	3.08		0.03		A	71		4.085	0.817	0.329	19.75
29	3.41		0.03		A	71		4.085	0.817	0.909	54.56
30.1	3.62	4.04	0.03	0.030	A	71	72	3.858	0.772	0.733	44.00
30.2	0.43		0.03		B	82					
31.1	1.09	4.25	0.03	0.030	B	82	74	3.546	0.709	1.304	78.24
31.2	3.16		0.03		A	71					
32.1	2.10	8.52	0.03	0.030	A	71	79	2.612	0.522	1.539	92.33
32.2	6.42		0.03		B	82					
33	9.07		0.03		B	82		2.195	0.439	1.054	63.23
total	88.35										

In the model, locations of junctions of incoming and outgoing reaches were chosen to match the physical locations in the field as closely as possible. Junction and Reach locations can be found on Exhibit 1a-b.

Meteorological Model

Because the Pine Tree Creek Wash encompasses two markedly different physical climates, the meteorological model was broken into

two regions. Rainfall data for the wash can be found on Figure B-54 of the KCHM and is reproduced for reference in Appendix A. For the wash's area the rainfall area average method was employed for both regions. Region I is wetter with an average of 5.35 inches of rain being produced in the 24-hour, 100 year event. This area also coincides with most of the geographical boundary encompassed by HSG Type D. Region II produces an average of 3.68 inches of rain for the same event and is concurrent with most of the geographical boundary encompassed by HSG Type A. Appendix D summarizes the estimated peak runoff through the wash based on the hydrological model.

In the model, Reach 34 is the significant downstream reach for the wetter region of the model and produces approximately 16,467 cubic feet per second (cfs). Reach 32 is the notable downstream reach of the drier region of the wash and generates approximately 6,324 cfs. The combined unit hydrograph for the two reaches can be found in Appendix D. Based on the model, the wash generates approximately 22,790 cfs of discharge during a 24-hour, 100-year storm.

Three other methods for estimating peak runoff were used for this project and used to confirm the peak outflows of the more rigorous Multi-Area HEC-HMS method. They are listed as follows:

- Regional Regression Equation
- Single Area HEC-HMS
- Unit Hydrograph – AES

The first method is the USGS Regional Regression Equation:

$$\mathbf{Q_{100} = 850Area^{0.69}}$$

The regression equation, as previously defined in Report Number 93-419, now WSP 2433, was used to estimate that the wash's peak outflow. The Regional Regression Equation estimates that approximately 18,720 cfs at peak flow will be generated.

Like the Multi-Area HEC-HMS method, the two remaining methods are based on mathematical models. Modeling guidelines including a calculation time interval of 20 minutes, as recommended in the KCHM, were used to estimate peak runoff for all the models including the Multi-Area method. Details of the alternate models are described below.

The second model used for estimating peak runoff is the Single Area HEC-HMS method. For this method there is only one basin - approximately 88 square miles (3,846,348 acres) - and the same n-value, soil type, curve number, initial abstraction, and lag equation apply over the entire basin. This method also assumes that rainfall is evenly distributed of the entire watershed. Curve number values (taken from the Multi-Area HEC HMS model) were weighted over the entire basin. Rainfall data was obtained from the National Oceanographic and Atmospheric Administration (NOAA), Atlas 14, and taken at the centroid of the basin geometry. This method produces approximately 21,550 cfs at peak flow. See Appendix G for the HEC-HMS Single Area Model output data.

The third model used for estimating peak runoff is the unit hydrograph method-AES. Advanced Engineering Software (AES) is a proprietary modeling program used to generate a unit hydrograph for any basin or network of basins. The software is widely used throughout Southern California. For this project the Kern County Module was used. The module is based on the KCHM. Much like HEC-HMS, AES will calculate a lag time. All input parameters were entered into the model as described in the KCHM. Rainfall amounts, taken at the centroid of the basin, were obtained from the KCHM and entered as appropriate into AES. For this method, approximately 21,617 cfs at peak flow can be expected. See Appendix F for the AES Single Area Model output data.

The regression equation produces the least conservative result as compared to the mathematical models. All of the models agree reasonably well. For this reason it is expected that the Pine Tree Creek Wash will produce approximately 22,000 cfs of flood waters in a 100-year storm event.

6.0 Conveyance of Flood Waters

To determine the initial conveyance of flood waters through the Plant Site, HEC-RAS, which can be found on the Corps website[1], was used to model flow patterns. Topographic survey data was gathered

[1] http://www.hec.usace.army.mil/software/hec-ras/

upstream, through, and downstream of the Plant Site. The existing geometry of the natural transport system was determined from the survey. Sections of the natural desert wash were generated and entered into HEC-RAS. Based on 22,000 cfs, the existing wash does not have enough capacity to route flood waters through the existing stream bed. The topography of the existing site shows there is a point at which a well defined natural earthen channel is truncated by an escarpment bisecting the Plant Site. Beyond the escarpment the flood waters spill out of the existing wash and inundate much of the Plant Site. However, because HEC-RAS is a one-dimensional model, it is unable to accurately predict how the water will spread across a basin should the capacity of the transport system be exceeded. Therefore, the scenario described above was modeled with a two dimensional approach. Mike2D, a FEMA approved two dimensional flow software program, was employed and back checked with Flow 2-D, another accepted method for modeling two dimensional flood flow by FEMA. Both produced similar results.

7.0 Site Improvements

To maximize the amount of useful land that can be utilized to generate solar energy as well as provide adequate protection to the solar array foundations, a drainage channel is proposed to route approximately 22,000 cfs of flood waters along the southern and eastern boundaries of the Plant Site. The channel will be offset 50 feet to the west of the eastern project boundary and 55 feet north of the southern project boundary in order to accommodate any future county roads.

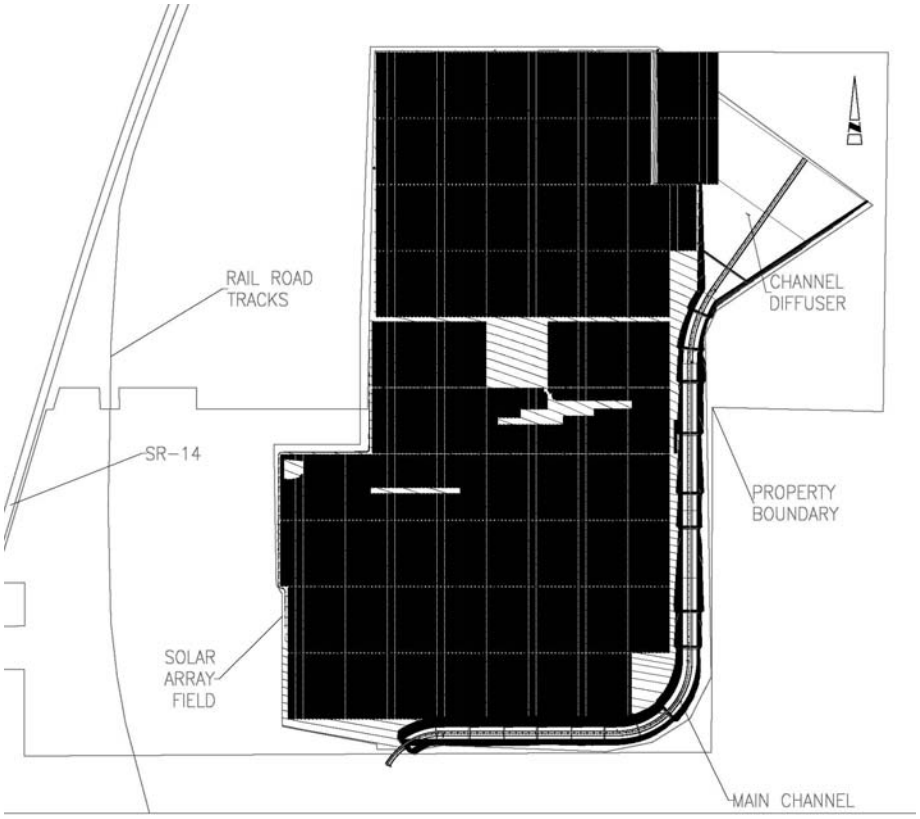


Fig. 1 Site Layout and Channel Concept

The channel will be approximately 250 feet wide at the base and maintain 4 feet horizontal to 1 foot vertical side slopes for public safety except along the east-west reach where the north side slope will be 3 feet horizontal to 1 foot vertical. The channel will be approximately 12 feet deep and have a diffuser at its downstream end. A more detailed conceptual site plan along with typical channel sections is shown in Exhibit 1c.

8.0 Channel Hydraulic Analysis

There are eleven 10-foot high drop structures proposed to maintain reasonable velocities through the channel as well as maximize the habitat potential between drop structures by maintaining maximum distance between drop structures (Figures 3 & 4). The drop structures allow the channel bed to slope at approximately 0.002 which is shown in HEC-RAS to produce velocities in the 9 to 12 feet per second range. Table 3 summarizes the average velocities within each reach of the

channel between successive drop structures, the average velocity along each drop structure, and the average velocity in the spreading basin.

Table 2. Velocity Ranges in Channel		
Reach Between Drop Structure	Drop Structure	Diffuser
(ft/sec)	(ft/sec)	(ft/sec)
9-12	15-35	4-8

To determine the anticipated velocities in the proposed channel design, a mixed flow regime was used in HEC-RAS. The mixed flow command combines the development of both subcritical super critical flows in the output file. The mixed flow regime was used as the basis of the scour and sediment transport analysis because it most closely models the expected conditions. The conceptual design is shown to minimize scour and sediment transport (Appendix C). A profile and a mixed flow HEC-RAS output file of the preliminary channel is shown in its entirety in Appendix B

At the downstream end of the channel a diffuser will disperse storm water to along the original discharge boundary of the Plant Site and into Jawbone Wash. The diffuser also assists in generating flood waters that are approximately 1-foot deep including velocities that reproduce the existing shallow flooding condition.

Kern County Requirements

Kern County has requested that the diffuser be analyzed with the FLO 2D software due to the rapid increase in channel width. For this reason the attached main channel HEC-RAS run does not include the diffuser. The preliminary water surface elevations from FLO 2D for the diffuser have been shown on the preliminary project plans

8.1 Drop Structure Hydraulic Analysis

In addition to the channel bed analysis, a mixed flow regime within HEC-RAS was used to model the proposed drop structures as well. The geometry of the proposed drop structures will produce a Froude

number from which the appropriate type of energy dissipation structure can be selected.

Design guidance for drop structures and stilling basins is provided from the Federal Highway Administration, Hydraulic Design Series, HEC 14 – Hydraulic Design of Energy Dissipators for Culverts and Channels[1]. Within this key technical resource, methods and procedures are given for the hydraulic design of energy dissipation systems. The concept for each drop structure is to have a longitudinal slope of 3 feet horizontal to 1 foot vertical to allow for desert tortoise longitudinal access within the channel. Based on that drop geometry, the drop structures produce a Froude number of approximately 3 at the toe of the drop. From HEC 14, it is recommended that a United States Bureau of Reclamation (USBR) Type IV basin be utilized for a Froude number of 3. A HEC-RAS generated water surface profile along with the critical water surface and energy gradelines is shown below for a USBR Type IV basin. The stilling calculations are shown in Appendix E.

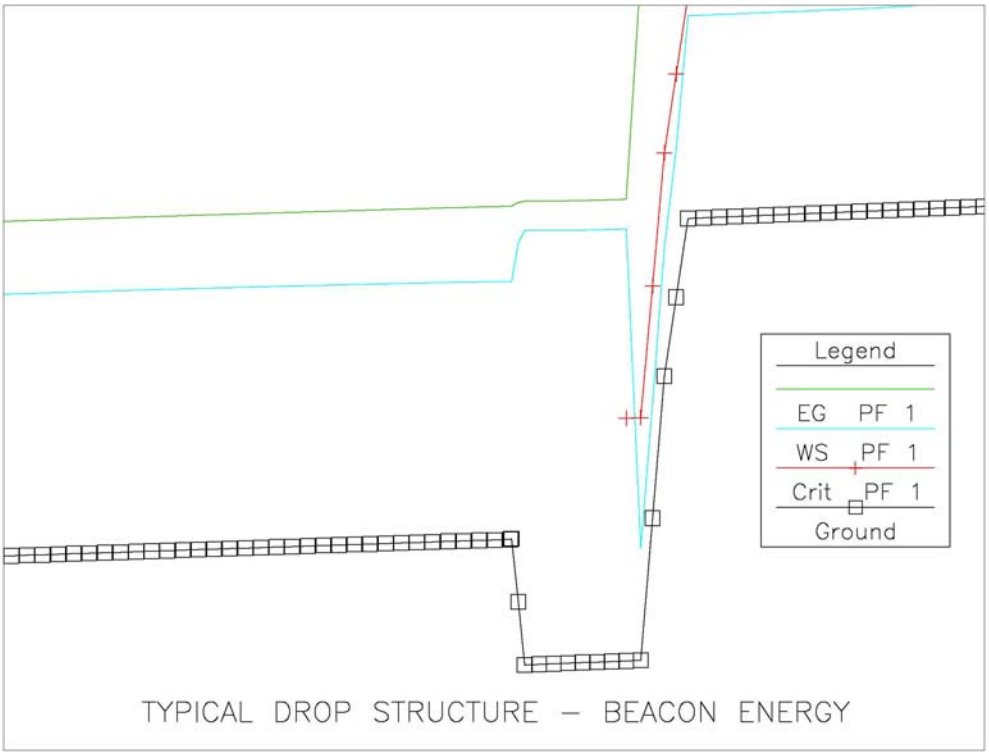


Fig. 2 HEC-RAS Drop Structure Water Surface Profile

[1] http://www.fhwa.dot.gov/engineering/hydraulics/pubs/06086/

From the output profile it is apparent that the basin quickly dissipates super critical flow into subcritical flow within the stilling basin. In addition to having a 3 horizontal to 1 vertical drop, each structure will have a chute blocks, a stilling basin, and end sill to “break head” under high flow conditions. To further enhance the habitat potential between drop structures each one will incorporate low flow offset notches to facilitate braiding of the stream bed. A conceptual plan and section of the drop structure and stilling basin are shown below.

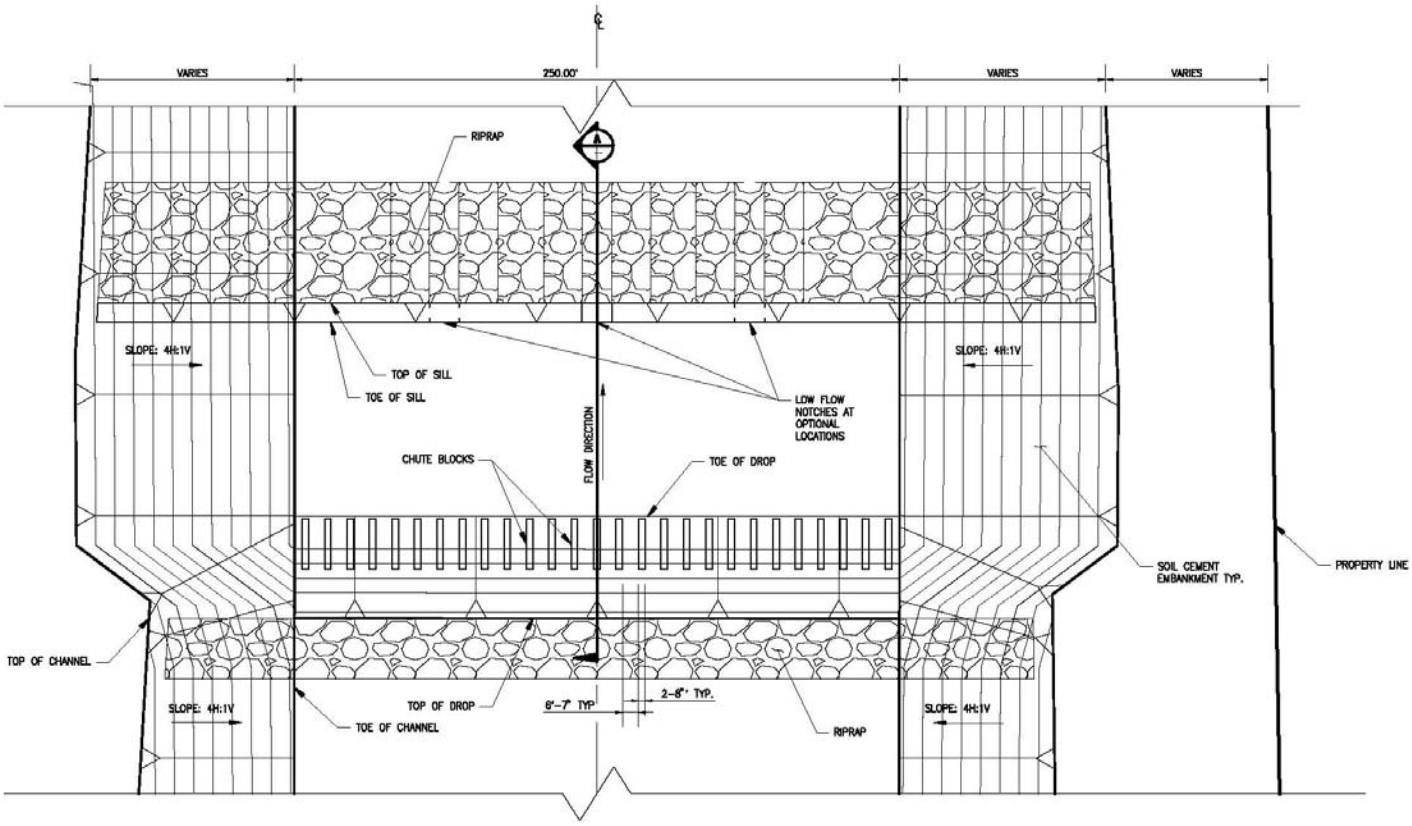


FIGURE 3. PLAN

REINFORCED CONCRETE DROP STRUCTURE AND STILLING BASIN

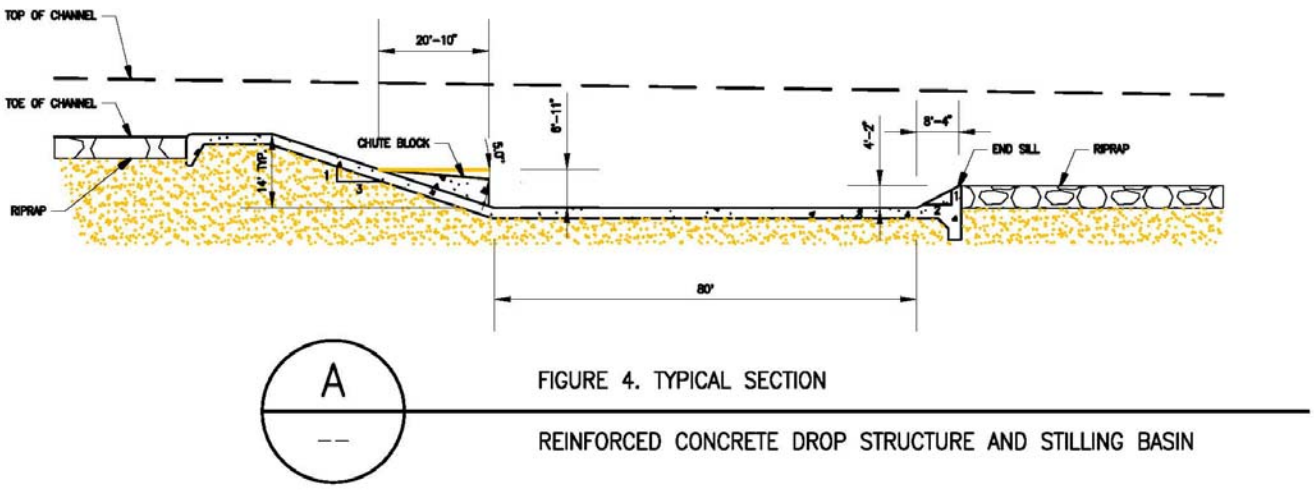


FIGURE 4. TYPICAL SECTION

REINFORCED CONCRETE DROP STRUCTURE AND STILLING BASIN

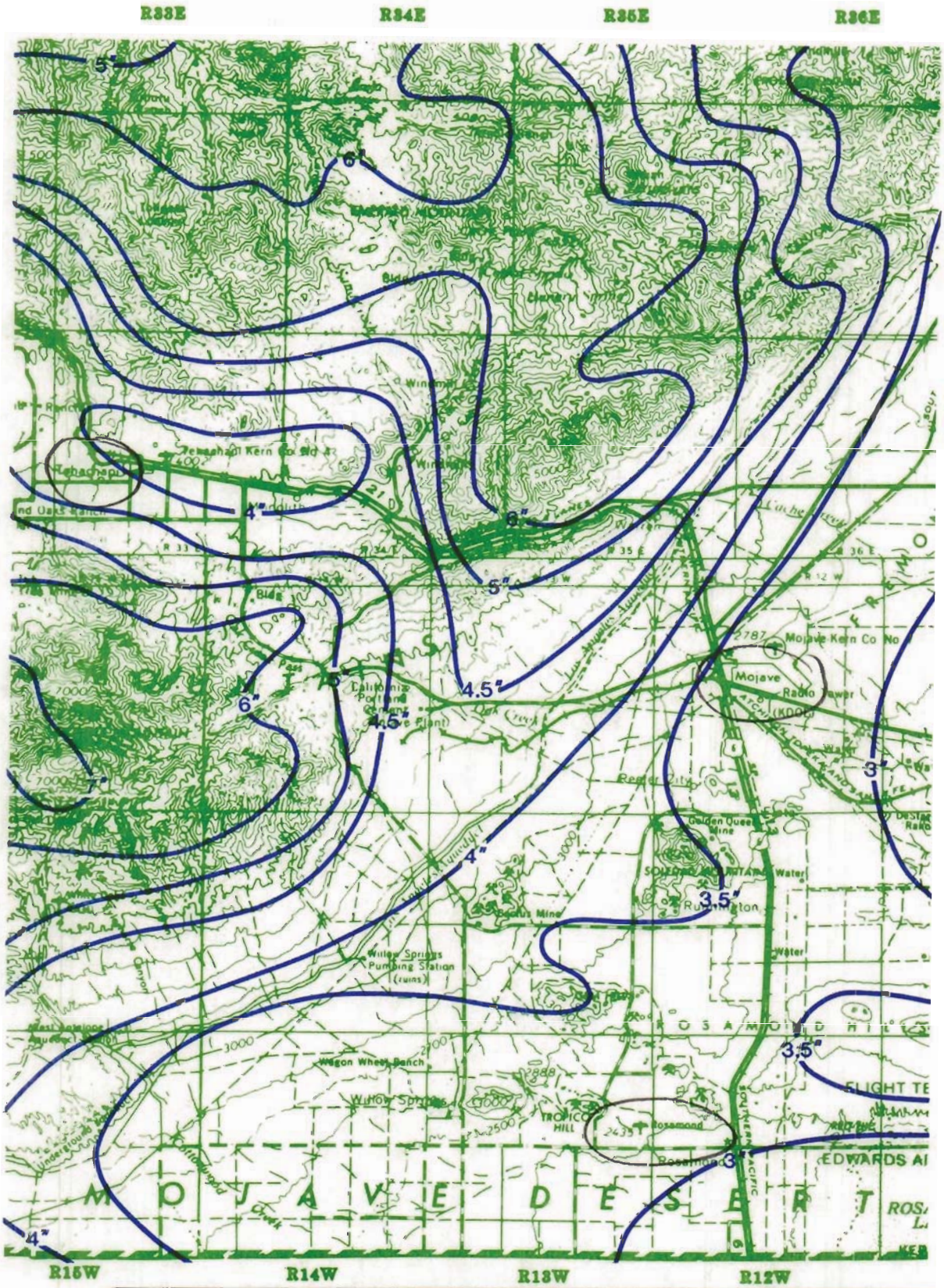
The initial HEC-RAS analysis shows that the super critical flows occur at the drop structures only (see Appendix B - "Sediment Transport Hydraulics"). Moreover, the conceptual design of the drop structures has shown those flows to be contained within the stilling basin. See Appendix B – "Final Hydraulics with Stilling Basins" for final channel results.

9.0 Summary

The hydrologic and hydraulic analysis shows that:

1. The Pine Tree Creek Wash generates approximately 22,000 cfs of flood waters in a 100-year storm event
2. All flows up to and including 22,000 cfs are safely conveyed around the solar arrays.
3. The conceptual design is shown to minimize scour and sediment transport
4. The diffuser flows are approximately 1-2 foot deep including velocities that reproduce the existing shallow flooding condition.

APPENDIX A



KERN COUNTY HYDROLOGY MANUAL

RAINFALL ISOHYET MAP

APPROXIMATE SCALE
1"=4 miles

——— 100-Year, 24-Hour Isohyet

NORTH

FIGURE B-54

Curve[1] Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		77	86	91	94
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and Redskank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadows or Cienagas (Areas with seasonally high water table, principal vegatation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	71	78
Open Brush (Soft wood shrubs-buckwheat,sage,etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (4) (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawns, shrubs, etc.)	Good	39	61	74	80
Turf (Irrigated and mowed grass)	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80

KERN COUNTY
Hydrology Manual

CURVE NUMBERS FOR PERVIOUS AREAS

Curve[1] Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS -					
Fallow (Bare Soil)		77	86	91	94
Close Seeded (alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Evergreen (Citrus, avacodos, etc.)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Pasture (Grassland or range, continuos forage for grazing)	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Row Crops (Straight row, non-contoured)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Straight row, non-contoured)	Poor	65	76	84	88
	Good	63	75	83	87

Notes:

1. Average runoff condition, Ia = 0.2(S)

2. Poor: Heavily grazed, regularly burned areas, or areas of high burn potential. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.

   Fair: Moderate cover with 50 percent to 75 percent of the ground surface protected. In wooded areas the woods are grazed but not burned, and some forest litter covers the soil.

   Good: Heavy or dense cover with more than 75 percent of the ground surface protected. In wooded areas the woods are protected from grazing, litter and brush adequately cover soil.

3. See Figure C-1 for definition of cover types.

KERN COUNTY
Hydrology Manual

CURVE NUMBERS FOR PERVIOUS AREAS

$\bar{n}$ = **0.015**

1. Drainage area has fairly uniform, gentle slopes
2. Most watercourses either improved or along paved streets
3. Groundcover consists of some grasses - large % of area impervious
4. Main water course improved channel or conduit

$\bar{n}$ = **0.020**

1. Drainage area has some graded and non-uniform, gentle slopes
2. Over half of the area watercourses are improved or paved streets
3. Groundcover consists of equal amount of grasses and impervious area
4. Main watercourse is partly improved channel or conduit and partly greenbelt (see n = 0.025)

$\bar{n}$ = **0.025**

1. Drainage area is generally rolling with gentle side slopes
2. Some drainage improvements in the area - streets and canals
3. Groundcover consists mostly of scattered brush and grass and small % impervious
4. Main watercourse is straight channels which are turfed or with stony beds and weeds on earth bank (greenbelt type)

$\bar{n}$ = **0.030**

1. Drainage area is generally rolling with rounded ridges and moderate side slopes
2. No drainage improvements exist in the area
3. Groundcover includes scattered brush and grasses
4. Watercourses meander in fairly straight, unimproved channels with some boulders and lodged debris

$\bar{n}$ = **0.040**

1. Drainage area is composed of steep upper canyons with moderate slopes in lower canyons
2. No drainage improvements exist in the area
3. Groundcover is mixed brush and trees with grasses in lower canyons
4. Watercourses have moderate bends and are moderately impeded by boulders and debris with meandering courses

$\bar{n}$ = **0.050**

1. Drainage area is quite rugged with sharp ridges and steep canyons
2. No drainage improvements exist in the area
3. Groundcover, excluding small areas of rock outcrops, includes many trees and considerable underbrush
4. Watercourses meander around sharp bends, over large boulders and considerable debris obstruction

$\bar{n}$ = **0.200**

1. Drainage area has comparatively uniform slopes
2. No drainage improvements exist in the area
3. Groundcover consists of cultivated crops or substantial growths of grass and fairly dense small shrubs, cacti, or similar vegetation
4. Surface characteristics are such that channelization does not occur

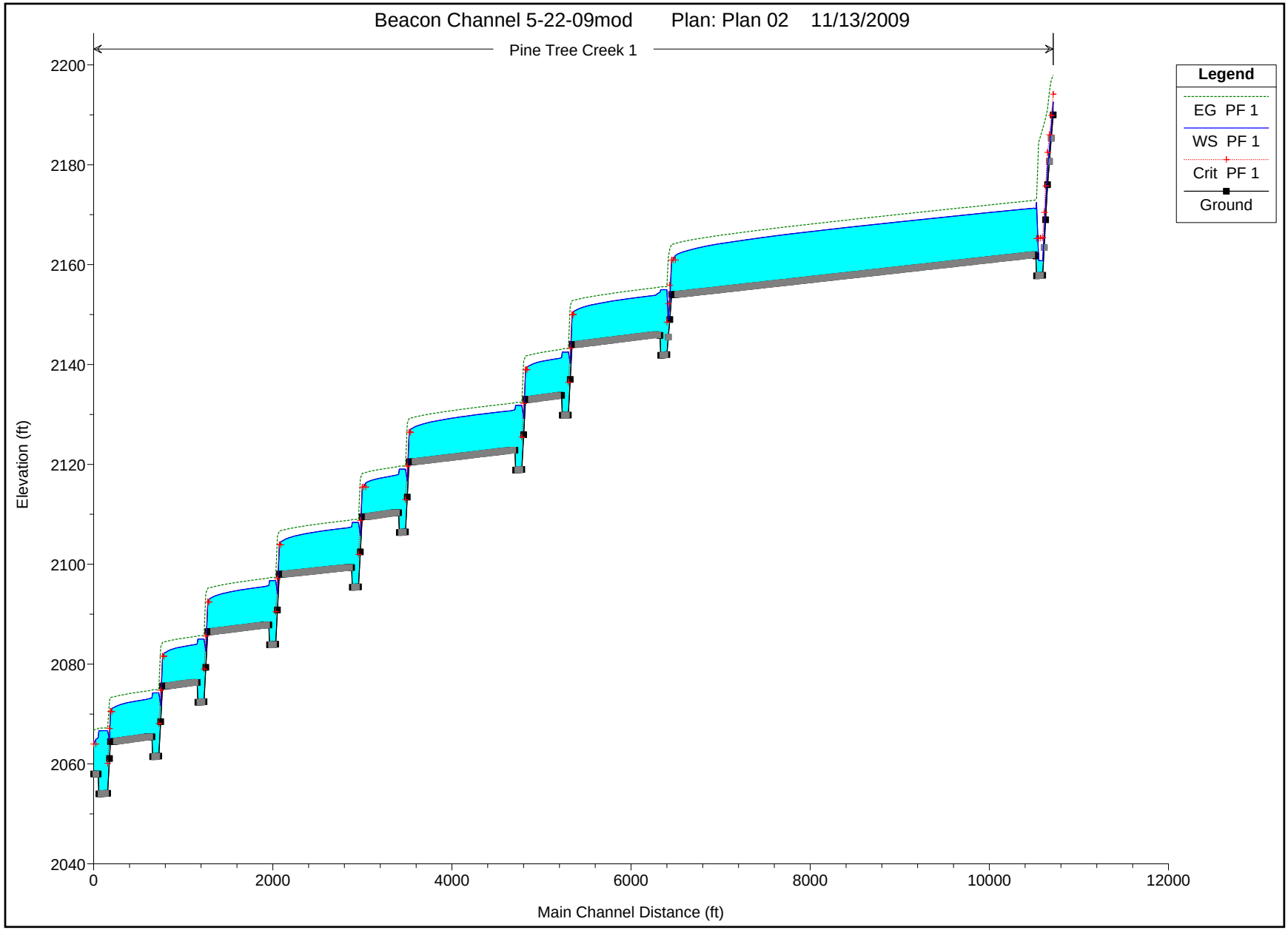
KERN COUNTY

HYDROLOGY MANUAL

BASIN FACTOR DESCRIPTIONS

Figure E-2

APPENDIX B


Beacon Channel 5-22-09mod Plan: Plan 02 11/13/2009
Pine Tree Creek 1
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
2200
2180
2160
2140
2120
2100
2080
2060
2040
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	14038	PF 1	22000	2190	2192.58	2194.14	2197.91	0.010005	18.52	1188.18	460	2.03
1	14024.*	PF 1	22000	2185.33	2187.6	2189.87	2197.05	0.072356	24.67	891.6	414.07	2.96
1	14010.*	PF 1	22000	2180.67	2183.28	2186.01	2194.73	0.147946	27.15	810.2	333.7	3.07
1	13996	PF 1	22000	2176	2179.47	2182.49	2191.15	0.192533	27.43	801.98	262.43	2.77
1	13975.17	PF 1	22000	2169	2172.06	2175.77	2189.36	0.028222	33.38	659.11	231.43	3.49
1	13942.5*	PF 1	22000	2163.44	2166.33	2170.47	2188.33	0.038733	37.65	584.39	217.23	4.04
1	13910	PF 1	22000	2157.88	2160.79	2165.41	2187.21	0.042736	41.71	539.09	195.85	4.31
1	13905.8*	PF 1	22000	2157.84	2160.8	2165.31	2185.82	0.041831	40.14	548.03	195.66	4.23
1	13901.6*	PF 1	22000	2157.79	2160.83	2165.25	2184.5	0.038298	39.05	563.39	196.2	4.06
1	13897.52	PF 1	22000	2157.75	2172.46	2165.21	2173.14	0.000165	6.61	3328.72	277.59	0.34
1	13822.52	PF 1	22000	2161.73	2171.15		2173.02	0.003096	10.95	2009.35	251.41	0.68
1	13814.2	PF 1	22000	2162	2171.32		2172.88	0.001766	10.01	2197.98	271.6	0.62
1	13789.3*	PF 1	22000	2161.95	2171.28		2172.83	0.001763	10	2199.2	271.58	0.62
1	13764.5*	PF 1	22000	2161.9	2171.23		2172.79	0.001759	10	2200.52	271.57	0.62
1	13739.7*	PF 1	22000	2161.85	2171.19		2172.74	0.001756	9.99	2201.73	271.55	0.62
1	13714.9*	PF 1	22000	2161.8	2171.15		2172.69	0.001752	9.99	2203.14	271.54	0.62
1	13690.1*	PF 1	22000	2161.75	2171.1		2172.65	0.001748	9.98	2204.47	271.51	0.62
1	13665.3*	PF 1	22000	2161.7	2171.06		2172.6	0.001744	9.97	2205.94	271.51	0.62
1	13640.5*	PF 1	22000	2161.65	2171.01		2172.56	0.00174	9.97	2207.34	271.49	0.62
1	13615.6*	PF 1	22000	2161.6	2170.97		2172.51	0.001737	9.96	2208.65	271.46	0.62
1	13590.8*	PF 1	22000	2161.55	2170.93		2172.47	0.001733	9.95	2210.06	271.44	0.61
1	13566.0*	PF 1	22000	2161.5	2170.88		2172.42	0.001729	9.95	2211.59	271.44	0.61
1	13541.2*	PF 1	22000	2161.45	2170.84		2172.37	0.001725	9.94	2213.04	271.42	0.61
1	13516.4*	PF 1	22000	2161.4	2170.8		2172.33	0.001721	9.93	2214.64	271.41	0.61
1	13491.6*	PF 1	22000	2161.35	2170.75		2172.28	0.001717	9.93	2216.12	271.4	0.61
1	13466.7*	PF 1	22000	2161.3	2170.71		2172.24	0.001713	9.92	2217.76	271.39	0.61
1	13441.9*	PF 1	22000	2161.25	2170.67		2172.19	0.001709	9.91	2219.36	271.38	0.61
1	13417.1*	PF 1	22000	2161.21	2170.62		2172.15	0.001711	9.92	2218.06	271.32	0.61
1	13392.3*	PF 1	22000	2161.16	2170.58		2172.1	0.001848	9.91	2219.17	271.29	0.61
1	13367.5*	PF 1	22000	2161.11	2170.53		2172.06	0.001846	9.91	2219.85	271.26	0.61
1	13342.7*	PF 1	22000	2161.06	2170.49		2172.01	0.001843	9.91	2220.52	271.22	0.61
1	13317.9*	PF 1	22000	2161.01	2170.44		2171.96	0.001841	9.9	2221.3	271.19	0.61

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13293.0*	PF 1	22000	2160.96	2170.39		2171.92	0.001839	9.9	2222.03	271.15	0.61
1	13268.2*	PF 1	22000	2160.91	2170.35		2171.87	0.001836	9.9	2222.83	271.12	0.61
1	13243.4*	PF 1	22000	2160.86	2170.3		2171.82	0.001834	9.89	2223.48	271.08	0.61
1	13218.6*	PF 1	22000	2160.81	2170.25		2171.77	0.001832	9.89	2224.34	271.05	0.61
1	13193.8*	PF 1	22000	2160.76	2170.21		2171.73	0.001829	9.89	2224.99	271	0.61
1	13169.0*	PF 1	22000	2160.71	2170.16		2171.68	0.001827	9.88	2225.83	270.97	0.61
1	13144.2*	PF 1	22000	2160.66	2170.12		2171.63	0.001824	9.88	2226.62	270.93	0.61
1	13119.3*	PF 1	22000	2160.61	2170.07		2171.59	0.001822	9.88	2227.49	270.91	0.61
1	13094.5*	PF 1	22000	2160.56	2170.03		2171.54	0.001819	9.87	2228.26	270.86	0.61
1	13069.7*	PF 1	22000	2160.51	2169.98		2171.49	0.001817	9.87	2229.18	270.84	0.61
1	13044.9*	PF 1	22000	2160.46	2169.93		2171.45	0.001814	9.87	2230.05	270.8	0.61
1	13020.1*	PF 1	22000	2160.41	2169.89		2171.4	0.001811	9.86	2230.88	270.76	0.61
1	12995.3*	PF 1	22000	2160.36	2169.84		2171.35	0.001809	9.86	2231.81	270.74	0.61
1	12970.4*	PF 1	22000	2160.31	2169.8		2171.3	0.001806	9.85	2232.73	270.7	0.6
1	12945.6*	PF 1	22000	2160.26	2169.75		2171.26	0.001803	9.85	2233.7	270.68	0.6
1	12920.8*	PF 1	22000	2160.21	2169.71		2171.21	0.0018	9.84	2234.68	270.64	0.6
1	12896.0*	PF 1	22000	2160.16	2169.66		2171.17	0.001797	9.84	2235.73	270.62	0.6
1	12871.2*	PF 1	22000	2160.11	2169.62		2171.12	0.001795	9.84	2236.64	270.58	0.6
1	12846.4*	PF 1	22000	2160.06	2169.57		2171.07	0.001791	9.83	2237.75	270.56	0.6
1	12821.6*	PF 1	22000	2160.01	2169.53		2171.03	0.001788	9.83	2238.8	270.53	0.6
1	12796.7*	PF 1	22000	2159.96	2169.48		2170.98	0.001785	9.82	2239.82	270.49	0.6
1	12771.9*	PF 1	22000	2159.91	2169.44		2170.93	0.001782	9.82	2240.85	270.45	0.6
1	12747.1*	PF 1	22000	2159.86	2169.39		2170.89	0.001779	9.81	2241.96	270.43	0.6
1	12722.3*	PF 1	22000	2159.81	2169.35		2170.84	0.001776	9.81	2243.08	270.4	0.6
1	12697.5*	PF 1	22000	2159.76	2169.3		2170.8	0.001773	9.8	2244.29	270.38	0.6
1	12672.7*	PF 1	22000	2159.71	2169.26		2170.75	0.001769	9.8	2245.47	270.35	0.6
1	12647.9*	PF 1	22000	2159.66	2169.21		2170.7	0.001766	9.79	2246.7	270.33	0.6
1	12623.0*	PF 1	22000	2159.61	2169.17		2170.66	0.001763	9.79	2247.8	270.3	0.6
1	12598.2*	PF 1	22000	2159.57	2169.12		2170.61	0.001907	9.8	2245.36	270.21	0.6
1	12573.4*	PF 1	22000	2159.52	2169.07		2170.56	0.001906	9.8	2245.61	270.15	0.6
1	12548.6*	PF 1	22000	2159.47	2169.03		2170.52	0.001905	9.8	2245.9	270.1	0.6
1	12523.8*	PF 1	22000	2159.42	2168.98		2170.47	0.001903	9.79	2246.14	270.05	0.6

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	12499.0*	PF 1	22000	2159.37	2168.93		2170.42	0.001902	9.79	2246.39	270	0.6
1	12474.2*	PF 1	22000	2159.32	2168.88		2170.37	0.001901	9.79	2246.62	269.94	0.6
1	12449.3*	PF 1	22000	2159.27	2168.83		2170.32	0.0019	9.79	2246.99	269.9	0.6
1	12424.5*	PF 1	22000	2159.22	2168.79		2170.27	0.001899	9.79	2247.23	269.84	0.6
1	12399.7*	PF 1	22000	2159.17	2168.74		2170.23	0.001897	9.79	2247.42	269.77	0.6
1	12374.9*	PF 1	22000	2159.12	2168.69		2170.18	0.001896	9.79	2247.67	269.72	0.6
1	12350.1*	PF 1	22000	2159.07	2168.64		2170.13	0.001895	9.79	2248.04	269.67	0.6
1	12325.3*	PF 1	22000	2159.02	2168.6		2170.08	0.001894	9.79	2248.32	269.61	0.6
1	12300.4*	PF 1	22000	2158.97	2168.55		2170.03	0.001892	9.78	2248.69	269.57	0.6
1	12275.6*	PF 1	22000	2158.92	2168.5		2169.99	0.001891	9.78	2248.99	269.51	0.6
1	12250.8*	PF 1	22000	2158.87	2168.45		2169.94	0.001889	9.78	2249.34	269.47	0.6
1	12226.0*	PF 1	22000	2158.82	2168.41		2169.89	0.001888	9.78	2249.71	269.41	0.6
1	12201.2*	PF 1	22000	2158.77	2168.36		2169.84	0.001886	9.78	2250.08	269.36	0.6
1	12176.4*	PF 1	22000	2158.72	2168.31		2169.79	0.001885	9.78	2250.48	269.31	0.6
1	12151.6*	PF 1	22000	2158.67	2168.26		2169.75	0.001883	9.77	2250.85	269.26	0.6
1	12126.7*	PF 1	22000	2158.62	2168.22		2169.7	0.001882	9.77	2251.21	269.21	0.6
1	12101.9*	PF 1	22000	2158.57	2168.17		2169.65	0.001881	9.77	2251.55	269.15	0.6
1	12077.1*	PF 1	22000	2158.52	2168.12		2169.6	0.001879	9.77	2252.04	269.11	0.6
1	12052.3*	PF 1	22000	2158.47	2168.07		2169.56	0.001877	9.77	2252.47	269.06	0.59
1	12027.5*	PF 1	22000	2158.42	2168.03		2169.51	0.001875	9.77	2252.93	269.01	0.59
1	12002.7*	PF 1	22000	2158.37	2167.98		2169.46	0.001874	9.76	2253.14	268.93	0.59
1	11977.9*	PF 1	22000	2158.32	2167.93		2169.41	0.001873	9.76	2253.62	268.89	0.59
1	11953.0*	PF 1	22000	2158.27	2167.89		2169.37	0.001871	9.76	2254.02	268.83	0.59
1	11928.2*	PF 1	22000	2158.22	2167.84		2169.32	0.001869	9.76	2254.57	268.79	0.59
1	11903.4*	PF 1	22000	2158.17	2167.79		2169.27	0.001867	9.76	2255.05	268.74	0.59
1	11878.6*	PF 1	22000	2158.12	2167.75		2169.22	0.001866	9.75	2255.51	268.69	0.59
1	11853.8*	PF 1	22000	2158.07	2167.7		2169.18	0.001864	9.75	2256	268.64	0.59
1	11829.0*	PF 1	22000	2158.02	2167.65		2169.13	0.001862	9.75	2256.54	268.59	0.59
1	11804.1*	PF 1	22000	2157.98	2167.6		2169.08	0.002012	9.76	2252.96	268.46	0.59
1	11779.3*	PF 1	22000	2157.93	2167.55		2169.03	0.002012	9.77	2252.52	268.39	0.59
1	11754.5*	PF 1	22000	2157.88	2167.5		2168.98	0.002013	9.77	2252.02	268.31	0.59
1	11729.7*	PF 1	22000	2157.83	2167.45		2168.93	0.002014	9.77	2251.43	268.23	0.59

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	11704.9*	PF 1	22000	2157.78	2167.4		2168.88	0.002015	9.77	2250.86	268.15	0.59
1	11680.1*	PF 1	22000	2157.73	2167.35		2168.83	0.002016	9.78	2250.41	268.08	0.59
1	11655.3*	PF 1	22000	2157.68	2167.3		2168.78	0.002017	9.78	2249.82	267.99	0.59
1	11630.4*	PF 1	22000	2157.63	2167.24		2168.73	0.002017	9.78	2249.31	267.92	0.59
1	11605.6*	PF 1	22000	2157.58	2167.19		2168.68	0.002019	9.78	2248.51	267.82	0.6
1	11580.8*	PF 1	22000	2157.53	2167.14		2168.63	0.00202	9.79	2247.97	267.74	0.6
1	11556.0*	PF 1	22000	2157.48	2167.09		2168.58	0.002021	9.79	2247.33	267.65	0.6
1	11531.2*	PF 1	22000	2157.43	2167.04		2168.53	0.002022	9.79	2246.81	267.58	0.6
1	11506.4*	PF 1	22000	2157.38	2166.99		2168.48	0.002023	9.79	2246.15	267.49	0.6
1	11481.6*	PF 1	22000	2157.33	2166.94		2168.43	0.002024	9.8	2245.51	267.42	0.6
1	11456.7*	PF 1	22000	2157.28	2166.89		2168.38	0.002025	9.8	2244.87	267.33	0.6
1	11431.9*	PF 1	22000	2157.23	2166.84		2168.33	0.002026	9.8	2244.26	267.25	0.6
1	11407.1*	PF 1	22000	2157.18	2166.79		2168.28	0.002027	9.81	2243.55	267.16	0.6
1	11382.3*	PF 1	22000	2157.13	2166.73		2168.23	0.002029	9.81	2242.84	267.08	0.6
1	11357.5*	PF 1	22000	2157.08	2166.68		2168.18	0.00203	9.81	2242.1	266.99	0.6
1	11332.7*	PF 1	22000	2157.03	2166.63		2168.13	0.002031	9.82	2241.39	266.9	0.6
1	11307.9*	PF 1	22000	2156.98	2166.58		2168.08	0.002033	9.82	2240.74	266.83	0.6
1	11283.0*	PF 1	22000	2156.93	2166.53		2168.03	0.002034	9.82	2239.94	266.73	0.6
1	11258.2*	PF 1	22000	2156.88	2166.48		2167.98	0.002036	9.82	2239.21	266.65	0.6
1	11233.4*	PF 1	22000	2156.83	2166.43		2167.93	0.002037	9.83	2238.38	266.56	0.6
1	11208.6*	PF 1	22000	2156.78	2166.37		2167.88	0.002039	9.83	2237.46	266.45	0.6
1	11183.8*	PF 1	22000	2156.73	2166.32		2167.82	0.00204	9.84	2236.68	266.36	0.6
1	11159.0*	PF 1	22000	2156.68	2166.27		2167.77	0.002042	9.84	2235.95	266.28	0.6
1	11134.1*	PF 1	22000	2156.63	2166.22		2167.72	0.002043	9.84	2235.08	266.18	0.6
1	11109.3*	PF 1	22000	2156.58	2166.17		2167.67	0.002045	9.85	2234.23	266.1	0.6
1	11084.5*	PF 1	22000	2156.53	2166.12		2167.62	0.002047	9.85	2233.32	266	0.6
1	11059.7*	PF 1	22000	2156.48	2166.06		2167.57	0.002049	9.85	2232.43	265.91	0.6
1	11034.9*	PF 1	22000	2156.43	2166.01		2167.52	0.002051	9.86	2231.32	265.81	0.6
1	11010.1*	PF 1	22000	2156.39	2165.95		2167.47	0.002216	9.88	2226.01	265.64	0.6
1	10985.3*	PF 1	22000	2156.34	2165.89		2167.41	0.002223	9.89	2223.39	265.5	0.6
1	10960.4*	PF 1	22000	2156.29	2165.84		2167.36	0.00223	9.91	2220.91	265.37	0.6
1	10935.6*	PF 1	22000	2156.24	2165.78		2167.3	0.002237	9.92	2218.31	265.23	0.6

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	10910.8*	PF 1	22000	2156.19	2165.72		2167.25	0.002245	9.93	2215.68	265.1	0.61
1	10886.0*	PF 1	22000	2156.14	2165.66		2167.19	0.002252	9.94	2212.89	264.95	0.61
1	10861.2*	PF 1	22000	2156.09	2165.6		2167.14	0.002261	9.95	2210.03	264.81	0.61
1	10836.4*	PF 1	22000	2156.04	2165.54		2167.08	0.002269	9.97	2207.11	264.67	0.61
1	10811.6*	PF 1	22000	2155.99	2165.48		2167.03	0.002278	9.98	2203.98	264.5	0.61
1	10786.7*	PF 1	22000	2155.94	2165.42		2166.97	0.002287	10	2200.87	264.34	0.61
1	10761.9*	PF 1	22000	2155.89	2165.36		2166.92	0.002296	10.01	2197.75	264.2	0.61
1	10737.1*	PF 1	22000	2155.84	2165.3		2166.86	0.002306	10.03	2194.36	264.03	0.61
1	10712.3*	PF 1	22000	2155.79	2165.24		2166.8	0.002316	10.04	2191.05	263.88	0.61
1	10687.5*	PF 1	22000	2155.74	2165.18		2166.75	0.002326	10.06	2187.56	263.72	0.62
1	10662.7*	PF 1	22000	2155.69	2165.11		2166.69	0.002337	10.07	2184.03	263.56	0.62
1	10637.9*	PF 1	22000	2155.64	2165.05		2166.63	0.002348	10.09	2180.35	263.39	0.62
1	10613.0*	PF 1	22000	2155.59	2164.99		2166.57	0.00236	10.11	2176.53	263.23	0.62
1	10588.2*	PF 1	22000	2155.54	2164.92		2166.52	0.002372	10.13	2172.57	263.05	0.62
1	10563.4*	PF 1	22000	2155.49	2164.86		2166.46	0.002385	10.15	2168.51	262.87	0.62
1	10538.6*	PF 1	22000	2155.44	2164.8		2166.4	0.002398	10.16	2164.44	262.7	0.62
1	10513.8*	PF 1	22000	2155.39	2164.73		2166.34	0.002412	10.18	2160.09	262.51	0.63
1	10489.0*	PF 1	22000	2155.34	2164.67		2166.28	0.002426	10.21	2155.65	262.33	0.63
1	10464.1*	PF 1	22000	2155.29	2164.6		2166.22	0.002441	10.23	2151.02	262.13	0.63
1	10439.3*	PF 1	22000	2155.24	2164.53		2166.16	0.002457	10.25	2146.29	261.94	0.63
1	10414.5*	PF 1	22000	2155.19	2164.47		2166.1	0.002473	10.27	2141.25	261.72	0.63
1	10389.7*	PF 1	22000	2155.14	2164.4		2166.04	0.00249	10.3	2136.23	261.52	0.64
1	10364.9*	PF 1	22000	2155.09	2164.33		2165.98	0.002508	10.32	2130.83	261.3	0.64
1	10340.1*	PF 1	22000	2155.04	2164.26		2165.92	0.002527	10.35	2125.44	261.1	0.64
1	10315.3*	PF 1	22000	2154.99	2164.19		2165.86	0.002547	10.38	2119.81	260.88	0.64
1	10290.4*	PF 1	22000	2154.94	2164.12		2165.8	0.002567	10.41	2114.02	260.66	0.64
1	10265.6*	PF 1	22000	2154.89	2164.05		2165.74	0.002588	10.44	2108.02	260.43	0.65
1	10240.8*	PF 1	22000	2154.84	2163.97		2165.68	0.002612	10.47	2101.44	260.2	0.65
1	10216.0*	PF 1	22000	2154.79	2163.9		2165.61	0.002826	10.51	2093.71	259.92	0.65
1	10191.2*	PF 1	22000	2154.75	2163.8		2165.54	0.002882	10.58	2080.13	259.53	0.66
1	10166.4*	PF 1	22000	2154.7	2163.72		2165.47	0.002925	10.63	2069.92	259.2	0.66
1	10141.6*	PF 1	22000	2154.65	2163.63		2165.4	0.002971	10.68	2059.17	258.85	0.67

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	10116.7*	PF 1	22000	2154.6	2163.53		2165.33	0.003021	10.74	2047.67	258.48	0.67
1	10091.9*	PF 1	22000	2154.55	2163.44		2165.25	0.003074	10.81	2035.72	258.11	0.68
1	10067.1*	PF 1	22000	2154.5	2163.34		2165.18	0.003133	10.88	2022.97	257.71	0.68
1	10042.3*	PF 1	22000	2154.45	2163.24		2165.1	0.003196	10.95	2009.55	257.3	0.69
1	10017.5*	PF 1	22000	2154.4	2163.13		2165.02	0.003272	11.03	1993.95	256.81	0.7
1	9992.71*	PF 1	22000	2154.35	2163.02		2164.94	0.003356	11.13	1977.18	256.31	0.71
1	9967.89*	PF 1	22000	2154.3	2162.9		2164.86	0.003451	11.23	1959.12	255.77	0.72
1	9943.08*	PF 1	22000	2154.25	2162.77		2164.77	0.003563	11.35	1938.46	255.18	0.73
1	9918.26*	PF 1	22000	2154.2	2162.63		2164.68	0.003695	11.49	1915.43	254.51	0.74
1	9893.45*	PF 1	22000	2154.15	2162.48		2164.58	0.00385	11.64	1889.73	253.79	0.75
1	9868.63*	PF 1	22000	2154.1	2162.31		2164.48	0.00405	11.84	1858.71	252.93	0.77
1	9843.82*	PF 1	22000	2154.05	2162.11		2164.38	0.004315	12.08	1820.54	251.88	0.79
1	9819	PF 1	22000	2154	2161.81	2160.92	2164.24	0.004807	12.52	1757.65	250.2	0.83
1	9794	PF 1	22000	2154	2160.93	2160.93	2164.1	0.001811	14.29	1539.33	244.52	1
1	9778	PF 1	22000	2154	2160.7	2160.9	2164.05	0.002008	14.69	1497.83	246.92	1.05
1	9758	PF 1	22000	2149	2152.96	2155.88	2163.24	0.132332	25.73	855.14	231.97	2.36
1	9746.5*	PF 1	22000	2145.49	2148.98	2152.17	2161.4	0.076398	28.28	777.95	237	2.75
1	9735	PF 1	22000	2141.98	2154.98	2148.5	2155.59	0.000168	6.27	3508.62	321.91	0.33
1	9705.*	PF 1	22000	2141.94	2154.98		2155.58	0.000166	6.23	3530.06	323.48	0.33
1	9675.*	PF 1	22000	2141.89	2154.98		2155.58	0.000163	6.19	3555.16	325.15	0.33
1	9645	PF 1	22000	2141.85	2154.98		2155.57	0.000161	6.15	3577.67	326.87	0.33
1	9637	PF 1	22000	2145.83	2154.48		2155.52	0.001759	8.18	2688.68	341.58	0.51
1	9627.*	PF 1	22000	2145.92	2154.22		2155.46	0.001806	8.92	2467.49	329.41	0.57
1	9617	PF 1	22000	2146	2153.86		2155.38	0.002069	9.89	2224.2	316.02	0.66
1	9590.86*	PF 1	22000	2145.94	2153.81		2155.32	0.002061	9.88	2226.8	316.04	0.66
1	9564.72*	PF 1	22000	2145.89	2153.76		2155.27	0.002063	9.88	2226.26	316.01	0.66
1	9538.58*	PF 1	22000	2145.83	2153.71		2155.22	0.002055	9.87	2228.85	316.04	0.66
1	9512.44*	PF 1	22000	2145.78	2153.65		2155.17	0.002228	9.88	2227.16	315.98	0.66
1	9486.30*	PF 1	22000	2145.72	2153.6		2155.11	0.002224	9.87	2228.3	315.94	0.66
1	9460.16*	PF 1	22000	2145.67	2153.54		2155.05	0.002231	9.88	2225.84	315.85	0.66
1	9434.02*	PF 1	22000	2145.61	2153.48		2155	0.002227	9.88	2227.01	315.83	0.66
1	9407.88*	PF 1	22000	2145.56	2153.42		2154.94	0.002235	9.89	2224.44	315.74	0.66

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	9381.75*	PF 1	22000	2145.5	2153.37		2154.89	0.002231	9.88	2225.68	315.72	0.66
1	9355.61*	PF 1	22000	2145.44	2153.31		2154.83	0.002226	9.88	2226.9	315.7	0.66
1	9329.47*	PF 1	22000	2145.39	2153.25		2154.77	0.002414	9.9	2223.01	315.57	0.66
1	9303.33*	PF 1	22000	2145.33	2153.19		2154.71	0.002414	9.9	2222.67	315.51	0.66
1	9277.19*	PF 1	22000	2145.28	2153.13		2154.65	0.00243	9.92	2217.86	315.35	0.66
1	9251.05*	PF 1	22000	2145.22	2153.07		2154.59	0.002431	9.92	2217.21	315.24	0.66
1	9224.91*	PF 1	22000	2145.17	2153		2154.54	0.002448	9.95	2212.15	315.07	0.66
1	9198.77*	PF 1	22000	2145.11	2152.94		2154.48	0.00245	9.95	2211.32	314.98	0.66
1	9172.63*	PF 1	22000	2145.06	2152.87		2154.42	0.002468	9.97	2206	314.81	0.66
1	9146.5*	PF 1	22000	2145	2152.81		2154.35	0.002472	9.98	2204.68	314.7	0.66
1	9120.36*	PF 1	22000	2144.94	2152.74		2154.29	0.002667	9.99	2202.11	314.55	0.67
1	9094.22*	PF 1	22000	2144.89	2152.67		2154.23	0.002697	10.03	2194.09	314.3	0.67
1	9068.08*	PF 1	22000	2144.83	2152.6		2154.16	0.002711	10.05	2190.12	314.11	0.67
1	9041.94*	PF 1	22000	2144.78	2152.52		2154.1	0.002744	10.08	2181.48	313.83	0.67
1	9015.80*	PF 1	22000	2144.72	2152.45		2154.03	0.002761	10.11	2176.79	313.58	0.68
1	8989.66*	PF 1	22000	2144.67	2152.37		2153.97	0.002797	10.15	2167.44	313.28	0.68
1	8963.52*	PF 1	22000	2144.61	2152.29		2153.9	0.002818	10.18	2161.73	313.03	0.68
1	8937.38*	PF 1	22000	2144.56	2152.2		2153.83	0.00308	10.24	2148.62	312.62	0.69
1	8911.25*	PF 1	22000	2144.5	2152.11		2153.75	0.003118	10.28	2139.83	312.27	0.69
1	8885.11*	PF 1	22000	2144.44	2152.02		2153.68	0.003159	10.33	2130.41	311.91	0.7
1	8858.97*	PF 1	22000	2144.39	2151.92		2153.6	0.003242	10.41	2112.42	311.36	0.7
1	8832.83*	PF 1	22000	2144.33	2151.82		2153.52	0.003301	10.48	2099.64	310.89	0.71
1	8806.69*	PF 1	22000	2144.28	2151.7		2153.44	0.003403	10.58	2078.79	310.25	0.72
1	8780.55*	PF 1	22000	2144.22	2151.59		2153.36	0.003485	10.67	2062.42	309.63	0.73
1	8754.41*	PF 1	22000	2144.17	2151.45		2153.27	0.003895	10.82	2033.45	308.77	0.74
1	8728.27*	PF 1	22000	2144.11	2151.3		2153.17	0.004068	10.97	2004.64	307.85	0.76
1	8702.14*	PF 1	22000	2144.06	2151.1		2153.06	0.004364	11.23	1959.44	306.54	0.78
1	8676	PF 1	22000	2144	2150.84		2152.93	0.004811	11.59	1898.43	304.75	0.82
1	8651	PF 1	22000	2144	2150.62	2150	2152.86	0.00135	12.03	1829.45	302.94	0.86
1	8635	PF 1	22000	2144	2150	2150	2152.78	0.001887	13.39	1643.42	297.98	1
1	8615	PF 1	22000	2137	2140.27	2143.26	2151.79	0.186484	27.23	807.79	260.5	2.73
1	8613.83	PF 1	22000	2129.88	2142.55	2136.43	2143.21	0.000185	6.49	3392.16	318.64	0.35

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	8591.06*	PF 1	22000	2129.87	2142.46		2143.19	0.000226	6.88	3199.14	319.55	0.38
1	8568.30*	PF 1	22000	2129.86	2142.46		2143.19	0.000224	6.85	3209.53	320.76	0.38
1	8545.54	PF 1	22000	2129.85	2142.51		2143.16	0.000183	6.44	3416.25	321.65	0.35
1	8488	PF 1	22000	2133.83	2141.38		2143.05	0.003436	10.38	2119.95	311.88	0.7
1	8468	PF 1	22000	2133.83	2141.25		2142.98	0.002519	10.57	2080.86	310.07	0.72
1	8443.71*	PF 1	22000	2133.77	2141.19		2142.92	0.002518	10.57	2081.45	310.13	0.72
1	8419.42*	PF 1	22000	2133.71	2141.12		2142.86	0.002726	10.57	2081.05	310.19	0.72
1	8395.14*	PF 1	22000	2133.65	2141.05		2142.79	0.002732	10.58	2079.51	310.19	0.72
1	8370.85*	PF 1	22000	2133.59	2140.98		2142.72	0.002742	10.59	2077.29	310.17	0.72
1	8346.57*	PF 1	22000	2133.53	2140.91		2142.66	0.002973	10.61	2073.69	310.12	0.72
1	8322.28*	PF 1	22000	2133.47	2140.83		2142.58	0.002994	10.63	2069.18	310.07	0.73
1	8298.*	PF 1	22000	2133.42	2140.74		2142.51	0.003049	10.69	2057.35	309.84	0.73
1	8273.71*	PF 1	22000	2133.36	2140.65		2142.44	0.003319	10.73	2049.5	309.68	0.74
1	8249.42*	PF 1	22000	2133.3	2140.55		2142.36	0.003369	10.79	2039.83	309.5	0.74
1	8225.14*	PF 1	22000	2133.24	2140.45		2142.28	0.003692	10.86	2025.92	309.18	0.75
1	8200.85*	PF 1	22000	2133.18	2140.32		2142.19	0.0038	10.96	2007.29	308.74	0.76
1	8176.57*	PF 1	22000	2133.12	2140.18		2142.09	0.00394	11.09	1984.14	308.2	0.77
1	8152.28*	PF 1	22000	2133.06	2140.03		2141.99	0.004419	11.25	1954.71	307.52	0.79
1	8128	PF 1	22000	2133	2139.79		2141.87	0.004804	11.56	1903.12	306.26	0.82
1	8103	PF 1	22000	2133	2139.48	2138.95	2141.79	0.00141	12.18	1806.28	303.2	0.88
1	8087	PF 1	22000	2133	2138.95	2138.95	2141.72	0.001888	13.36	1646.94	299.76	1
1	8065.83	PF 1	22000	2125.95	2129.22	2132.2	2140.72	0.185453	27.2	808.69	260.13	2.72
1	8045	PF 1	22000	2118.98	2131.81	2125.43	2132.43	0.000171	6.29	3494.97	322.7	0.34
1	8022.23*	PF 1	22000	2118.94	2131.81		2132.42	0.000169	6.27	3508.44	323.11	0.34
1	7999.47*	PF 1	22000	2118.89	2131.81		2132.42	0.000167	6.24	3525.06	323.57	0.33
1	7976.71	PF 1	22000	2118.85	2131.81		2132.41	0.000165	6.22	3538.52	323.99	0.33
1	7968.75	PF 1	22000	2122.83	2130.94		2132.33	0.002603	9.47	2323	318.14	0.62
1	7943.75*	PF 1	22000	2122.83	2130.83		2132.27	0.002204	9.61	2289.89	317.33	0.63
1	7918.75	PF 1	22000	2122.83	2130.74		2132.21	0.001968	9.73	2260.1	316.6	0.64
1	7893.96*	PF 1	22000	2122.78	2130.69		2132.16	0.001966	9.73	2260.57	316.59	0.64
1	7869.17*	PF 1	22000	2122.72	2130.64		2132.11	0.001954	9.71	2265.03	316.69	0.64
1	7844.38*	PF 1	22000	2122.67	2130.6		2132.06	0.001953	9.71	2265.57	316.68	0.64

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	7819.59*	PF 1	22000	2122.62	2130.55		2132.01	0.001951	9.71	2265.99	316.68	0.64
1	7794.80*	PF 1	22000	2122.57	2130.5		2131.96	0.002112	9.71	2265.64	316.66	0.64
1	7770.02*	PF 1	22000	2122.51	2130.44		2131.9	0.002104	9.7	2268.09	316.68	0.64
1	7745.23*	PF 1	22000	2122.46	2130.39		2131.85	0.002107	9.7	2267.11	316.64	0.64
1	7720.44*	PF 1	22000	2122.41	2130.34		2131.8	0.00211	9.71	2266.12	316.6	0.64
1	7695.65*	PF 1	22000	2122.35	2130.28		2131.75	0.002103	9.7	2268.36	316.6	0.64
1	7670.86*	PF 1	22000	2122.3	2130.23		2131.69	0.002105	9.7	2267.55	316.58	0.64
1	7646.08*	PF 1	22000	2122.25	2130.18		2131.64	0.002108	9.71	2266.49	316.52	0.64
1	7621.29*	PF 1	22000	2122.19	2130.13		2131.59	0.002101	9.7	2268.79	316.52	0.64
1	7596.50*	PF 1	22000	2122.14	2130.07		2131.53	0.002104	9.7	2267.72	316.48	0.64
1	7571.71*	PF 1	22000	2122.09	2130.02		2131.48	0.002276	9.71	2265.26	316.38	0.64
1	7546.92*	PF 1	22000	2122.04	2129.96		2131.42	0.002285	9.73	2262.21	316.28	0.64
1	7522.13*	PF 1	22000	2121.98	2129.9		2131.37	0.002282	9.72	2263.13	316.25	0.64
1	7497.35*	PF 1	22000	2121.93	2129.84		2131.31	0.002291	9.73	2260.05	316.15	0.64
1	7472.56*	PF 1	22000	2121.88	2129.78		2131.25	0.002301	9.75	2256.83	316.03	0.64
1	7447.77*	PF 1	22000	2121.82	2129.72		2131.2	0.002298	9.75	2257.48	315.99	0.64
1	7422.98*	PF 1	22000	2121.77	2129.66		2131.14	0.002309	9.76	2254.03	315.85	0.64
1	7398.19*	PF 1	22000	2121.72	2129.6		2131.08	0.002319	9.77	2250.67	315.75	0.65
1	7373.41*	PF 1	22000	2121.67	2129.54		2131.03	0.002332	9.79	2246.65	315.59	0.65
1	7348.62*	PF 1	22000	2121.61	2129.48		2130.97	0.00251	9.8	2245.8	315.48	0.65
1	7323.83*	PF 1	22000	2121.56	2129.41		2130.91	0.00253	9.82	2239.94	315.31	0.65
1	7299.04*	PF 1	22000	2121.51	2129.34		2130.84	0.002551	9.85	2233.59	315.09	0.65
1	7274.25*	PF 1	22000	2121.45	2129.27		2130.78	0.002558	9.86	2231.59	314.95	0.65
1	7249.46*	PF 1	22000	2121.4	2129.2		2130.72	0.002581	9.89	2224.96	314.73	0.66
1	7224.68*	PF 1	22000	2121.35	2129.13		2130.66	0.002605	9.92	2218	314.5	0.66
1	7199.89*	PF 1	22000	2121.29	2129.06		2130.59	0.002614	9.93	2215.26	314.33	0.66
1	7175.10*	PF 1	22000	2121.24	2128.99		2130.53	0.002642	9.97	2207.44	314.07	0.66
1	7150.31*	PF 1	22000	2121.19	2128.91		2130.47	0.002872	10.01	2197.93	313.75	0.67
1	7125.52*	PF 1	22000	2121.14	2128.82		2130.4	0.002919	10.06	2186.23	313.41	0.67
1	7100.74*	PF 1	22000	2121.08	2128.74		2130.32	0.002946	10.1	2179.2	313.09	0.67
1	7075.95*	PF 1	22000	2121.03	2128.65		2130.25	0.003002	10.16	2165.83	312.66	0.68
1	7051.16*	PF 1	22000	2120.98	2128.56		2130.18	0.003061	10.22	2151.96	312.25	0.69

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	7026.37*	PF 1	22000	2120.92	2128.47		2130.11	0.003099	10.27	2143.03	311.87	0.69
1	7001.58*	PF 1	22000	2120.87	2128.37		2130.03	0.003171	10.34	2127.04	311.37	0.7
1	6976.79*	PF 1	22000	2120.82	2128.26		2129.95	0.003256	10.43	2108.61	310.81	0.71
1	6952.01*	PF 1	22000	2120.76	2128.16		2129.87	0.003319	10.5	2095.11	310.31	0.71
1	6927.22*	PF 1	22000	2120.71	2128.04		2129.79	0.003679	10.62	2071.3	309.6	0.72
1	6902.43*	PF 1	22000	2120.66	2127.89		2129.69	0.003848	10.78	2041.17	308.73	0.74
1	6877.64*	PF 1	22000	2120.61	2127.72		2129.59	0.004069	10.98	2004.48	307.68	0.76
1	6852.85*	PF 1	22000	2120.55	2127.55		2129.49	0.0043	11.17	1968.93	306.63	0.78
1	6828.07	PF 1	22000	2120.5	2127.28		2129.36	0.004803	11.58	1899.91	304.79	0.82
1	6803.07	PF 1	22000	2120.5	2127.05	2126.43	2129.29	0.001348	12.01	1831.26	303.16	0.86
1	6787.07	PF 1	22000	2120.5	2126.43	2126.43	2129.21	0.001893	13.38	1643.71	298.67	1.01
1	6765.92	PF 1	22000	2113.45	2116.66	2119.63	2128.2	0.187606	27.26	807.07	260.78	2.73
1	6745	PF 1	22000	2106.48	2119.03	2112.91	2119.68	0.000182	6.44	3417.62	320.48	0.35
1	6722.23*	PF 1	22000	2106.44	2119.03		2119.67	0.00018	6.41	3434.69	321.12	0.35
1	6699.47*	PF 1	22000	2106.39	2119.04		2119.67	0.000177	6.37	3455.06	321.79	0.34
1	6676.71	PF 1	22000	2106.35	2119.04		2119.66	0.000174	6.34	3472.2	322.44	0.34
1	6668.76	PF 1	22000	2110.32	2118.01		2119.56	0.003082	10	2200.22	315.32	0.67
1	6643.76*	PF 1	22000	2110.32	2117.86		2119.48	0.002665	10.21	2154.57	314.22	0.69
1	6618.76	PF 1	22000	2110.32	2117.73		2119.41	0.002432	10.42	2111.53	313.18	0.71
1	6594.47*	PF 1	22000	2110.26	2117.66		2119.35	0.002443	10.44	2107.96	312.92	0.71
1	6570.19*	PF 1	22000	2110.19	2117.6		2119.29	0.002645	10.44	2106.88	312.7	0.71
1	6545.90*	PF 1	22000	2110.13	2117.52		2119.23	0.002667	10.47	2100.65	312.37	0.71
1	6521.62*	PF 1	22000	2110.07	2117.45		2119.16	0.002908	10.51	2092.91	312.03	0.72
1	6497.34*	PF 1	22000	2110	2117.37		2119.09	0.002923	10.53	2088.72	311.73	0.72
1	6473.05*	PF 1	22000	2109.94	2117.29		2119.03	0.002964	10.58	2078.82	311.31	0.72
1	6448.77*	PF 1	22000	2109.88	2117.19		2118.95	0.003249	10.65	2065.66	310.83	0.73
1	6424.48*	PF 1	22000	2109.82	2117.08		2118.87	0.003333	10.74	2048.32	310.22	0.74
1	6400.20*	PF 1	22000	2109.75	2116.99		2118.8	0.003383	10.8	2037.97	309.76	0.74
1	6375.92*	PF 1	22000	2109.69	2116.86		2118.71	0.003752	10.91	2015.86	309.06	0.75
1	6351.63*	PF 1	22000	2109.63	2116.71		2118.62	0.003923	11.07	1986.66	308.16	0.77
1	6327.35*	PF 1	22000	2109.56	2116.56		2118.52	0.004394	11.24	1957.16	307.22	0.78
1	6303.07	PF 1	22000	2109.5	2116.28	2115.47	2118.39	0.004898	11.64	1889.72	305.32	0.82

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	6278.07	PF 1	22000	2109.5	2115.53	2115.47	2118.25	0.001827	13.23	1662.65	299.41	0.99
1	6262.67	PF 1	22000	2109.5	2115.47	2115.47	2118.21	0.001881	13.29	1654.88	302.61	1
1	6241.59	PF 1	22000	2102.48	2105.76	2108.74	2117.21	0.184468	27.16	810.07	260.2	2.71
1	6220.59	PF 1	22000	2095.48	2108.36	2101.96	2108.98	0.000171	6.3	3491.25	322.01	0.34
1	6197.82*	PF 1	22000	2095.44	2108.36		2108.97	0.000169	6.27	3506.13	322.32	0.34
1	6175.06*	PF 1	22000	2095.41	2108.36		2108.97	0.000167	6.25	3517.62	322.53	0.33
1	6152.3	PF 1	22000	2095.37	2108.36		2108.96	0.000165	6.23	3532.23	322.8	0.33
1	6144.33	PF 1	22000	2099.35	2107.48		2108.88	0.002611	9.49	2318.11	317.18	0.62
1	6119.33*	PF 1	22000	2099.35	2107.38		2108.82	0.002211	9.63	2284.78	316.35	0.63
1	6094.33	PF 1	22000	2099.35	2107.28		2108.76	0.001975	9.76	2254.84	315.6	0.64
1	6069.65*	PF 1	22000	2099.3	2107.23		2108.71	0.001971	9.75	2256.44	315.68	0.64
1	6044.97*	PF 1	22000	2099.26	2107.18		2108.66	0.001979	9.76	2253.8	315.7	0.64
1	6020.29*	PF 1	22000	2099.21	2107.13		2108.61	0.002138	9.76	2254.58	315.75	0.64
1	5995.61*	PF 1	22000	2099.16	2107.08		2108.56	0.002138	9.76	2254.72	315.81	0.64
1	5970.94*	PF 1	22000	2099.12	2107.02		2108.51	0.002152	9.78	2250.09	315.76	0.65
1	5946.26*	PF 1	22000	2099.07	2106.97		2108.45	0.002153	9.78	2249.97	315.78	0.65
1	5921.58*	PF 1	22000	2099.02	2106.91		2108.4	0.002153	9.78	2249.91	315.82	0.65
1	5896.90*	PF 1	22000	2098.98	2106.86		2108.35	0.002169	9.8	2244.9	315.75	0.65
1	5872.22*	PF 1	22000	2098.93	2106.8		2108.29	0.002345	9.81	2243.16	315.73	0.65
1	5847.55*	PF 1	22000	2098.88	2106.74		2108.23	0.002353	9.82	2240.73	315.7	0.65
1	5822.87*	PF 1	22000	2098.84	2106.67		2108.18	0.002377	9.85	2233.44	315.56	0.65
1	5798.19*	PF 1	22000	2098.79	2106.61		2108.12	0.002387	9.86	2230.64	315.53	0.65
1	5773.51*	PF 1	22000	2098.74	2106.55		2108.06	0.002398	9.88	2227.4	315.44	0.66
1	5748.83*	PF 1	22000	2098.7	2106.48		2108	0.002426	9.91	2219.22	315.28	0.66
1	5724.16*	PF 1	22000	2098.65	2106.41		2107.94	0.002627	9.94	2214.27	315.17	0.66
1	5699.48*	PF 1	22000	2098.61	2106.33		2107.88	0.002672	9.99	2202.3	314.91	0.67
1	5674.80*	PF 1	22000	2098.56	2106.26		2107.81	0.002698	10.02	2195.45	314.72	0.67
1	5650.12*	PF 1	22000	2098.51	2106.18		2107.75	0.002725	10.05	2188.46	314.56	0.67
1	5625.44*	PF 1	22000	2098.47	2106.09		2107.68	0.002778	10.12	2174.89	314.24	0.68
1	5600.77*	PF 1	22000	2098.42	2106.02		2107.62	0.002812	10.16	2166.37	314.02	0.68
1	5576.09*	PF 1	22000	2098.37	2105.93		2107.55	0.003062	10.21	2155.73	313.73	0.69
1	5551.41*	PF 1	22000	2098.33	2105.82		2107.47	0.003153	10.3	2135.55	313.25	0.7

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	5526.73*	PF 1	22000	2098.28	2105.72		2107.4	0.003222	10.37	2120.72	312.86	0.7
1	5502.06*	PF 1	22000	2098.23	2105.62		2107.32	0.003306	10.46	2103.19	312.39	0.71
1	5477.38*	PF 1	22000	2098.19	2105.49		2107.23	0.003441	10.6	2076.27	311.72	0.72
1	5452.70*	PF 1	22000	2098.14	2105.37		2107.15	0.003557	10.71	2054.07	311.15	0.73
1	5428.02*	PF 1	22000	2098.09	2105.22		2107.05	0.00398	10.87	2024.72	310.37	0.75
1	5403.34*	PF 1	22000	2098.05	2105.01		2106.94	0.004324	11.16	1971.73	309.1	0.78
1	5378.67	PF 1	22000	2098	2104.74		2106.81	0.004823	11.56	1903.91	307.39	0.82
1	5353.67	PF 1	22000	2098	2104.51	2103.9	2106.74	0.001356	12	1833.63	305.71	0.86
1	5337.67	PF 1	22000	2098	2103.91	2103.91	2106.66	0.001879	13.31	1653.12	301.35	1
1	5316.09	PF 1	22000	2090.85	2094.12	2097.1	2105.65	0.186302	27.25	807.35	259.94	2.72
1	5295.67	PF 1	22000	2083.98	2096.72	2090.5	2097.36	0.00018	6.42	3426.73	319.86	0.35
1	5272.90*	PF 1	22000	2083.94	2096.72		2097.36	0.000178	6.39	3444.11	320.54	0.34
1	5250.14*	PF 1	22000	2083.89	2096.72		2097.35	0.000175	6.35	3464.48	321.22	0.34
1	5227.38	PF 1	22000	2083.85	2096.72		2097.34	0.000172	6.32	3481.89	321.91	0.34
1	5219.42	PF 1	22000	2087.83	2095.74		2097.25	0.002936	9.88	2227.34	313.51	0.65
1	5194.42*	PF 1	22000	2087.83	2095.62		2097.18	0.002498	10.03	2192.65	312.84	0.67
1	5169.42	PF 1	22000	2087.83	2095.51		2097.12	0.002233	10.17	2164.11	312.34	0.68
1	5144.80*	PF 1	22000	2087.77	2095.46		2097.06	0.002225	10.15	2166.45	312.4	0.68
1	5120.19*	PF 1	22000	2087.72	2095.4		2097.01	0.00223	10.16	2165.01	312.42	0.68
1	5095.58*	PF 1	22000	2087.66	2095.35		2096.95	0.002407	10.15	2166.67	312.46	0.68
1	5070.97*	PF 1	22000	2087.61	2095.28		2096.89	0.002419	10.17	2163.18	312.41	0.68
1	5046.36*	PF 1	22000	2087.55	2095.22		2096.83	0.002416	10.17	2164.21	312.46	0.68
1	5021.75*	PF 1	22000	2087.5	2095.16		2096.77	0.002428	10.18	2160.66	312.4	0.68
1	4997.13*	PF 1	22000	2087.44	2095.1		2096.71	0.002427	10.18	2161.18	312.41	0.68
1	4972.52*	PF 1	22000	2087.39	2095.03		2096.65	0.002636	10.2	2156.17	312.34	0.68
1	4947.91*	PF 1	22000	2087.33	2094.96		2096.58	0.002643	10.21	2154.54	312.31	0.69
1	4923.30*	PF 1	22000	2087.28	2094.89		2096.52	0.002667	10.24	2148.17	312.18	0.69
1	4898.69*	PF 1	22000	2087.22	2094.82		2096.46	0.002675	10.25	2146.39	312.16	0.69
1	4874.08*	PF 1	22000	2087.17	2094.75		2096.39	0.002703	10.28	2139.19	312.01	0.69
1	4849.46*	PF 1	22000	2087.11	2094.67		2096.32	0.002925	10.3	2134.99	311.91	0.69
1	4824.85*	PF 1	22000	2087.05	2094.6		2096.25	0.002946	10.33	2130.01	311.82	0.7
1	4800.24*	PF 1	22000	2087	2094.51		2096.18	0.002997	10.38	2118.48	311.56	0.7

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	4775.63*	PF 1	22000	2086.94	2094.42		2096.11	0.003026	10.42	2111.98	311.41	0.7
1	4751.02*	PF 1	22000	2086.89	2094.32		2096.03	0.003317	10.49	2097.42	311.1	0.71
1	4726.41*	PF 1	22000	2086.83	2094.23		2095.95	0.003376	10.55	2085.56	310.81	0.72
1	4701.79*	PF 1	22000	2086.78	2094.11		2095.87	0.003479	10.65	2065.58	310.35	0.73
1	4677.18*	PF 1	22000	2086.72	2094		2095.79	0.003555	10.72	2051.31	310.02	0.73
1	4652.57*	PF 1	22000	2086.67	2093.87		2095.7	0.003697	10.86	2025.69	309.43	0.75
1	4627.96*	PF 1	22000	2086.61	2093.72		2095.6	0.004112	11	2000.76	308.81	0.76
1	4603.35*	PF 1	22000	2086.56	2093.53		2095.49	0.0044	11.24	1957.94	307.8	0.79
1	4578.74	PF 1	22000	2086.5	2093.29		2095.37	0.00481	11.56	1902.88	306.43	0.82
1	4553.74	PF 1	22000	2086.5	2093.06	2092.45	2095.3	0.00135	12	1833.58	304.68	0.86
1	4537.74	PF 1	22000	2086.5	2092.45	2092.45	2095.22	0.001889	13.36	1647.08	299.92	1
1	4516.29	PF 1	22000	2079.35	2082.61	2085.61	2094.21	0.188457	27.33	804.86	260.18	2.74
1	4495.67	PF 1	22000	2072.48	2085.02	2079	2085.69	0.000191	6.57	3348.83	316.02	0.36
1	4472.90*	PF 1	22000	2072.44	2085.02		2085.69	0.000189	6.54	3361.47	316.36	0.35
1	4450.13*	PF 1	22000	2072.39	2085.02		2085.68	0.000187	6.51	3377.33	316.75	0.35
1	4427.37	PF 1	22000	2072.35	2085.02		2085.68	0.000185	6.49	3389.92	317.09	0.35
1	4419.4	PF 1	22000	2076.33	2084.02		2085.58	0.003097	10.02	2196.45	315.14	0.67
1	4394.4*	PF 1	22000	2076.33	2083.92		2085.51	0.00261	10.13	2171.86	315.69	0.68
1	4369.4	PF 1	22000	2076.33	2083.83		2085.45	0.00231	10.22	2153.1	316.42	0.69
1	4344.76*	PF 1	22000	2076.27	2083.76		2085.39	0.002325	10.24	2147.49	315.82	0.69
1	4320.12*	PF 1	22000	2076.21	2083.69		2085.33	0.002535	10.28	2140.48	315.19	0.7
1	4295.48*	PF 1	22000	2076.15	2083.62		2085.27	0.002561	10.32	2132.06	314.53	0.7
1	4270.84*	PF 1	22000	2076.09	2083.54		2085.21	0.002798	10.37	2121.91	313.83	0.7
1	4246.20*	PF 1	22000	2076.03	2083.45		2085.14	0.002847	10.43	2108.94	313.06	0.71
1	4221.56*	PF 1	22000	2075.97	2083.36		2085.08	0.0029	10.5	2095	312.26	0.71
1	4196.92*	PF 1	22000	2075.9	2083.28		2085	0.003158	10.55	2085.25	311.55	0.72
1	4172.28*	PF 1	22000	2075.84	2083.16		2084.93	0.003251	10.66	2064.64	310.6	0.73
1	4147.64*	PF 1	22000	2075.78	2083.03		2084.84	0.003619	10.79	2039.03	309.53	0.74
1	4123.00*	PF 1	22000	2075.72	2082.89		2084.75	0.00379	10.96	2007.84	308.32	0.76
1	4098.36*	PF 1	22000	2075.66	2082.7		2084.65	0.004316	11.19	1966.91	306.87	0.78
1	4073.73	PF 1	22000	2075.6	2082.42		2084.52	0.004833	11.61	1895.55	304.63	0.82
1	4048.73	PF 1	22000	2075.6	2082.19	2081.59	2084.45	0.00136	12.05	1825.1	302.81	0.87

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	4032.73	PF 1	22000	2075.6	2081.58	2081.58	2084.37	0.001889	13.38	1643.77	298.37	1
1	4011.56	PF 1	22000	2068.48	2071.74	2074.74	2083.36	0.188889	27.36	804.1	260.02	2.74
1	3990.66	PF 1	22000	2061.58	2074.25	2068.09	2074.89	0.000183	6.42	3424.32	322.75	0.35
1	3967.89*	PF 1	22000	2061.54	2074.24		2074.88	0.000181	6.41	3429.96	322.05	0.35
1	3945.13*	PF 1	22000	2061.49	2074.24		2074.88	0.000179	6.4	3437.55	321.2	0.34
1	3922.37	PF 1	22000	2061.45	2074.24		2074.87	0.000178	6.4	3440.13	320.06	0.34
1	3914.4	PF 1	22000	2065.43	2073.23		2074.78	0.003039	9.99	2203.15	313.07	0.66
1	3889.4*	PF 1	22000	2065.43	2073.09		2074.7	0.002622	10.19	2158.47	311.86	0.68
1	3864.4	PF 1	22000	2065.43	2072.95		2074.63	0.002389	10.4	2116.11	310.7	0.7
1	3839.61*	PF 1	22000	2065.37	2072.89		2074.57	0.002394	10.41	2114.08	310.43	0.7
1	3814.83*	PF 1	22000	2065.31	2072.82		2074.51	0.002599	10.42	2110.9	310.12	0.7
1	3790.05*	PF 1	22000	2065.24	2072.76		2074.44	0.002598	10.42	2110.48	309.84	0.7
1	3765.27*	PF 1	22000	2065.18	2072.68		2074.38	0.002613	10.45	2105.81	309.49	0.71
1	3740.49*	PF 1	22000	2065.12	2072.61		2074.31	0.002841	10.48	2099.53	309.08	0.71
1	3715.71*	PF 1	22000	2065.06	2072.53		2074.25	0.00287	10.52	2092.18	308.65	0.71
1	3690.93*	PF 1	22000	2065	2072.45		2074.18	0.002902	10.56	2083.9	308.19	0.72
1	3666.15*	PF 1	22000	2064.93	2072.36		2074.1	0.003142	10.58	2078.55	307.74	0.72
1	3641.37*	PF 1	22000	2064.87	2072.27		2074.03	0.003201	10.65	2065.29	307.14	0.72
1	3616.59*	PF 1	22000	2064.81	2072.16		2073.95	0.003268	10.73	2050.75	306.51	0.73
1	3591.81*	PF 1	22000	2064.75	2072.05		2073.87	0.003605	10.83	2031.68	305.74	0.74
1	3567.03*	PF 1	22000	2064.69	2071.91		2073.78	0.00374	10.96	2007.11	304.84	0.75
1	3542.25*	PF 1	22000	2064.62	2071.78		2073.68	0.003853	11.07	1986.97	304.01	0.76
1	3517.47*	PF 1	22000	2064.56	2071.6		2073.58	0.004363	11.28	1950.45	302.8	0.78
1	3492.69	PF 1	22000	2064.5	2071.34		2073.45	0.004838	11.66	1886.11	300.92	0.82
1	3467.69	PF 1	22000	2064.5	2071.12	2070.5	2073.38	0.001347	12.07	1823.19	299.78	0.86
1	3451.19	PF 1	22000	2064.5	2070.5	2070.5	2073.3	0.001881	13.42	1639.06	295.22	1
1	3441.01	PF 1	22000	2061.11	2064.77	2067.09	2072.73	0.111071	22.64	971.87	280.37	2.14
1	3420.11	PF 1	22000	2054.14	2066.68	2060.12	2067.21	0.000148	5.83	3773.34	350.78	0.31
1	3395.55*	PF 1	22000	2054.1	2066.67		2067.2	0.000148	5.86	3753.71	346.22	0.31
1	3370.99*	PF 1	22000	2054.07	2066.66		2067.2	0.000148	5.9	3730.43	341.62	0.31
1	3346.43*	PF 1	22000	2054.03	2066.65		2067.2	0.000148	5.93	3710.5	337.05	0.31
1	3321.87	PF 1	22000	2054	2066.64		2067.19	0.000149	5.97	3686.85	332.45	0.32

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	3313.87	PF 1	22000	2058	2065.22		2067.06	0.003985	10.89	2019.44	308.73	0.75
1	3288.87*	PF 1	22000	2058	2064.93	2063.98	2066.94	0.003703	11.38	1932.52	306.63	0.8
1	3263.87	PF 1	22000	2058	2063.98	2063.98	2066.76	0.005239	13.36	1646.18	299.2	1

APPENDIX C

HMS Multi-Area Model								
Reach 32				Reach 34				Combined Unit Hydrograph
Date	Time	Q_{in} (cfs)	Q_{out} (cfs)	Date	Time	Q_{in} (cfs)	Q_{out} (cfs)	Q_{out} (cfs)
1-Jan-09	0:00	0	0	1-Jan-09	0:00	0	0	0
1-Jan-09	0:20	0	0	1-Jan-09	0:20	0	0	0
1-Jan-09	0:40	0	0	1-Jan-09	0:40	0	0	0
1-Jan-09	1:00	0	0	1-Jan-09	1:00	0	0	0
1-Jan-09	1:20	0	0	1-Jan-09	1:20	0	0	0
1-Jan-09	1:40	0	0	1-Jan-09	1:40	0	0	0
1-Jan-09	2:00	0	0	1-Jan-09	2:00	0	0	0
1-Jan-09	2:20	0	0	1-Jan-09	2:20	0	0	0
1-Jan-09	2:40	0	0	1-Jan-09	2:40	0	0	0
1-Jan-09	3:00	0	0	1-Jan-09	3:00	0	0	0
1-Jan-09	3:20	0	0	1-Jan-09	3:20	0	0	0
1-Jan-09	3:40	0	0	1-Jan-09	3:40	0.1	0	0
1-Jan-09	4:00	0	0	1-Jan-09	4:00	0.4	0.1	0.1
1-Jan-09	4:20	0	0	1-Jan-09	4:20	2.1	0.3	0.3
1-Jan-09	4:40	0	0	1-Jan-09	4:40	10.1	0.6	0.6
1-Jan-09	5:00	0	0	1-Jan-09	5:00	32.8	2.7	2.7
1-Jan-09	5:20	0	0	1-Jan-09	5:20	80.1	11.3	11.3
1-Jan-09	5:40	0.2	0.1	1-Jan-09	5:40	157.7	35.2	35.3
1-Jan-09	6:00	0.8	0.3	1-Jan-09	6:00	255.4	85.8	86.1
1-Jan-09	6:20	3.4	1	1-Jan-09	6:20	370.2	166.7	167.7
1-Jan-09	6:40	10	3.6	1-Jan-09	6:40	503.5	272	275.6
1-Jan-09	7:00	22.5	10.4	1-Jan-09	7:00	660.5	396.9	407.3
1-Jan-09	7:20	42.2	23.4	1-Jan-09	7:20	841.9	543.2	566.6
1-Jan-09	7:40	69.4	43.9	1-Jan-09	7:40	1043.8	714.2	758.1
1-Jan-09	8:00	104.3	72.3	1-Jan-09	8:00	1262.1	908.9	981.2
1-Jan-09	8:20	149.5	109.2	1-Jan-09	8:20	1539.3	1123.6	1232.8
1-Jan-09	8:40	215.4	158.9	1-Jan-09	8:40	1939	1375.1	1534
1-Jan-09	9:00	315.6	232.8	1-Jan-09	9:00	2490.3	1718.4	1951.2

HMS Multi-Area Model								
Reach 32				Reach 34				Combined Unit Hydrograph
1-Jan-09	9:20	467.7	346.4	1-Jan-09	9:20	3291.7	2205.1	2551.5
1-Jan-09	9:40	730.6	529.5	1-Jan-09	9:40	4904	2912.5	3442
1-Jan-09	10:00	1659.7	993.4	1-Jan-09	10:00	12724.3	4234.2	5227.6
1-Jan-09	10:20	3175	2141.3	1-Jan-09	10:20	15725.5	10858.5	12999.8
1-Jan-09	10:40	4280.8	3565.5	1-Jan-09	10:40	17112.4	15426.8	18992.3
1-Jan-09	11:00	5290.9	4706.4	1-Jan-09	11:00	16569.1	16913.4	21619.8
1-Jan-09	11:20	7436.7	6323.7	1-Jan-09	11:20	14935.4	16466.8	22790.5
1-Jan-09	11:40	7584.6	7521	1-Jan-09	11:40	12986.2	14986.8	22507.8
1-Jan-09	12:00	6873.6	7222.9	1-Jan-09	12:00	11125.7	13198.1	20421
1-Jan-09	12:20	6383.6	6631.3	1-Jan-09	12:20	9559.9	11453.8	18085.1
1-Jan-09	12:40	6019.8	6208.8	1-Jan-09	12:40	8313.9	9941.3	16150.1
1-Jan-09	13:00	5660.8	5851.2	1-Jan-09	13:00	7336.1	8696.9	14548.1
1-Jan-09	13:20	5284.3	5489.2	1-Jan-09	13:20	6565.5	7668.9	13158.1
1-Jan-09	13:40	4895.9	5113.4	1-Jan-09	13:40	5954.1	6839.8	11953.2
1-Jan-09	14:00	4519.4	4736.7	1-Jan-09	14:00	5440.3	6180.8	10917.5
1-Jan-09	14:20	4178	4381.2	1-Jan-09	14:20	5008.7	5637.1	10018.3
1-Jan-09	14:40	3881.8	4063.5	1-Jan-09	14:40	4656.5	5179.5	9243
1-Jan-09	15:00	3625.6	3787.3	1-Jan-09	15:00	4379.1	4799.7	8587
1-Jan-09	15:20	3402.6	3547.1	1-Jan-09	15:20	4153.8	4494.7	8041.8
1-Jan-09	15:40	3207.2	3335.6	1-Jan-09	15:40	3976.7	4249.6	7585.2
1-Jan-09	16:00	3038.7	3150.1	1-Jan-09	16:00	3836.5	4053.6	7203.7
1-Jan-09	16:20	2898.6	2991.6	1-Jan-09	16:20	3718.1	3898.1	6889.7
1-Jan-09	16:40	2781.2	2859.4	1-Jan-09	16:40	3624.7	3770.6	6630
1-Jan-09	17:00	2682.8	2748.6	1-Jan-09	17:00	3537.3	3666.7	6415.3
1-Jan-09	17:20	2598.1	2655	1-Jan-09	17:20	3457.8	3576.7	6231.7
1-Jan-09	17:40	2523.8	2573.9	1-Jan-09	17:40	3376.6	3493.9	6067.8
1-Jan-09	18:00	2457.8	2502.4	1-Jan-09	18:00	3304.1	3413.6	5916
1-Jan-09	18:20	2398.3	2438.6	1-Jan-09	18:20	3227.2	3337.6	5776.2

PEAK FLOW

HMS Multi-Area Model								
Reach 32				Reach 34				Combined Unit Hydrograph
1-Jan-09	18:40	2342.6	2380.3	1-Jan-09	18:40	3152.3	3262.8	5643.1
1-Jan-09	19:00	2289.4	2325.6	1-Jan-09	19:00	3078.3	3187.3	5512.9
1-Jan-09	19:20	2237.8	2272.9	1-Jan-09	19:20	2999.6	3113.2	5386.1
1-Jan-09	19:40	2187.2	2221.7	1-Jan-09	19:40	2927.9	3036.9	5258.6
1-Jan-09	20:00	2137.6	2171.6	1-Jan-09	20:00	2850.7	2962.3	5133.9
1-Jan-09	20:20	2088.6	2122.2	1-Jan-09	20:20	2774.9	2887.8	5010
1-Jan-09	20:40	2039.1	2073.1	1-Jan-09	20:40	2693.9	2811.8	4884.9
1-Jan-09	21:00	1989.5	2023.6	1-Jan-09	21:00	2619.8	2733.6	4757.2
1-Jan-09	21:20	1939.9	1974.1	1-Jan-09	21:20	2540.2	2656.7	4630.8
1-Jan-09	21:40	1889.8	1924.4	1-Jan-09	21:40	2462.1	2579.9	4504.3
1-Jan-09	22:00	1838.9	1874.2	1-Jan-09	22:00	2384.9	2501.6	4375.8
1-Jan-09	22:20	1787.5	1823.2	1-Jan-09	22:20	2302.8	2424.3	4247.5
1-Jan-09	22:40	1735.8	1771.8	1-Jan-09	22:40	2227.9	2345	4116.8
1-Jan-09	23:00	1684.1	1720.3	1-Jan-09	23:00	2147.6	2267.1	3987.4
1-Jan-09	23:20	1631.8	1668.5	1-Jan-09	23:20	2068.9	2189.7	3858.2
1-Jan-09	23:40	1578.5	1616	1-Jan-09	23:40	1985.2	2110.9	3726.9
2-Jan-09	0:00	1524.7	1562.6	2-Jan-09	0:00	1908.5	2030.2	3592.8
2-Jan-09	0:20	1450.4	1502.6	2-Jan-09	0:20	1583.3	1950.6	3453.2
2-Jan-09	0:40	1334.8	1416.5	2-Jan-09	0:40	1292.2	1755.5	3172
2-Jan-09	1:00	1192.7	1294.5	2-Jan-09	1:00	1007.6	1465.8	2760.3

APPENDIX D

Sample Calculation for USBR Type IV Stilling Basin for Beacon Energy Drainage Channel

Flow Rate, Q		28000	*(cfs)*
Width of Basin		250	*(ft)*
C		1.1	
Depth of Water at Basin Entry	***(From HEC-RAS)*** Y_1 =	3.47	*(ft)*
Froude No. at Basin Entry	***(From HEC-RAS)*** Fr_1 =	2.95	
Sequent Depth	$Y_2 = C*Y_1/2*[(1+8Fr_1^2)^{1/2} -1]$ =	14.13	*(ft)*
	L_B/Y_2 ***vs.*** Fr_1	5.19	*from Fig. 8.2 HEC-14*
Length of Basin	$L_B = Y_2*Fr_1$ =	73.30	*(ft)*
No. Shute Blocks	$N_c = B/(2.625*Y_1)$ =	27	
Width of Chute Block	$W_1 = B/(3.5*N_c)$ =	2.65	*(ft)*
Height of Chute Block	$h_1 = 2*Y_1$ =	6.94	*(ft)*
Spacing of Chute Block	$W_2 = 2.5*W_1$ =	6.61	*(ft)*
Height of End Sill	$h_4 = Y_1*(0.0536*Fr_1 + 1.04)$ =	4.16	*(ft)*
Length of End Sill	$L_5 = 2*h_4$ =	8.31	*(ft)*

APPENDIX E

```
**************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
          USING KERN COUNTY UNIT-HYDROGRAPH (1992 MANUAL)
        (c) Copyright 1989-2008 Advanced Engineering Software (aes)
          Ver. 15.0  Release Date: 04/01/2008  License ID 1395

                          Analysis prepared by:

                                   AECOM
                          7807 Convoy Court Suite 200
                          San Diego California, 92111


--------------------------------------------------------------------------
  FILE NAME: TRY.DAT
  TIME/DATE OF STUDY: 13:45 07/31/2009


**************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   78057.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   41600.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    3610.000 FEET
         BASIN FACTOR = 0.040
         WATERSHED AREA =   56544.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    2.060 HOURS
         STORM RETURN FREQUENCY =  100-YEAR
         VALLEY(DEVELOPED):
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.650
         VALLEY(UNDEVELOPED)/DESERT:
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.350
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.420
         LOW LOSS FRACTION = 0.200
         *HYDROGRAPH MODEL #4 SPECIFIED*
         WATERSHED REGION: DESERT REGION
         USER SPECIFIED RAINFALL VALUES:
           2-YR  6-HR RAINFALL DEPTH(INCH) =  1.20
           2-YR 24-HR RAINFALL DEPTH(INCH) =  2.00
         100-YR  6-HR RAINFALL DEPTH(INCH) =  3.00
         100-YR 24-HR RAINFALL DEPTH(INCH) =  6.00

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.56
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.14
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.51
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.30
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  6.00
```

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.321
30-MINUTE FACTOR = 0.375
1-HOUR FACTOR = 0.417
3-HOUR FACTOR = 0.765
6-HOUR FACTOR = 0.895
24-HOUR FACTOR = 0.939

UNIT HYDROGRAPH TIME UNIT = 20.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 16.185

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.428	2441.077
2	5.343	6693.123
3	11.662	10803.481
4	22.027	17718.457
5	34.571	21446.072
6	44.580	17109.746
7	51.999	12684.529
8	57.277	9022.465
9	61.347	6957.353
10	64.865	6015.087
11	67.824	5058.507
12	70.415	4429.978
13	72.699	3904.058
14	74.763	3529.580
15	76.550	3054.097
16	78.151	2737.244
17	79.639	2543.920
18	81.015	2351.797
19	82.247	2106.041
20	83.349	1883.788
21	84.387	1775.505
22	85.377	1692.147
23	86.236	1468.394
24	87.063	1413.809
25	87.800	1260.267
26	88.475	1153.197
27	89.126	1114.146
28	89.736	1042.436
29	90.311	982.060
30	90.867	950.770
31	91.391	895.767
32	91.880	836.422
33	92.351	805.366
34	92.805	776.280
35	93.210	692.831
36	93.593	654.341
37	93.976	654.602
38	94.342	625.321
39	94.681	580.622
40	95.021	580.505

41	95.360	580.231
42	95.700	579.840
43	96.001	515.186
44	96.277	472.013
45	96.553	472.274
46	96.829	472.274
47	97.060	394.081
48	97.268	356.439
49	97.455	319.423
50	97.607	259.621
51	97.759	259.073
52	97.910	258.278
53	98.061	258.799
54	98.213	258.812
55	98.364	259.086
56	98.515	258.538
57	98.662	251.039
58	98.732	119.617
59	98.774	70.797
60	98.815	70.276
61	98.856	70.797
62	98.898	70.797
63	98.939	70.810
64	98.980	69.741
65	99.021	70.784
66	99.063	70.810
67	99.104	70.810
68	99.145	70.263
69	99.186	70.263
70	99.228	70.810
71	99.269	71.345
72	99.310	69.728
73	99.352	71.332
74	99.393	69.741
75	99.433	69.728
76	99.474	69.728
77	99.515	69.728
78	99.556	69.741
79	99.597	69.728
80	99.637	69.728
81	99.678	69.728
82	99.719	69.741
83	99.760	69.728
84	99.801	69.728
85	99.841	69.728
86	99.882	69.741
87	99.923	69.728
88	99.964	69.728
89	100.000	62.098

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0420	0.0084	0.0336
2	0.0424	0.0085	0.0339
3	0.0428	0.0086	0.0342
4	0.0433	0.0087	0.0346
5	0.0437	0.0087	0.0350
6	0.0442	0.0088	0.0354
7	0.0447	0.0089	0.0357
8	0.0452	0.0090	0.0362
9	0.0457	0.0091	0.0366
10	0.0463	0.0093	0.0370
11	0.0468	0.0094	0.0375
12	0.0474	0.0095	0.0379
13	0.0480	0.0096	0.0384
14	0.0487	0.0097	0.0389
15	0.0494	0.0099	0.0395
16	0.0501	0.0100	0.0400
17	0.0508	0.0102	0.0406
18	0.0516	0.0103	0.0412
19	0.0524	0.0105	0.0419
20	0.0532	0.0106	0.0426
21	0.0541	0.0108	0.0433
22	0.0550	0.0110	0.0440
23	0.0560	0.0112	0.0448
24	0.0571	0.0114	0.0457
25	0.0582	0.0116	0.0466
26	0.0594	0.0119	0.0475
27	0.0606	0.0121	0.0485
28	0.0620	0.0124	0.0496
29	0.0635	0.0127	0.0508
30	0.0650	0.0130	0.0520
31	0.0667	0.0133	0.0534
32	0.0686	0.0137	0.0549
33	0.0706	0.0141	0.0565
34	0.0728	0.0146	0.0582
35	0.0752	0.0150	0.0602
36	0.0780	0.0156	0.0624
37	0.0923	0.0185	0.0738
38	0.0956	0.0191	0.0765
39	0.0994	0.0199	0.0795
40	0.1037	0.0207	0.0830
41	0.1089	0.0218	0.0871
42	0.1151	0.0230	0.0920
43	0.1836	0.0367	0.1469
44	0.1860	0.0372	0.1488
45	0.1890	0.0378	0.1512
46	0.1931	0.0386	0.1545
47	0.1304	0.0261	0.1044
48	0.2035	0.0407	0.1628
49	0.2961	0.0592	0.2368
50	0.1922	0.0384	0.1537
51	0.1854	0.0371	0.1483
52	0.1136	0.0227	0.0908
53	0.1027	0.0205	0.0821
54	0.0948	0.0190	0.0758

55	0.0773	0.0155	0.0618
56	0.0722	0.0144	0.0578
57	0.0681	0.0136	0.0545
58	0.0646	0.0129	0.0517
59	0.0617	0.0123	0.0493
60	0.0591	0.0118	0.0473
61	0.0568	0.0114	0.0455
62	0.0548	0.0110	0.0438
63	0.0530	0.0106	0.0424
64	0.0514	0.0103	0.0411
65	0.0499	0.0100	0.0399
66	0.0485	0.0097	0.0388
67	0.0473	0.0095	0.0378
68	0.0461	0.0092	0.0369
69	0.0451	0.0090	0.0361
70	0.0441	0.0088	0.0353
71	0.0431	0.0086	0.0345
72	0.0423	0.0085	0.0338

TOTAL STORM RAINFALL(INCHES) = 5.63
TOTAL SOIL-LOSS(INCHES) = 1.13
TOTAL EFFECTIVE RAINFALL(INCHES) = 4.51

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 5307.5576
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 21219.2734

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 5425.0 10850.0 16275.0 21700.0
0.083	0.5644	81.95	Q . . . .
0.167	1.1287	81.95	Q . . . .
0.250	1.6931	81.95	Q . . . .
0.333	2.2575	81.95	Q . . . .
0.417	4.3749	307.45	Q . . . .
0.500	6.4923	307.45	Q . . . .
0.583	8.6097	307.45	Q . . . .
0.667	10.7271	307.45	Q . . . .
0.750	15.3634	673.19	VQ . . . .
0.833	19.9997	673.19	VQ . . . .
0.917	24.6360	673.19	VQ . . . .
1.000	29.2724	673.19	VQ . . . .
1.083	38.0518	1274.78	V Q . . . .
1.167	46.8313	1274.78	V Q . . . .
1.250	55.6107	1274.78	V Q . . . .
1.333	64.3902	1274.78	V Q . . . .
1.417	78.2169	2007.63	V Q . . . .
1.500	92.0435	2007.63	V Q . . . .
1.583	105.8702	2007.63	V Q . . . .
1.667	119.6968	2007.63	V Q . . . .
1.750	137.6204	2602.50	V Q . . . .
1.833	155.5439	2602.50	V Q . . . .
1.917	173.4675	2602.50	V Q . . . .
2.000	191.3910	2602.50	V Q . . . .
2.083	212.4323	3055.19	V Q . . . .
2.167	233.4735	3055.19	V Q . . . .
2.250	254.5148	3055.19	V Q . . . .
2.333	275.5561	3055.19	V Q . . . .
2.417	298.9038	3390.08	V Q . . . .
2.500	322.2515	3390.08	V Q . . . .
2.583	345.5992	3390.08	V Q . . . .
2.667	368.9468	3390.08	V Q . . . .
2.750	394.1517	3659.74	V Q . . . .
2.833	419.3565	3659.74	V Q . . . .
2.917	444.5613	3659.74	V Q . . . .
3.000	469.7662	3659.74	V Q . . . .
3.083	496.6348	3901.33	V Q . . . .
3.167	523.5035	3901.33	V Q . . . .
3.250	550.3721	3901.33	V Q . . . .
3.333	577.2408	3901.33	V Q . . . .
3.417	605.5755	4114.20	.V Q . . . .
3.500	633.9102	4114.20	.V Q . . . .
3.583	662.2449	4114.20	.V Q . . . .
3.667	690.5797	4114.20	.V Q . . . .
3.750	720.2573	4309.19	.V Q . . . .
3.833	749.9349	4309.19	.V Q . . . .
3.917	779.6125	4309.19	.V Q . . . .
4.000	809.2901	4309.19	.V Q . . . .

4.083	840.2108	4489.69	.V	Q .	.	.	.
4.167	871.1315	4489.69	.V	Q .	.	.	.
4.250	902.0522	4489.69	.V	Q .	.	.	.
4.333	932.9730	4489.69	.V	Q .	.	.	.
4.417	965.0718	4660.75	.V	Q .	.	.	.
4.500	997.1707	4660.75	.V	Q .	.	.	.
4.583	1029.2695	4660.75	.V	Q .	.	.	.
4.667	1061.3684	4660.75	. V	Q .	.	.	.
4.750	1094.5574	4819.03	. V	Q .	.	.	.
4.833	1127.7463	4819.03	. V	Q .	.	.	.
4.917	1160.9353	4819.03	. V	Q .	.	.	.
5.000	1194.1243	4819.03	. V	Q .	.	.	.
5.083	1228.3519	4969.85	. V	Q.	.	.	.
5.167	1262.5796	4969.85	. V	Q.	.	.	.
5.250	1296.8073	4969.85	. V	Q.	.	.	.
5.333	1331.0349	4969.85	. V	Q.	.	.	.
5.417	1366.2791	5117.46	. V	Q.	.	.	.
5.500	1401.5232	5117.46	. V	Q.	.	.	.
5.583	1436.7673	5117.46	. V	Q.	.	.	.
5.667	1472.0115	5117.46	. V	Q.	.	.	.
5.750	1508.2511	5262.00	. V	Q.	.	.	.
5.833	1544.4907	5262.00	. V	Q.	.	.	.
5.917	1580.7303	5262.00	. V	Q.	.	.	.
6.000	1616.9700	5262.00	. V	Q.	.	.	.
6.083	1654.1726	5401.82	. V	Q.	.	.	.
6.167	1691.3752	5401.82	. V	Q.	.	.	.
6.250	1728.5779	5401.82	. V	Q.	.	.	.
6.333	1765.7805	5401.82	. V	Q.	.	.	.
6.417	1803.9200	5537.85	. V	Q	.	.	.
6.500	1842.0596	5537.85	. V	Q	.	.	.
6.583	1880.1991	5537.85	. V	Q	.	.	.
6.667	1918.3386	5537.85	. V	Q	.	.	.
6.750	1957.4164	5674.10	. V	Q	.	.	.
6.833	1996.4941	5674.10	. V	Q	.	.	.
6.917	2035.5719	5674.10	. V	Q	.	.	.
7.000	2074.6497	5674.10	. V	Q	.	.	.
7.083	2114.6746	5811.62	. V	Q	.	.	.
7.167	2154.6995	5811.62	. V	Q	.	.	.
7.250	2194.7244	5811.62	. V	Q	.	.	.
7.333	2234.7493	5811.62	. V	Q	.	.	.
7.417	2275.6995	5945.98	. V	Q	.	.	.
7.500	2316.6497	5945.98	. V	Q	.	.	.
7.583	2357.5999	5945.98	. V	Q	.	.	.
7.667	2398.5500	5945.98	. V	Q	.	.	.
7.750	2440.4448	6083.12	. V	.Q	.	.	.
7.833	2482.3396	6083.12	. V	.Q	.	.	.
7.917	2524.2344	6083.12	. V	.Q	.	.	.
8.000	2566.1292	6083.12	. V	.Q	.	.	.
8.083	2608.9670	6220.06	. V	.Q	.	.	.
8.167	2651.8049	6220.06	. V	.Q	.	.	.
8.250	2694.6428	6220.06	. V	.Q	.	.	.
8.333	2737.4807	6220.06	. V	.Q	.	.	.
8.417	2781.2737	6358.73	. V	.Q	.	.	.
8.500	2825.0667	6358.73	. V	.Q	.	.	.
8.583	2868.8596	6358.73	. V	.Q	.	.	.
8.667	2912.6526	6358.73	. V	.Q	.	.	.
8.750	2957.4312	6501.83	. V	.Q	.	.	.
8.833	3002.2097	6501.83	. V	.Q	.	.	.
8.917	3046.9883	6501.83	. V	.Q	.	.	.
9.000	3091.7668	6501.83	. V	.Q	.	.	.

9.083	3137.5574	6648.80	.	V	. Q	.	.	.
9.167	3183.3479	6648.80	.	V	. Q	.	.	.
9.250	3229.1384	6648.80	.	V	. Q	.	.	.
9.333	3274.9290	6648.80	.	V	. Q	.	.	.
9.417	3321.7649	6800.58	.	V	. Q	.	.	.
9.500	3368.6008	6800.58	.	V	. Q	.	.	.
9.583	3415.4368	6800.58	.	V	. Q	.	.	.
9.667	3462.2727	6800.58	.	V	. Q	.	.	.
9.750	3510.1985	6958.81	.	V	. Q	.	.	.
9.833	3558.1243	6958.81	.	V	. Q	.	.	.
9.917	3606.0500	6958.81	.	V	. Q	.	.	.
10.000	3653.9758	6958.81	.	V	. Q	.	.	.
10.083	3703.0356	7123.48	.	V	. Q	.	.	.
10.167	3752.0955	7123.48	.	V	. Q	.	.	.
10.250	3801.1553	7123.48	.	V	. Q	.	.	.
10.333	3850.2151	7123.48	.	V	. Q	.	.	.
10.417	3900.4585	7295.35	.	V	. Q	.	.	.
10.500	3950.7019	7295.35	.	V	. Q	.	.	.
10.583	4000.9453	7295.35	.	V	. Q	.	.	.
10.667	4051.1887	7295.35	.	V	. Q	.	.	.
10.750	4102.6792	7476.44	.	V	. Q	.	.	.
10.833	4154.1699	7476.44	.	V	. Q	.	.	.
10.917	4205.6606	7476.44	.	V	. Q	.	.	.
11.000	4257.1514	7476.44	.	V	. Q	.	.	.
11.083	4309.9619	7668.06	.	V	. Q	.	.	.
11.167	4362.7725	7668.06	.	V	. Q	.	.	.
11.250	4415.5830	7668.06	.	V	. Q	.	.	.
11.333	4468.3936	7668.06	.	V	. Q	.	.	.
11.417	4522.5942	7869.91	.	V	. Q	.	.	.
11.500	4576.7949	7869.91	.	V	. Q	.	.	.
11.583	4630.9956	7869.91	.	V	. Q	.	.	.
11.667	4685.1963	7869.91	.	V	. Q	.	.	.
11.750	4740.8804	8085.30	.	V	. Q	.	.	.
11.833	4796.5645	8085.30	.	V	. Q	.	.	.
11.917	4852.2485	8085.30	.	V	. Q	.	.	.
12.000	4907.9326	8085.30	.	V	. Q	.	.	.
12.083	4965.3687	8339.71	.	V	. Q	.	.	.
12.167	5022.8047	8339.71	.	V	. Q	.	.	.
12.250	5080.2407	8339.71	.	V	. Q	.	.	.
12.333	5137.6768	8339.71	.	V	. Q	.	.	.
12.417	5197.2554	8650.84	.	V	. Q	.	.	.
12.500	5256.8340	8650.84	.	V	. Q	.	.	.
12.583	5316.4126	8650.84	.	V	Q	.	.	.
12.667	5375.9912	8650.84	.	V	Q	.	.	.
12.750	5438.1104	9019.70	.	V	Q	.	.	.
12.833	5500.2295	9019.70	.	V	Q	.	.	.
12.917	5562.3486	9019.70	.	V	Q	.	.	.
13.000	5624.4678	9019.70	.	V	Q	.	.	.
13.083	5689.7334	9476.56	.	V	Q	.	.	.
13.167	5754.9990	9476.56	.	V	Q	.	.	.
13.250	5820.2646	9476.56	.	V	Q	.	.	.
13.333	5885.5303	9476.56	.	V	Q	.	.	.
13.417	5954.3804	9997.04	.	V	Q	.	.	.
13.500	6023.2305	9997.04	.	V	Q	.	.	.
13.583	6092.0806	9997.04	.	V	Q	.	.	.
13.667	6160.9307	9997.04	.	V	Q	.	.	.
13.750	6233.3472	10514.89	.	V	Q	.	.	.
13.833	6305.7637	10514.89	.	V	Q	.	.	.
13.917	6378.1802	10514.89	.	V	Q	.	.	.
14.000	6450.5967	10514.89	.	V	Q	.	.	.

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14.083   6527.4282  11155.91  .         . V       Q         .         .
14.167   6604.2598  11155.91  .         . V       Q         .         .
14.250   6681.0913  11155.91  .         . V       Q         .         .
14.333   6757.9229  11155.91  .         . V       Q         .         .
14.417   6840.6738  12015.48  .         . V       . Q       .         .
14.500   6923.4248  12015.48  .         .  V      . Q       .         .
14.583   7006.1758  12015.48  .         .  V      . Q       .         .
14.667   7088.9268  12015.48  .         .  V      . Q       .         .
14.750   7179.0986  13092.95  .         .  V      .   Q     .         .
14.833   7269.2705  13092.95  .         .  V      .   Q     .         .
14.917   7359.4424  13092.95  .         .  V      .   Q     .         .
15.000   7449.6143  13092.95  .         .   V     .   Q     .         .
15.083   7549.6543  14525.80  .         .   V     .     Q   .         .
15.167   7649.6943  14525.80  .         .   V     .     Q   .         .
15.250   7749.7344  14525.80  .         .   V     .     Q   .         .
15.333   7849.7744  14525.80  .         .   V     .     Q   .         .
15.417   7959.9443  15996.68  .         .    V    .        Q.         .
15.500   8070.1143  15996.68  .         .    V    .        Q.         .
15.583   8180.2842  15996.68  .         .    V    .        Q.         .
15.667   8290.4541  15996.68  .         .    V    .        Q.         .
15.750   8408.4492  17132.91  .         .    V    .         .Q        .
15.833   8526.4443  17132.91  .         .     V   .         .Q        .
15.917   8644.4395  17132.91  .         .     V   .         .Q        .
16.000   8762.4346  17132.91  .         .     V   .         .Q        .
16.083   8887.9619  18226.52  .         .     V   .         .  Q      .
16.167   9013.4893  18226.52  .         .     V   .         .  Q      .
16.250   9139.0166  18226.52  .         .      V  .         .  Q      .
16.333   9264.5439  18226.52  .         .      V  .         .  Q      .
16.417   9395.9951  19086.71  .         .      V  .         .    Q    .
16.500   9527.4463  19086.71  .         .      V  .         .    Q    .
16.583   9658.8975  19086.71  .         .       V .         .    Q    .
16.667   9790.3486  19086.71  .         .       V .         .    Q    .
16.750   9927.6377  19934.35  .         .       V .         .     Q   .
16.833  10064.9268  19934.35  .         .       V .         .     Q   .
16.917  10202.2158  19934.35  .         .        V.         .     Q   .
17.000  10339.5049  19934.35  .         .        V.         .     Q   .
17.083  10485.0098  21127.32  .         .        V.         .       Q .
17.167  10630.5146  21127.32  .         .         V         .       Q .
17.250  10776.0195  21127.32  .         .         V         .       Q .
17.333  10921.5244  21127.32  .         .         V         .       Q .
17.417  11070.4033  21617.22  .         .         V         .        Q.
17.500  11219.2822  21617.22  .         .          V        .        Q.
17.583  11368.1611  21617.22  .         .          V        .        Q.
17.667  11517.0400  21617.22  .         .          V        .        Q.
17.750  11661.7900  21017.75  .         .         .V        .       Q .
17.833  11806.5400  21017.75  .         .         . V       .       Q .
17.917  11951.2900  21017.75  .         .         . V       .       Q .
18.000  12096.0400  21017.75  .         .         . V       .       Q .
18.083  12232.2627  19779.47  .         .         .  V      .     Q   .
18.167  12368.4854  19779.47  .         .         .  V      .     Q   .
18.250  12504.7080  19779.47  .         .         .  V      .     Q   .
18.333  12640.9307  19779.47  .         .         .  V      .     Q   .
18.417  12766.1484  18181.58  .         .         .   V     .  Q      .
18.500  12891.3662  18181.58  .         .         .   V     .  Q      .
18.583  13016.5840  18181.58  .         .         .   V     .  Q      .
18.667  13141.8018  18181.58  .         .         .   V     .  Q      .
18.750  13257.5352  16804.51  .         .         .   V     Q         .
18.833  13373.2686  16804.51  .         .         .    V    Q         .
18.917  13489.0020  16804.51  .         .         .    V    Q         .
19.000  13604.7354  16804.51  .         .         .    V    Q         .
```

19.083	13712.3633	15627.61	. . . V Q . .
19.167	13819.9912	15627.61	. . . V Q . .
19.250	13927.6191	15627.61	. . . V Q . .
19.333	14035.2471	15627.61	. . . V Q . .
19.417	14135.8096	14601.64	. . . Q . .
19.500	14236.3721	14601.64	. . . Q . .
19.583	14336.9346	14601.64	. . . QV . .
19.667	14437.4971	14601.64	. . . QV . .
19.750	14532.2471	13757.72	. . . Q V . .
19.833	14626.9971	13757.72	. . . Q V . .
19.917	14721.7471	13757.72	. . . Q V . .
20.000	14816.4971	13757.72	. . . Q V . .
20.083	14906.2588	13033.38	. . . Q V . .
20.167	14996.0205	13033.38	. . . Q V . .
20.250	15085.7822	13033.38	. . . Q V . .
20.333	15175.5439	13033.38	. . . Q V . .
20.417	15261.0195	12411.00	. . . Q V . .
20.500	15346.4951	12411.00	. . . Q V . .
20.583	15431.9707	12411.00	. . . Q V . .
20.667	15517.4463	12411.00	. . . Q V . .
20.750	15599.0371	11847.04	. . . Q V . .
20.833	15680.6279	11847.04	. . . Q V . .
20.917	15762.2188	11847.04	. . . Q V . .
21.000	15843.8096	11847.04	. . . Q V . .
21.083	15921.9844	11351.05	. . . Q V . .
21.167	16000.1592	11351.05	. . . Q V . .
21.250	16078.3340	11351.05	. . . Q V . .
21.333	16156.5088	11351.05	. . . Q V . .
21.417	16231.6162	10905.64	. . . Q V . .
21.500	16306.7236	10905.64	. . . Q V . .
21.583	16381.8311	10905.64	. . . Q V . .
21.667	16456.9395	10905.64	. . . Q V . .
21.750	16529.2930	10505.71	. . . Q . V . .
21.833	16601.6465	10505.71	. . . Q . V . .
21.917	16674.0000	10505.71	. . . Q . V . .
22.000	16746.3535	10505.71	. . . Q . V . .
22.083	16816.0957	10126.58	. . . Q . V . .
22.167	16885.8379	10126.58	. . . Q . V . .
22.250	16955.5801	10126.58	. . . Q . V . .
22.333	17025.3223	10126.58	. . . Q . . V .
22.417	17092.6250	9772.38	. . . Q . . V .
22.500	17159.9277	9772.38	. . . Q . . V .
22.583	17227.2305	9772.38	. . . Q . . V .
22.667	17294.5332	9772.38	. . . Q . . V .
22.750	17359.6953	9461.56	. . . Q . . V .
22.833	17424.8574	9461.56	. . . Q . . V .
22.917	17490.0195	9461.56	. . . Q . . V .
23.000	17555.1816	9461.56	. . . Q . . V .
23.083	17618.3242	9168.22	. . . Q . . V .
23.166	17681.4668	9168.22	. . . Q . . V .
23.250	17744.6094	9168.22	. . . Q . . V .
23.333	17807.7520	9168.22	. . . Q . . V .
23.416	17868.9883	8891.61	. . . Q . . V .
23.500	17930.2246	8891.61	. . . Q . . V .
23.583	17991.4609	8891.61	. . . Q . . V .
23.666	18052.6973	8891.61	. . . Q . . V .
23.750	18112.2188	8642.57	. . . Q . . V .
23.833	18171.7402	8642.57	. . . Q . . V .
23.916	18231.2617	8642.57	. . . Q . . V .
24.000	18290.7832	8642.57	. . . Q . . V .

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24.083  18348.0527   8315.68  .         .    Q    .         .   V     .
24.166  18405.3223   8315.68  .         .    Q    .         .   V     .
24.250  18462.5918   8315.68  .         .    Q    .         .   V     .
24.333  18519.8613   8315.68  .         .    Q    .         .   V     .
24.416  18574.0957   7874.94  .         .   Q     .         .    V    .
24.500  18628.3301   7874.94  .         .   Q     .         .    V    .
24.583  18682.5645   7874.94  .         .   Q     .         .    V    .
24.666  18736.7988   7874.94  .         .   Q     .         .    V    .
24.750  18787.1973   7317.87  .         .  Q      .         .    V    .
24.833  18837.5957   7317.87  .         .  Q      .         .    V    .
24.916  18887.9941   7317.87  .         .  Q      .         .    V    .
25.000  18938.3926   7317.87  .         .  Q      .         .    V    .
25.083  18983.4980   6549.22  .         . Q       .         .    V    .
25.166  19028.6035   6549.22  .         . Q       .         .    V    .
25.250  19073.7090   6549.22  .         . Q       .         .    V    .
25.333  19118.8145   6549.22  .         . Q       .         .     V   .
25.416  19157.9375   5680.59  .         Q         .         .     V   .
25.500  19197.0605   5680.59  .         Q         .         .     V   .
25.583  19236.1836   5680.59  .         Q         .         .     V   .
25.666  19275.3066   5680.59  .         Q         .         .     V   .
25.750  19309.5898   4978.02  .        Q.         .         .     V   .
25.833  19343.8730   4978.02  .        Q.         .         .     V   .
25.916  19378.1562   4978.02  .        Q.         .         .     V   .
26.000  19412.4395   4978.02  .        Q.         .         .     V   .
26.083  19443.0078   4438.44  .       Q .         .         .     V   .
26.166  19473.5762   4438.44  .       Q .         .         .     V   .
26.250  19504.1445   4438.44  .       Q .         .         .     V   .
26.333  19534.7129   4438.44  .       Q .         .         .     V   .
26.416  19562.4922   4033.55  .      Q  .         .         .     V   .
26.500  19590.2715   4033.55  .      Q  .         .         .     V   .
26.583  19618.0508   4033.55  .      Q  .         .         .     V   .
26.666  19645.8301   4033.55  .      Q  .         .         .      V  .
26.750  19671.3848   3710.43  .     Q   .         .         .      V  .
26.833  19696.9395   3710.43  .     Q   .         .         .      V  .
26.916  19722.4941   3710.43  .     Q   .         .         .      V  .
27.000  19748.0488   3710.43  .     Q   .         .         .      V  .
27.083  19771.6465   3426.27  .     Q   .         .         .      V  .
27.166  19795.2441   3426.27  .     Q   .         .         .      V  .
27.250  19818.8418   3426.27  .     Q   .         .         .      V  .
27.333  19842.4395   3426.27  .     Q   .         .         .      V  .
27.416  19864.3145   3176.25  .    Q    .         .         .      V  .
27.500  19886.1895   3176.25  .    Q    .         .         .      V  .
27.583  19908.0645   3176.25  .    Q    .         .         .      V  .
27.666  19929.9395   3176.25  .    Q    .         .         .      V  .
27.750  19950.3164   2958.69  .    Q    .         .         .      V  .
27.833  19970.6934   2958.69  .    Q    .         .         .      V  .
27.916  19991.0703   2958.69  .    Q    .         .         .      V  .
28.000  20011.4473   2958.69  .    Q    .         .         .      V  .
28.083  20030.4883   2764.80  .    Q    .         .         .      V  .
28.166  20049.5293   2764.80  .    Q    .         .         .      V  .
28.250  20068.5703   2764.80  .    Q    .         .         .      V  .
28.333  20087.6113   2764.80  .    Q    .         .         .      V  .
28.416  20105.4102   2584.30  .   Q     .         .         .      V  .
28.500  20123.2090   2584.30  .   Q     .         .         .      V  .
28.583  20141.0078   2584.30  .   Q     .         .         .      V  .
28.666  20158.8066   2584.30  .   Q     .         .         .       V .
28.750  20175.5020   2424.10  .   Q     .         .         .       V .
28.833  20192.1973   2424.10  .   Q     .         .         .       V .
28.916  20208.8926   2424.10  .   Q     .         .         .       V .
29.000  20225.5879   2424.10  .   Q     .         .         .       V .
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29.083	20241.2949	2280.68	. Q	.	.	.	V .
29.166	20257.0020	2280.68	. Q	.	.	.	V .
29.250	20272.7090	2280.68	. Q	.	.	.	V .
29.333	20288.4160	2280.68	. Q	.	.	.	V .
29.416	20303.2031	2146.97	. Q	.	.	.	V .
29.500	20317.9902	2146.97	. Q	.	.	.	V .
29.583	20332.7773	2146.97	. Q	.	.	.	V .
29.666	20347.5645	2146.97	. Q	.	.	.	V .
29.750	20361.4668	2018.60	. Q	.	.	.	V .
29.833	20375.3691	2018.60	. Q	.	.	.	V .
29.916	20389.2715	2018.60	. Q	.	.	.	V .
30.000	20403.1738	2018.60	. Q	.	.	.	V .
30.083	20416.1953	1890.78	. Q	.	.	.	V .
30.166	20429.2168	1890.78	. Q	.	.	.	V .
30.250	20442.2383	1890.78	. Q	.	.	.	V .
30.333	20455.2598	1890.78	. Q	.	.	.	V .
30.416	20467.4551	1770.84	. Q	.	.	.	V .
30.500	20479.6504	1770.84	. Q	.	.	.	V .
30.583	20491.8457	1770.84	. Q	.	.	.	V .
30.666	20504.0410	1770.84	. Q	.	.	.	V .
30.750	20515.4980	1663.67	. Q	.	.	.	V .
30.833	20526.9551	1663.67	. Q	.	.	.	V .
30.916	20538.4121	1663.67	. Q	.	.	.	V .
31.000	20549.8691	1663.67	. Q	.	.	.	V .
31.083	20560.6133	1560.03	. Q	.	.	.	V .
31.166	20571.3574	1560.03	. Q	.	.	.	V .
31.250	20582.1016	1560.03	. Q	.	.	.	V .
31.333	20592.8457	1560.03	. Q	.	.	.	V .
31.416	20602.9062	1460.87	. Q	.	.	.	V .
31.500	20612.9668	1460.87	. Q	.	.	.	V .
31.583	20623.0273	1460.87	. Q	.	.	.	V .
31.666	20633.0879	1460.87	. Q	.	.	.	V .
31.750	20642.5176	1369.27	. Q	.	.	.	V .
31.833	20651.9473	1369.27	. Q	.	.	.	V .
31.916	20661.3770	1369.27	. Q	.	.	.	V .
32.000	20670.8066	1369.27	. Q	.	.	.	V .
32.083	20679.6328	1281.51	. Q	.	.	.	V .
32.166	20688.4590	1281.51	. Q	.	.	.	V .
32.250	20697.2852	1281.51	. Q	.	.	.	V.
32.333	20706.1113	1281.51	. Q	.	.	.	V.
32.416	20714.3848	1201.43	. Q	.	.	.	V.
32.500	20722.6582	1201.43	. Q	.	.	.	V.
32.583	20730.9316	1201.43	. Q	.	.	.	V.
32.666	20739.2051	1201.43	. Q	.	.	.	V.
32.750	20746.9883	1130.22	. Q	.	.	.	V.
32.833	20754.7715	1130.22	. Q	.	.	.	V.
32.916	20762.5547	1130.22	. Q	.	.	.	V.
33.000	20770.3379	1130.22	. Q	.	.	.	V.
33.083	20777.6250	1058.01	.Q	.	.	.	V.
33.166	20784.9121	1058.01	.Q	.	.	.	V.
33.250	20792.1992	1058.01	.Q	.	.	.	V.
33.333	20799.4863	1058.01	.Q	.	.	.	V.
33.416	20806.3086	990.72	.Q	.	.	.	V.
33.500	20813.1309	990.72	.Q	.	.	.	V.
33.583	20819.9531	990.72	.Q	.	.	.	V.
33.666	20826.7754	990.72	.Q	.	.	.	V.
33.750	20833.1543	926.19	.Q	.	.	.	V.
33.833	20839.5332	926.19	.Q	.	.	.	V.
33.916	20845.9121	926.19	.Q	.	.	.	V.
34.000	20852.2910	926.19	.Q	.	.	.	V.

34.083	20858.2500	865.17	.Q	.	.	.	V.
34.166	20864.2090	865.17	.Q	.	.	.	V.
34.250	20870.1680	865.17	.Q	.	.	.	V.
34.333	20876.1270	865.17	.Q	.	.	.	V.
34.416	20881.7305	813.76	.Q	.	.	.	V.
34.500	20887.3340	813.76	.Q	.	.	.	V.
34.583	20892.9375	813.76	.Q	.	.	.	V.
34.666	20898.5410	813.76	.Q	.	.	.	V.
34.750	20903.7656	758.62	.Q	.	.	.	V.
34.833	20908.9902	758.62	.Q	.	.	.	V.
34.916	20914.2148	758.62	.Q	.	.	.	V.
35.000	20919.4395	758.62	.Q	.	.	.	V.
35.083	20924.2148	693.28	.Q	.	.	.	V.
35.166	20928.9902	693.28	.Q	.	.	.	V.
35.250	20933.7656	693.28	.Q	.	.	.	V.
35.333	20938.5410	693.28	.Q	.	.	.	V.
35.416	20942.9414	638.80	.Q	.	.	.	V.
35.500	20947.3418	638.80	.Q	.	.	.	V.
35.583	20951.7422	638.80	.Q	.	.	.	V.
35.666	20956.1426	638.80	.Q	.	.	.	V.
35.750	20960.2148	591.34	.Q	.	.	.	V.
35.833	20964.2871	591.34	.Q	.	.	.	V.
35.916	20968.3594	591.34	.Q	.	.	.	V.
36.000	20972.4316	591.34	.Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	2180.0
10%	1660.0
20%	1340.0
30%	1000.0
40%	680.0
50%	460.0
60%	340.0
70%	240.0
80%	160.0
90%	100.0

==========

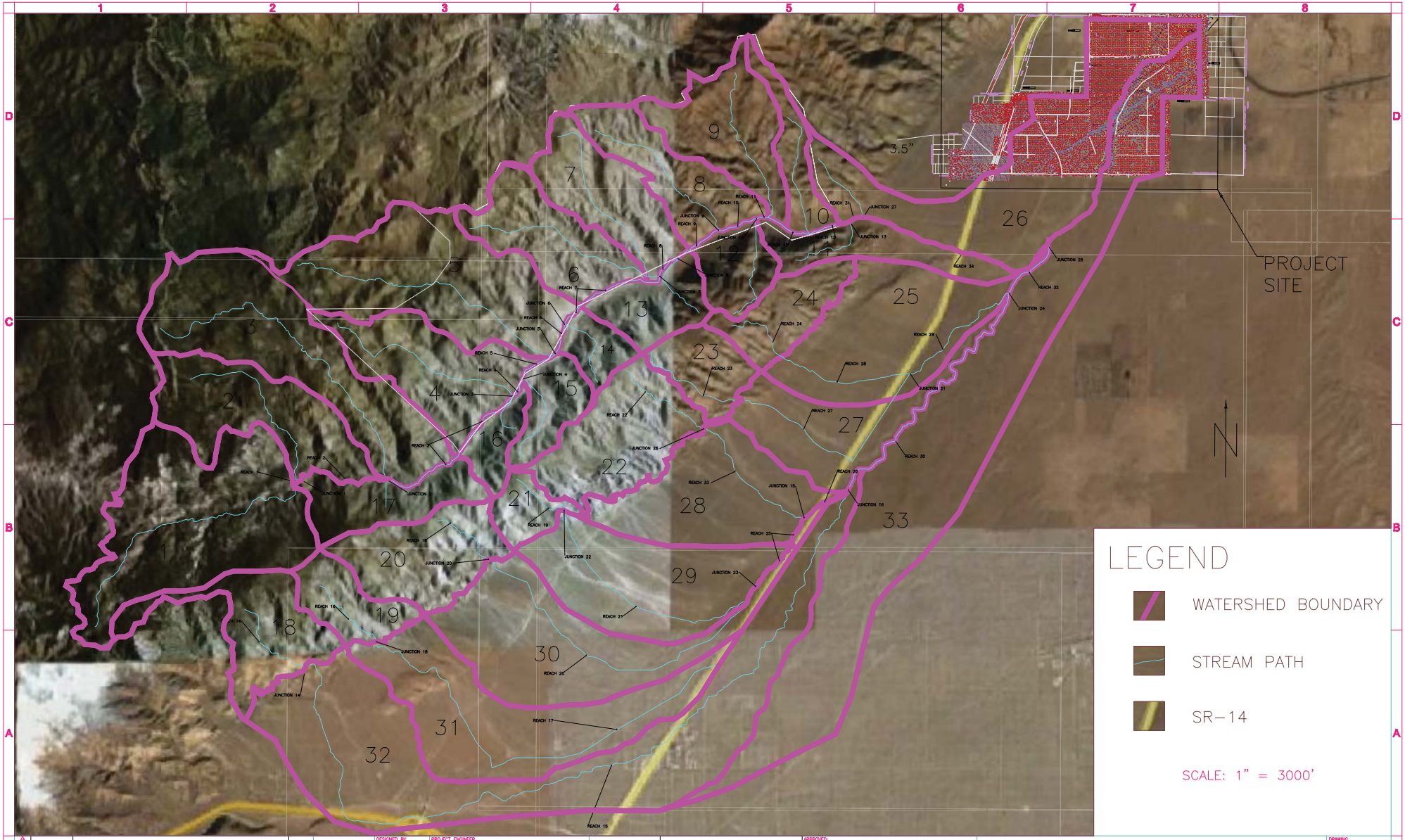
END OF FLOODSCx ROUTING ANALYSIS

APPENDIX F

HMS Single Area Model		
Date	Time	Q_{out} (cfs)
1-Jan-09	0:00	0
1-Jan-09	0:20	0
1-Jan-09	0:40	0
1-Jan-09	1:00	0
1-Jan-09	1:20	0
1-Jan-09	1:40	0
1-Jan-09	2:00	0
1-Jan-09	2:20	0
1-Jan-09	2:40	0
1-Jan-09	3:00	0
1-Jan-09	3:20	0
1-Jan-09	3:40	0
1-Jan-09	4:00	0
1-Jan-09	4:20	0
1-Jan-09	4:40	0
1-Jan-09	5:00	0
1-Jan-09	5:20	0.3
1-Jan-09	5:40	2.5
1-Jan-09	6:00	9.7
1-Jan-09	6:20	26.7
1-Jan-09	6:40	60.4
1-Jan-09	7:00	118.3
1-Jan-09	7:20	207.4
1-Jan-09	7:40	333.2
1-Jan-09	8:00	499.7
1-Jan-09	8:20	711.1
1-Jan-09	8:40	977
1-Jan-09	9:00	1315.8
1-Jan-09	9:20	1764.4
1-Jan-09	9:40	2417.3
1-Jan-09	10:00	3814.2
1-Jan-09	10:20	6038.1
1-Jan-09	10:40	9148.8
1-Jan-09	11:00	13058.8
1-Jan-09	11:20	16795.4
1-Jan-09	11:40	19528.9
1-Jan-09	12:00	21067.9
1-Jan-09	12:20	21550.3
1-Jan-09	12:40	21145.3
1-Jan-09	13:00	20102.1
1-Jan-09	13:20	18473.6
1-Jan-09	13:40	16865.5
1-Jan-09	14:00	15504.1
1-Jan-09	14:20	14317.5
1-Jan-09	14:40	13269.2

HMS Single Area Model		
Date	Time	Q_{out} (cfs)
1-Jan-09	15:00	12294.1
1-Jan-09	15:20	11402.5
1-Jan-09	15:40	10615.2
1-Jan-09	16:00	9933.3
1-Jan-09	16:20	9339.1
1-Jan-09	16:40	8827.3
1-Jan-09	17:00	8395.3
1-Jan-09	17:20	8030.5
1-Jan-09	17:40	7714.5
1-Jan-09	18:00	7436.3
1-Jan-09	18:20	7188.4
1-Jan-09	18:40	6965.6
1-Jan-09	19:00	6762.3
1-Jan-09	19:20	6573.9
1-Jan-09	19:40	6392.6
1-Jan-09	20:00	6215.5
1-Jan-09	20:20	6043.6
1-Jan-09	20:40	5874.2
1-Jan-09	21:00	5707.3
1-Jan-09	21:20	5547.7
1-Jan-09	21:40	5395.7
1-Jan-09	22:00	5246
1-Jan-09	22:20	5097
1-Jan-09	22:40	4948.5
1-Jan-09	23:00	4799.9
1-Jan-09	23:20	4651.2
1-Jan-09	23:40	4502.3
2-Jan-09	0:00	4353.2
2-Jan-09	0:20	4183.3
2-Jan-09	0:40	3974.7
2-Jan-09	1:00	3708.7

EXHIBIT 1a



REV	DATE	DESCRIPTION	APPR
1			
2			
3			
4			
5			
6			

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY | PROJECT ENGINEER
DRAWN BY | REG NUMBER | EXP DATE
CHECKED BY | PROJECT NUMBER
DATE: APRIL 2009 | CADD STANDARDS

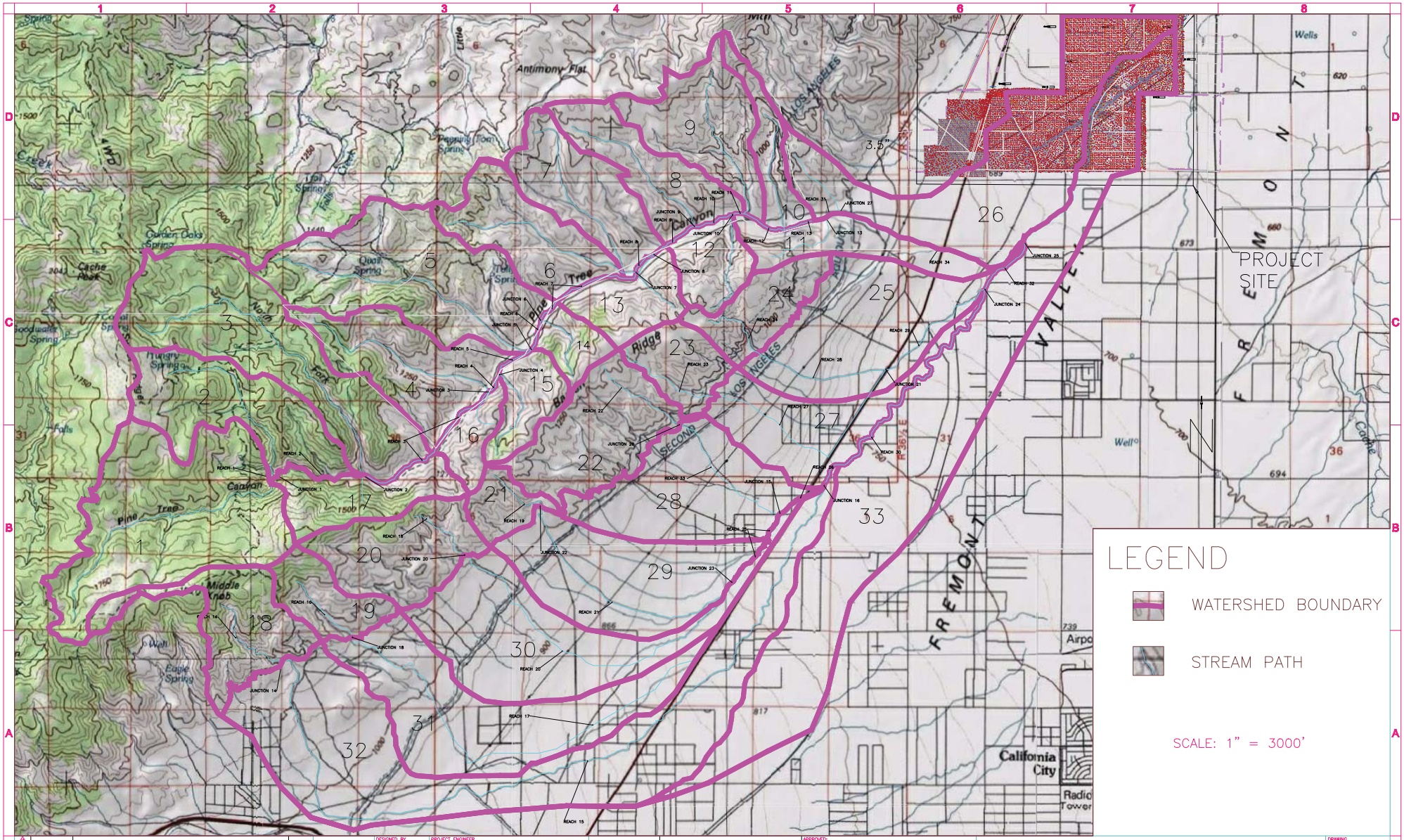
APPROVED: CHIEF ENGINEER – SMWD | RCE NO. | DATE
APPROVED: SENIOR ENGINEER – SMWD | RCE NO. | DATE

EXHIBIT 1A

HMS MODEL – AERIAL IMAGERY

DRAWING: EXHIBIT 1A
OF SHEETS

EXHIBIT 1b



REV	DATE	DESCRIPTION	APPR
1			
2			
3			
4			
5			

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY | PROJECT ENGINEER
DRAWN BY | REG NUMBER | EXP DATE
CHECKED BY | PROJECT NUMBER
DATE: APRIL 2009 | CADD STANDARDS

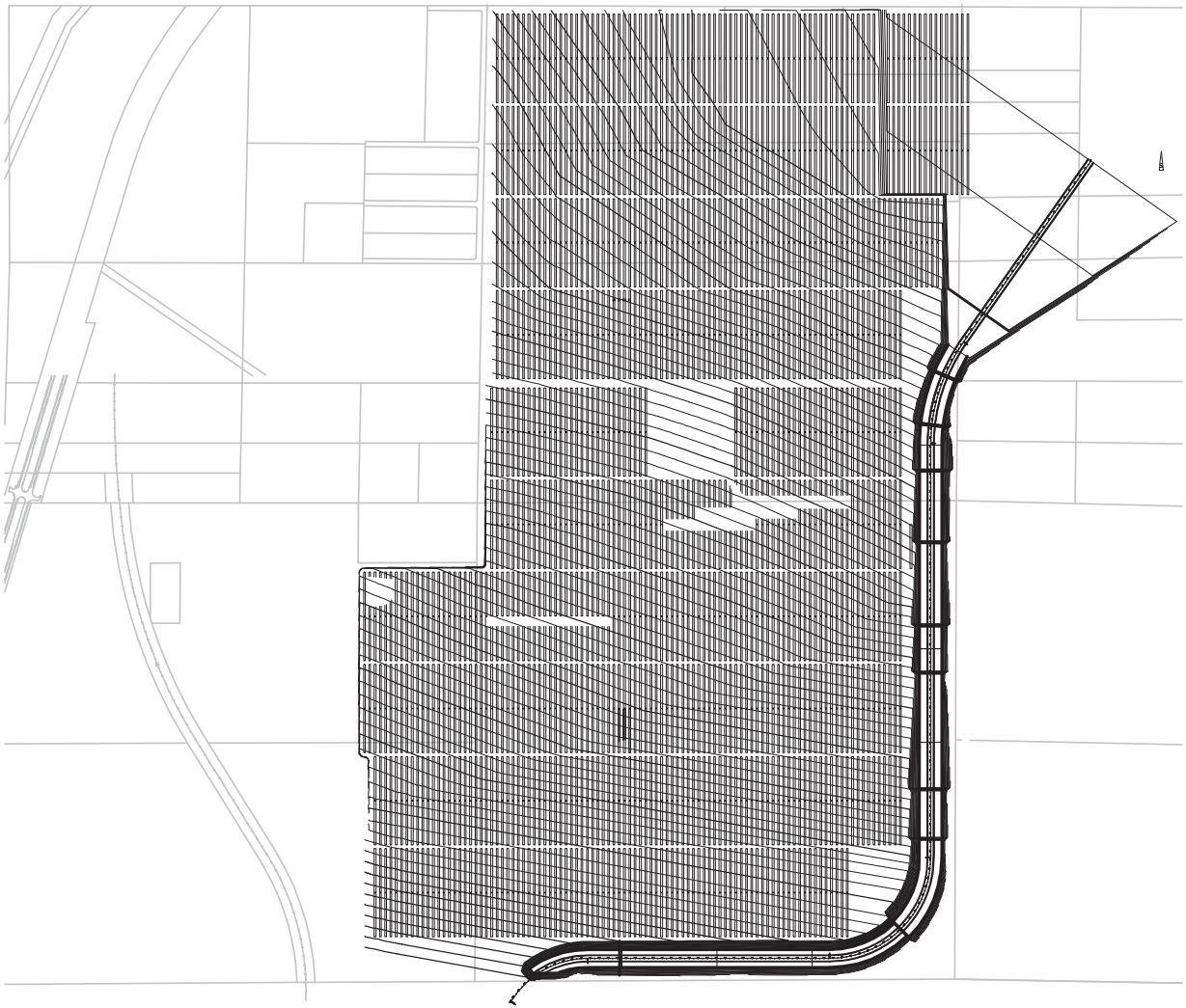
APPROVED: CHIEF ENGINEER – SMWD | RCE NO. | DATE
APPROVED: SENIOR ENGINEER – SMWD | RCE NO. | DATE

EXHIBIT 1B

HMS MODEL – USGS QUAD MAPS

DRAWING: EXHIBIT 1B
OF SHEETS

EXHIBIT 1c



REV	DESCRIPTION	ENGR	DATE	APPD	DATE

SCALE NTS
DATE 06/2009
FILENAME C-SD-DROP
DESIGNED BY: GK
DRAWN BY: GK
CHECKED BY:

AECOM
AECOM USA, Inc.
7807 Convoy Court
San Diego, California 92111
T 858.268.8080
F
www.aecom.com

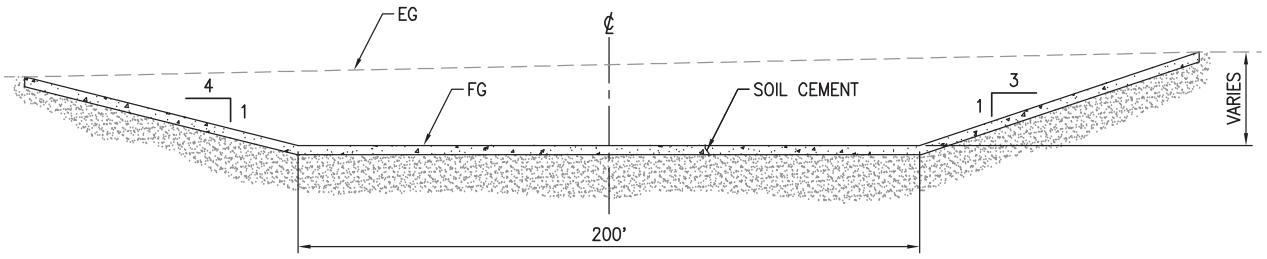
BEACON SOLAR ENERGY

BEACON SOLAR ENERGY
DRAINAGE CHANNEL DROP STRUCTURE AND STILLING BASIN

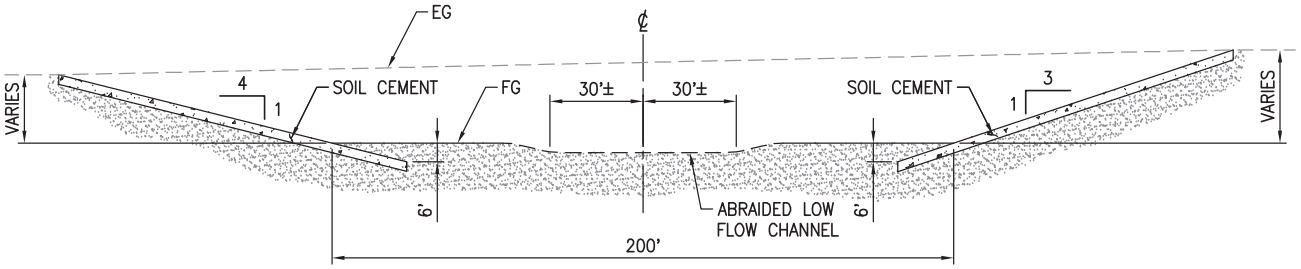
EXHIBIT 1-C

PROJECT NO. 60096411

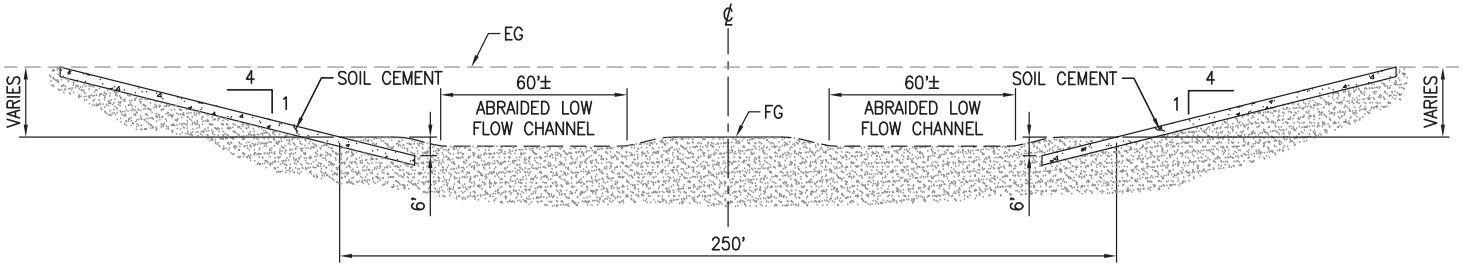
DWG. NO. 1 OF 2



TYPICAL SECTION
STA 143+50 TO 135+00



TYPICAL SECTION
STA 135+00 TO 101+74



TYPICAL SECTION
STA 101+74 TO 36+00

REV	DESCRIPTION	ENGR	DATE	APPD	DATE

SCALE: NTS
DATE: 06/2009
FILENAME: C-SD-DROP
DESIGNED BY: GK
DRAWN BY: GK
CHECKED BY:

AECOM
AECOM USA, Inc.
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San Diego, California 92111
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www.aecom.com

BEACON SOLAR ENERGY

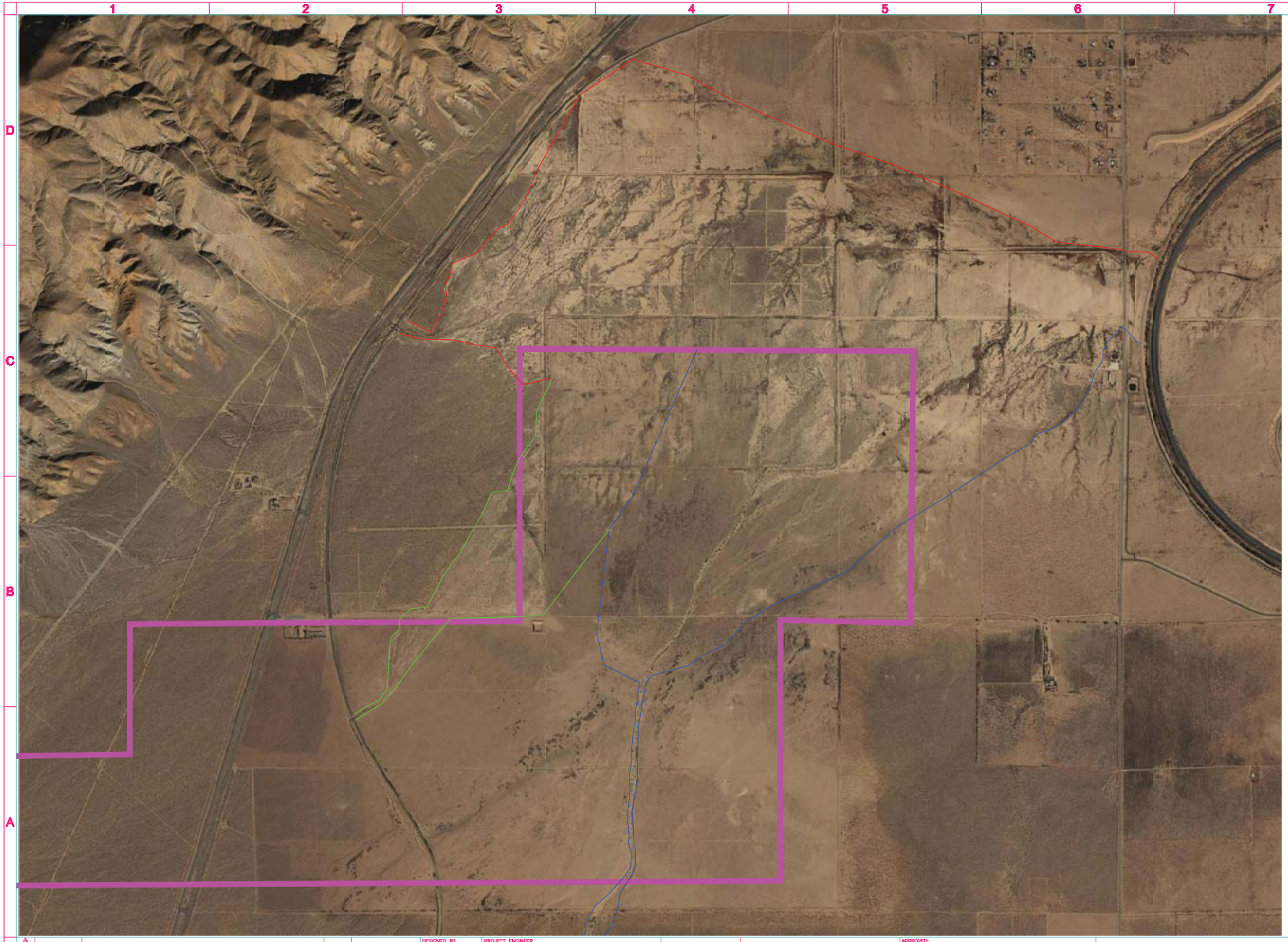
BEACON SOLAR ENERGY
DRAINAGE CHANNEL DROP STRUCTURE AND STILLING BASIN

EXHIBIT 1-C

PROJECT NO. 60096411

DWG. NO. 2 OF 2

EXHIBIT 1d-f



LEGEND

- CALTRANS FLOOD SOURCE
- RAILROAD FLOOD SOURCE
- PINE TREE CREEK
- PROPERTY LINE

PLAN

SCALE: 1"=1000'

REV	DATE	DESCRIPTION	APPR
1			
2			
3			
4			
5			
6			
7			

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

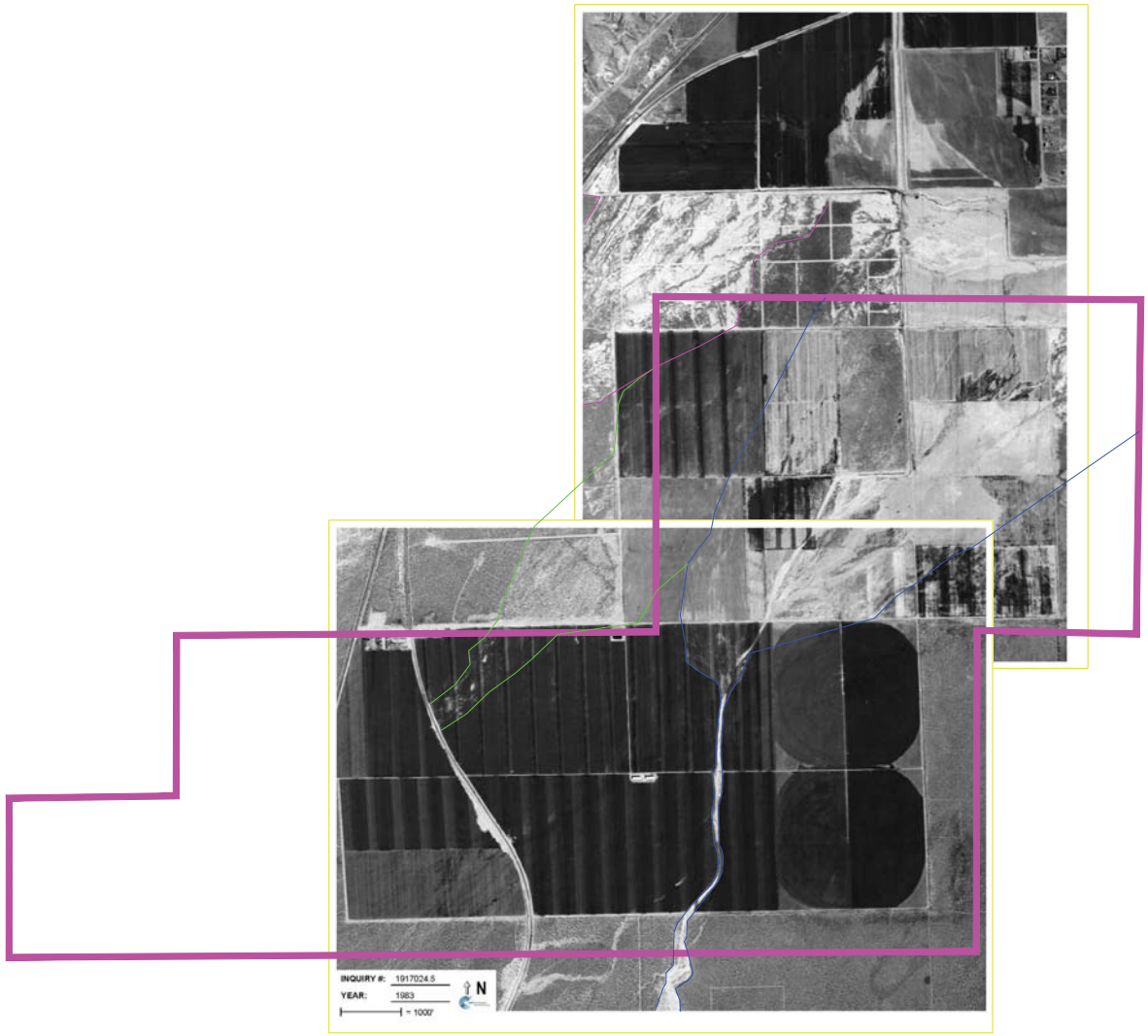
DESIGNED BY
DRAWN BY
CHECKED BY
DATE APRIL 2009
PROJECT ENGINEER
REG NUMBER EXP DATE
PROJECT NUMBER
CADD STANDARDS

APPROVED:
CHIEF ENGINEER – SMWD RCE NO. DATE
APPROVED:
SENIOR ENGINEER – SMWD RCE NO. DATE

EXHIBIT 1f

CURRENT FLOOD SOURCES BASED ON AERIAL IMAGERY

DRAWING
EXHIBIT
OF SHEETS



LEGEND

- CALTRANS FLOOD SOURCE
- RAILROAD FLOOD SOURCE
- PINE TREE CREEK
- PROPERTY LINE

PLAN

SCALE: 1" = 1000'

REV	DATE	DESCRIPTION	APPR
1			
2			
3			
4			
5			
6			
7			

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

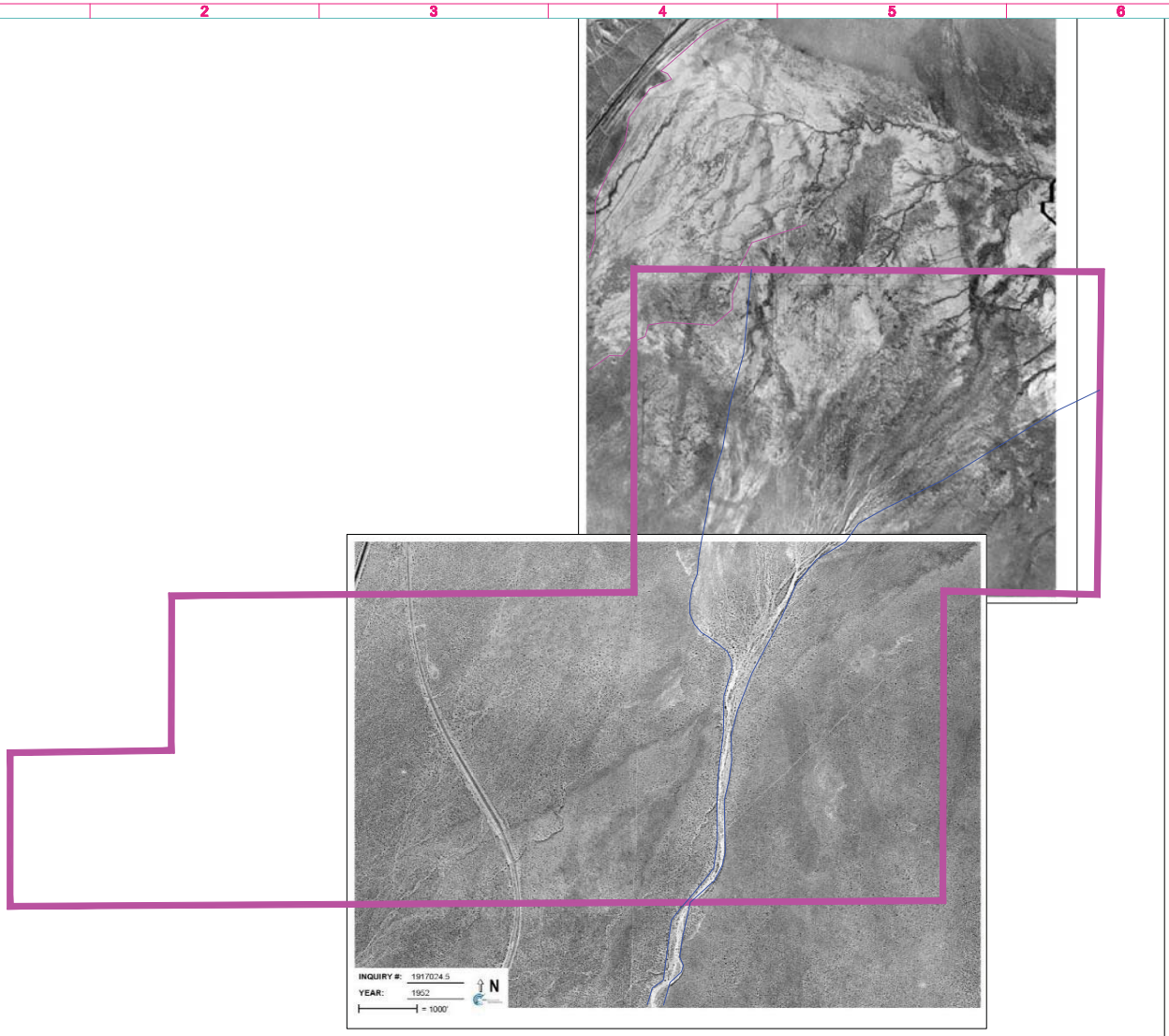
DESIGNED BY | PROJECT ENGINEER
DRAWN BY | REG NUMBER | EXP DATE
CHECKED BY | PROJECT NUMBER
DATE APRIL 2009 | CADD STANDARDS

APPROVED:
CHIEF ENGINEER – SMWD | RCE NO. | DATE
APPROVED:
SENIOR ENGINEER – SMWD | RCE NO. | DATE

EXHIBIT 1e

1983 AERIAL IMAGERY

DRAWING
EXHIBIT
OF SHEETS



LEGEND

- RAILROAD FLOOD SOURCE
- PINE TREE CREEK
- PROPERTY LINE

PLAN

SCALE: 1" = 1000'

REV	DATE	DESCRIPTION	APPR
1			
2			
3			
4			
5			
6			
7			

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY | PROJECT ENGINEER

DRAWN BY | REG NUMBER | EXP DATE

CHECKED BY | PROJECT NUMBER

DATE: APRIL 2009 | CADD STANDARDS

APPROVED:

CHIEF ENGINEER – SMWD | RCE NO. | DATE

APPROVED:

SENIOR ENGINEER – SMWD | RCE NO. | DATE

EXHIBIT 1d

1952 AERIAL IMAGERY

DRAWING

EXHIBIT

OF SHEETS

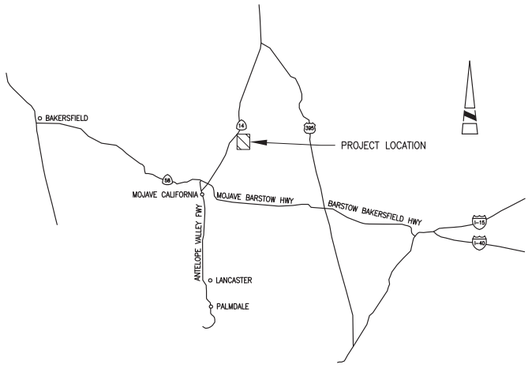
BEACON SOLAR ENERGY PERIPHERAL CHANNEL

GENERAL GRADING NOTES

1. ALL GRADING AND RELATED ACTIVITIES SHALL CONFORM TO THE GRADING, EROSION & SEDIMENT CONTROL ORDINANCE NO. 04-04, AND IF APPLICABLE, TO THE STATE WATER RESOURCES CONTROL BOARD NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES.
2. MAXIMUM CUT AND FILL SLOPES SHALL BE 2:1.
3. ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A REGISTERED CIVIL ENGINEER, SOIL ENGINEER, OR ENGINEERING GEOLOGIST WHO SHALL CERTIFY THAT ALL FILLS HAVE BEEN PROPERLY PLACED AND WHO SHALL SUBMIT A FINAL COMPACTION REPORT FOR ALL FILLS OVER 1' DEEP.
4. A REGISTERED CIVIL ENGINEER SHALL SUBMIT TO THE KERN COUNTY PUBLIC WORKS DEPARTMENT A WRITTEN CERTIFICATION OF COMPLETION OF ROUGH GRADING IN ACCORDANCE WITH THE APPROVED GRADING PLAN PRIOR TO ISSUANCE OF THE BUILDING PERMIT. CERTIFICATION SHALL BE TO LINE, GRADE, ELEVATION AND LOCATION OF CUT/FILL SLOPES.
5. FINAL COMPACTION REPORT WILL BE REQUIRED FOR ALL FILLS GREATER THAN ONE FOOT.
6. ALL GRADING SHALL BE DONE IN CONFORMANCE WITH RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION. TWO SETS OF THE FINAL COMPACTION REPORT SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT WHICH SHALL INCLUDE FOUNDATION DESIGN RECOMMENDATIONS AND CERTIFICATION THAT GRADING HAS BEEN DONE IN CONFORMANCE WITH THE RECOMMENDATIONS OF THE PRELIMINARY SOILS REPORT.
7. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AT LEAST 48 HOURS IN ADVANCE REQUESTING FINISH LOT GRADING INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT CLEARANCE FOR EACH LOT.
8. CUT AND FILL SLOPES SHALL BE PROTECTED WITH A COMBINATION OF EROSION AND SEDIMENT CONTROLS TO PROTECT THE SLOPE FROM EROSION AND INSTABILITY DURING THE GRADING PHASE.
9. FILL MATERIAL SHALL NOT BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, DEBRIS, TOPSOIL, AND OTHER DELETERIOUS MATERIAL. IF STEEP SLOPING TERRAIN OCCURS UPON WHICH FILL IS TO BE PLACED, THE TERRAIN MUST BE CLEARED, KEYED, AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. A REGISTERED CIVIL ENGINEER, SOIL ENGINEER, OR ENGINEERING GEOLOGIST SHALL APPROVE PLACEMENT OF FILL.
10. TEMPORARY DRAINAGE SHALL BE PROVIDED UNTIL PERMANENT DRAINAGE STRUCTURES ARE INSTALLED. PROTECTIVE MEASURES SHALL BE IMPLEMENTED TO PROTECT ADJOINING AND DOWNSTREAM PROPERTIES FROM SILT DEPOSITION AND PONDING WATER DURING GRADING OPERATIONS.
11. DUST SHALL BE CONTROLLED BY METHODS APPROVED BY THE COUNTY ENGINEER.
12. A REGISTERED CIVIL ENGINEER OR LICENSED LAND SURVEYOR SHALL SUBMIT CERTIFICATION OF BUILDING PAD ELEVATIONS. WHERE SPECIFIC ELEVATIONS ARE REQUIRED, THE ELEVATION (WITH RESPECT TO MEAN SEA LEVEL) SHALL BE GIVEN. IF AN ELEVATION WITH RESPECT TO ADJACENT GROUND SURFACE IS REQUIRED, THE ACTUAL DISTANCE ABOVE THE ADJACENT GROUND SHALL BE GIVEN.
13. EROSION AND SEDIMENT CONTROL: THE PERMITTEE SHALL ABIDE BY THE REQUIREMENTS OUTLINED IN THE KERN COUNTY GRADING, EROSION & SEDIMENT CONTROL ORDINANCE THROUGHOUT THE DURATION OF THE PROJECT, INCLUDING ADHERENCE TO THE STATE NPDES PERMIT FOR CONSTRUCTION ACTIVITIES, IF APPLICABLE.
14. ALL PROPERTY CORNERS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
15. THE PERMITTEE MUST OBTAIN AN ENCROACHMENT PERMIT PRIOR TO ANY WORK WITHIN A PUBLIC RIGHT-OF-WAY.
16. APPROVAL OF THESE PLANS BY THE COUNTY OR ITS AGENTS DOES NOT RELIEVE THE APPLICANT AND HIS ENGINEER FROM THE RESPONSIBILITY FOR THE CORRECTION OF ERRORS OR OMISSIONS DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE APPROPRIATE PLAN REVISIONS SHALL BE PROMPTLY SUBMITTED TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL.
17. THE ISSUANCE OF THIS PERMIT BY KERN COUNTY DOES NOT IMPLY OR PROVIDE ANY CLEARANCES FROM STATE OR FEDERAL AGENCIES REGULATING THE PROVISIONS OF STATE OR FEDERAL ENDANGERED SPECIES ACTS OR WATER QUALITY REGULATIONS. THE CONTRACTOR/OWNER/DEVELOPER IS RESPONSIBLE FOR OBTAINING THE APPROPRIATE CLEARANCES FROM THESE AGENCIES PRIOR TO ANY SITE DISTURBANCES OR GRADING.
18. NO GRUBBING/CLEARING OF THE SITE SHALL OCCUR PRIOR TO SCHEDULING THE PRE-GRADING MEETING WITH PUBLIC WORKS. ALL PROJECT SITES CONTAINING SUITABLE HABITAT FOR BURROWING OWLS, WHETHER OWLS WERE FOUND OR NOT, REQUIRE A 30-DAY PRECONSTRUCTION SURVEY THAT SHALL BE CONDUCTED WITHIN 30 DAYS PRIOR TO GROUND DISTURBANCE TO AVOID DIRECT TAKE OF BURROWING OWLS. IF THE RESULTS OF THE SURVEY INDICATE THAT NO BURROWING OWLS ARE PRESENT ON-SITE, THEN THE PROJECT MAY MOVE FORWARD WITH GRADING, UPON PLANNING DEPARTMENT APPROVAL. IFBURROWING OWLS ARE FOUND TO BE PRESENT OR NESTING ON-SITE DURING THE PRECONSTRUCTION SURVEY, THEN THE FOLLOWING RECOMMENDATIONS MUST BE ADHERED TO: EXCLUSION AND RELOCATION ACTIVITIES MAY NOT OCCUR DURING THE BREEDING SEASON, WHICH IS DEFINED AS MARCH 1 THROUGH AUGUST 31, WITH THE FOLLOWING EXCEPTION: FROM MARCH 1 THROUGH MARCH 15 AND FROM AUGUST 1 THROUGH AUGUST 31 EXCLUSION AND RELOCATION ACTIVITIES MAY TAKE PLACE IF IT IS PROVEN TO THE CITY AND APPROPRIATE REGULATORY AGENCIES (IF ANY) THAT EGG LAYING OR CHICK REARING IS NOT TAKING PLACE. THIS DETERMINATION MUST BE MADE BY A QUALIFIED BIOLOGIST.
19. IF AT ANY TIME DURING EXCAVATION/CONSTRUCTION OF THE SITE, ARCHAEOLOGICAL/CULTURAL RESOURCES, OR ANY ARTIFACTS OR OTHER OBJECTS WHICH REASONABLY APPEARS TO BE EVIDENCE OF CULTURAL OR ARCHAEOLOGICAL RESOURCES ARE DISCOVERED, THE PROPERTY OWNER SHALL IMMEDIATELY ADVISE THE CITY OF SUCH AND THE CITY SHALL CAUSE ALL FURTHER EXCAVATION OR OTHER DISTURBANCE OF THE AFFECTED AREA TO IMMEDIATELY CEASE. THE DIRECTOR OF PLANNING AT HIS/HER SOLE DISCRETION MAY REQUIRE THE PROPERTY TO DEPOSIT A SUM OF MONEY IT DEEMS REASONABLY NECESSARY TO ALLOW THE CITY TO CONSULT AND/OR AUTHORIZE AN INDEPENDENT, FULLY QUALIFIED SPECIALIST TO INSPECT THE SITE AT NO COST TO THE CITY, IN ORDER TO ASSESS THE SIGNIFICANCE OF THE FIND. UPON DETERMINING THAT THE DISCOVERY IS NOT AN ARCHAEOLOGICAL/CULTURAL RESOURCE, THE DIRECTOR OF PLANNING SHALL NOTIFY THE PROPERTY OWNER OF SUCH DETERMINATION AND SHALL AUTHORIZE THE RESUMPTION OF WORK. UPON DETERMINING THAT THE DISCOVERY IS AN ARCHAEOLOGICAL/CULTURAL RESOURCE, THE DIRECTOR OF PLANNING SHALL NOTIFY THE PROPERTY OWNER THAT NO FURTHER EXCAVATION OR DEVELOPMENT MAY TAKE PLACE UNTIL A MITIGATION PLAN OR OTHER CORRECTIVE MEASURES HAVE BEEN APPROVED BY THE DIRECTOR OF PLANNING"
20. IF CULTURAL RESOURCES ARE DISCOVERED DURING THE PROJECT CONSTRUCTION (INADVERTENT DISCOVERIES), ALL WORK IN THE AREA OF THE FIND SHALL CEASE, AND A QUALIFIED ARCHAEOLOGIST AND REPRESENTATIVES OF THE PECHANGA TRIBE SHALL BE RETAINED BY THE PROJECT SPONSOR TO INVESTIGATE THE FIND, AND MAKE RECOMMENDATIONS AS TO TREATMENT AND MITIGATION.

CHANNEL GRADING QUANTITIES

DESCRIPTION	QUANTITY
CUT	XXXXX CY
FILL	XXXXX CY
IMPORT	XXXXX CY
EXPORT	XXXXX CY
REMEDIAL	XXXXX CY



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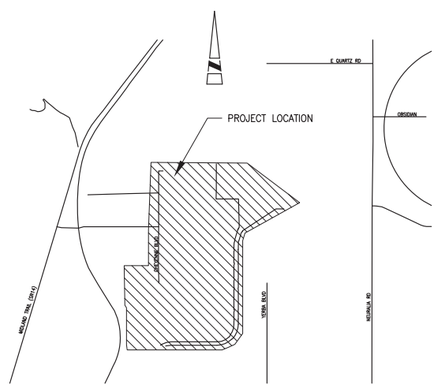
NO SCALE



VICINITY MAP
NO SCALE

KERN COUNTY GRADING NOTES

1. ALL GRADING SHALL CONFORM TO KERN COUNTY GRADING CODE AND STANDARDS PERTAINING THERETO.
2. ALL CUT AND FILL SLOPES SHALL NOT BE STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL AND 3 HORIZONTAL TO 1 VERTICAL FOR FLOODPLAIN AREAS.
3. FILL AREAS SLOPING STEEPER THAN 5:1 SHALL BE KEYED AND BENCHED TO SUPPORT FILL (SEE SHEET G4).
4. ALL FILL AREAS SHALL BE CLEARED OF ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FOR A STRUCTURAL FILL AND THE AREAS SCARIFIED TO A DEPTH OF 6 INCHES.
5. FILL MATERIALS SHALL BE PLACED IN LAYERS NOT EXCEEDING 6 INCHES IN COMPACTED THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT BY APPROVED METHOD.
6. ALL FILL TO BE COMPACTED TO A MINIMUM OF 90% DENSITY OF THE MAXIMUM DENSITY AND SO CERTIFIED BY TESTS AND REPORTS PERFORMED BY A SOILS ENGINEER.
7. BERMS OR DRAINAGE DEVICES SHALL BE PLACED AT THE TOP OF ALL FILL SLOPES.
8. SURFACE DRAINAGE TO BE 2.0% TOWARD APPROVED DRAINAGE. (LIMITED WAIVERS TO ALLOW 1.0% DRAINAGE FROM THE BUILDING PAD MAY BE ALLOWED IF WAIVED PER SECTION 17.28.130)
9. ALL FILL MATERIAL SHALL NOT CONTAIN DETRIMENTAL AMOUNTS OF ORGANIC MATTER. NO ROCK OR IRREDUCIBLE MATERIAL WITH A MINIMUM DIMENSION GREATER THAN 12 INCHES SHALL BE BURIED OR PLACED IN FILLS.
10. EROSION AND SEDIMENTATION WILL BE CONTROLLED BY BERMS, PLANTING, RIP-RAP OR OTHER DEVICES OR METHODS.

INDEX OF SHEETS

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC.	LEAD DISC. ENGINEER	PROJECT ENGINEERING MANAGER	PROJECT MANAGER

PRELIMINARY STATUS	DATE	
LDE	–	–

REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS	DATE	
LDE	–	–

REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: RDL	REGISTERED PROFESSIONAL ENGINEER GERARD F. DALZIEL No. 36333 Exp. 06/30/10 CIVIL STATE OF CALIFORNIA
CHECKED BY: –	
LEAD DESIGNER: RDL	
ENGINEER/TECH SPECIALIST: –	
PROJECT ENGINEERING MANAGER: –	
PROJECT MANAGER: GFD	

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
LIC. NO.: 36333 DATE: 06/30/10

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AECOM

CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

TITLE SHEET
–
–

SCALE	DRAWING SIZE
NO SCALE	ARCH D (36"X24")

DWG. NO.	REV
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NOT FOR CONSTRUCTION

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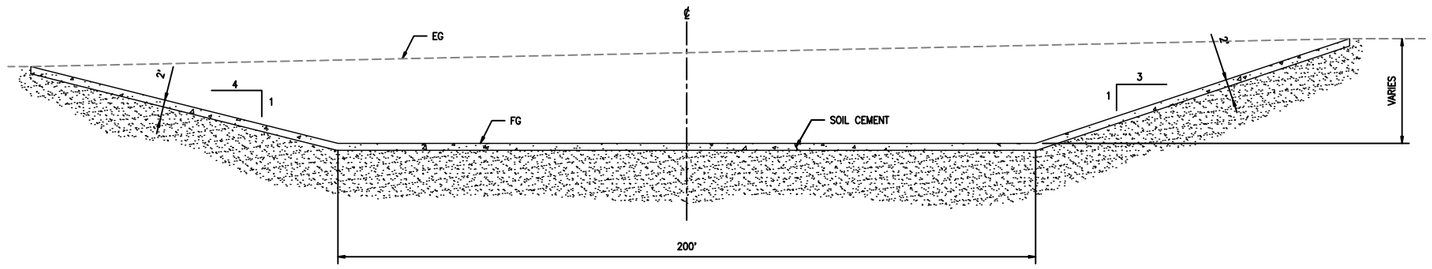

TYPICAL SECTION
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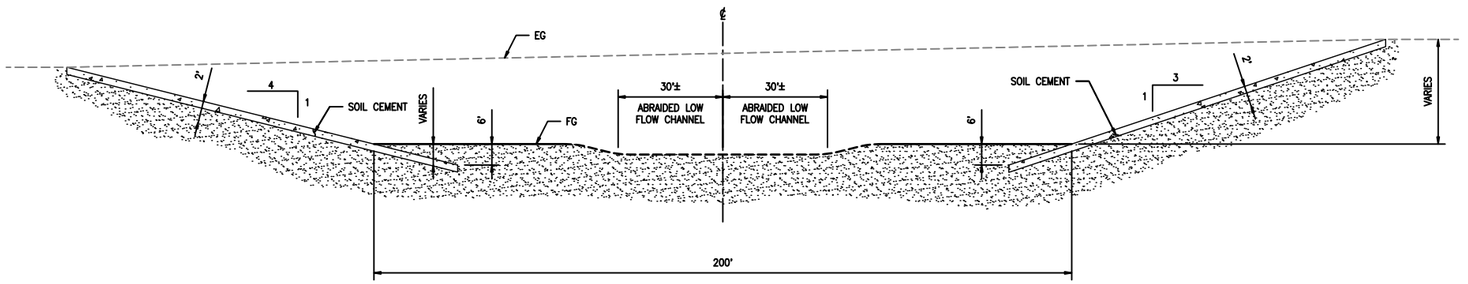

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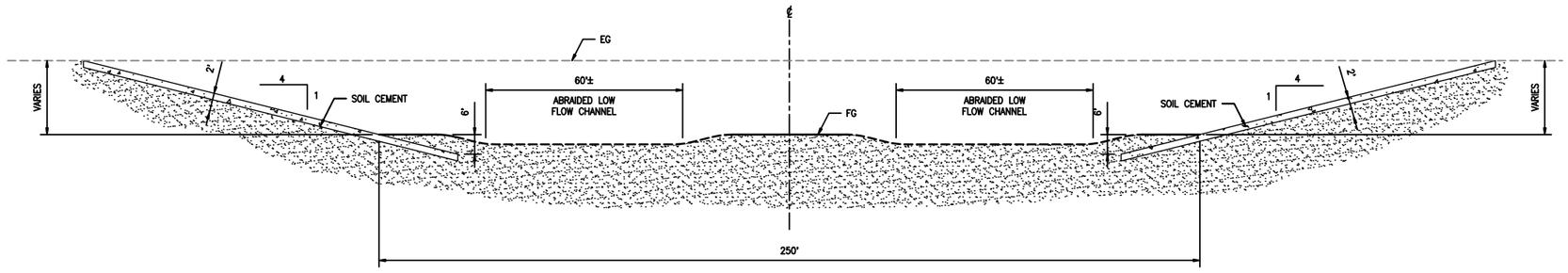

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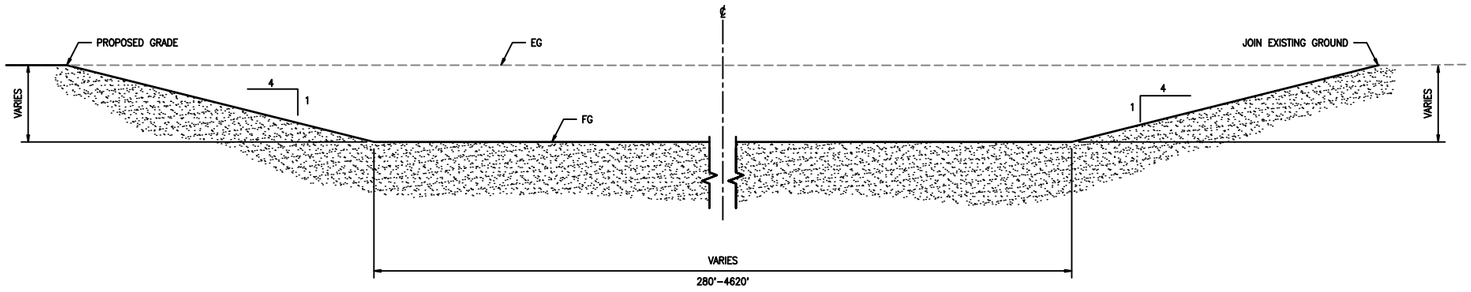

TYPICAL SECTION
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PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

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PRELIMINARY STATUS	DATE	
LDE	–	–

REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS	DATE	
LDE	–	–

REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" REMAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	
DRAWN BY	RDL
CHECKED BY	–
LEAD DESIGNER	RDL
ENGINEER/TECH SPECIALIST	–
PROJECT ENGINEERING MANAGER	–
PROJECT MANAGER	GFD

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
GERARD F. DALZIEL
No. 36333
Exp. 06/30/10
CIVIL
STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
Lic. NO.: 36333 DATED: 04/30/10

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AECOM

CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

TYPICAL SECTIONS
–
–

SCALE	DRAWING SIZE
1" = 20'	ARCH D (36"X24")

DWG. NO.	REV
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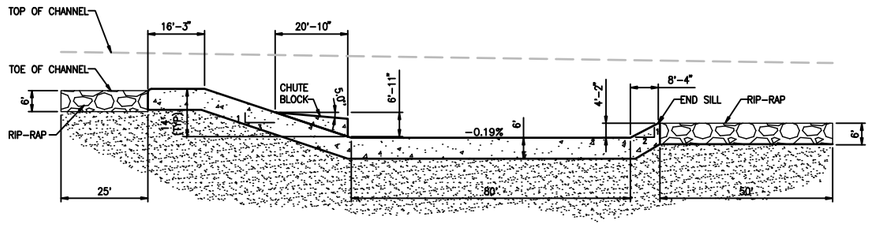
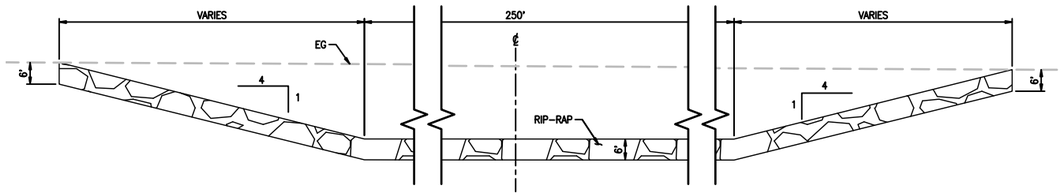


B-B CROSS SECTION

REINFORCED CONCRETE DROP STRUCTURE AND STILLING BASIN
SCALE: HORIZONTAL: 1"=20'
VERTICAL: 1"=20'



C-C CROSS SECTION

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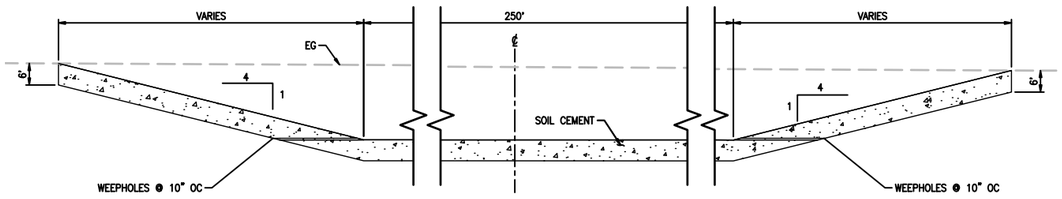
VERTICAL: 1"=20'



D-D CROSS SECTION

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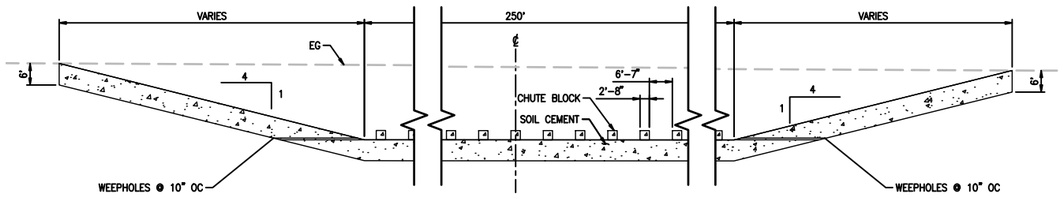

E-E CROSS SECTION

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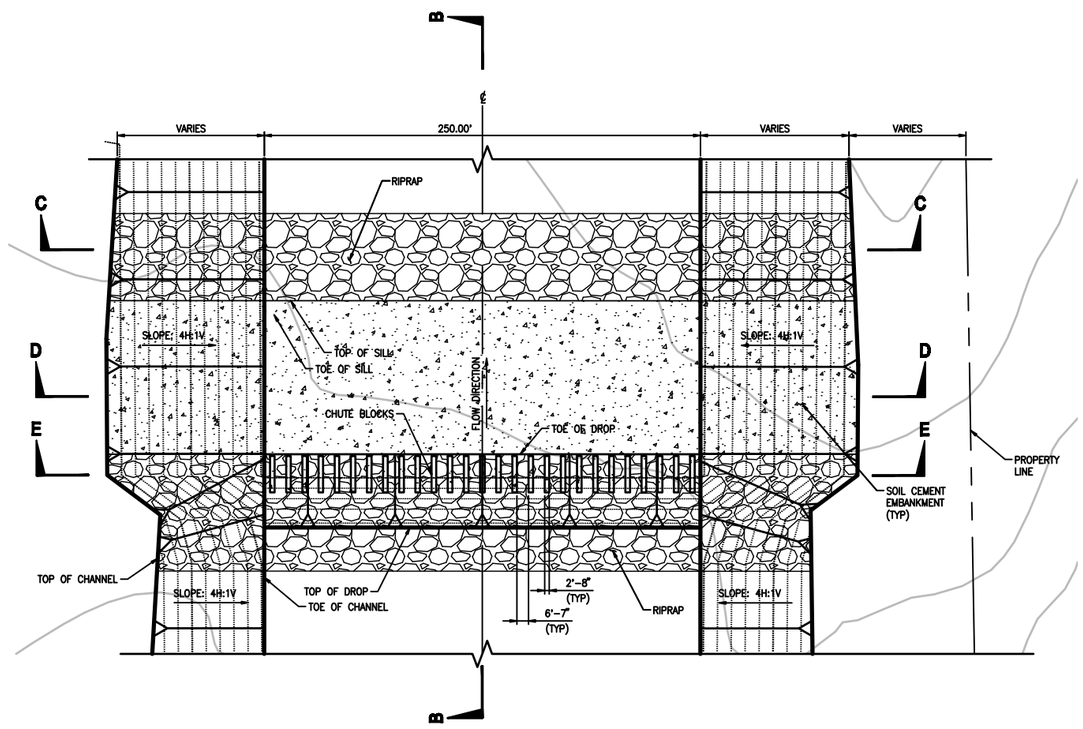

FIGURE 3. PLAN

REINFORCED CONCRETE DROP STRUCTURE AND STILLING BASIN
SCALE: HORIZONTAL: 1"=40'

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	TECH SPEC	ENGINEER	PROJ ENGR	PROJECT MANAGER

PRELIMINARY STATUS	DATE	
LDE	–	–

REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS	DATE	
LDE	–	–

REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	
DRAWN BY	RDL
CHECKED BY	–
LEAD DESIGNER	RDL
ENGINEER/TECH SPECIALIST	–
PROJECT ENGINEERING MANAGER	–
PROJECT MANAGER	GFD

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
GERARD F. DALZIEL
No. 36333
Exp. 06/30/10
CIVIL
STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
Lic. NO.: 36333 DATE: 04/30/10

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AECOM

CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

DROP STRUCTURE
PLAN AND TYPICAL SECTION
–

SCALE	DRAWING SIZE
AS SHOWN	ARCH D (36"X24")

DWG. NO.	REV
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PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

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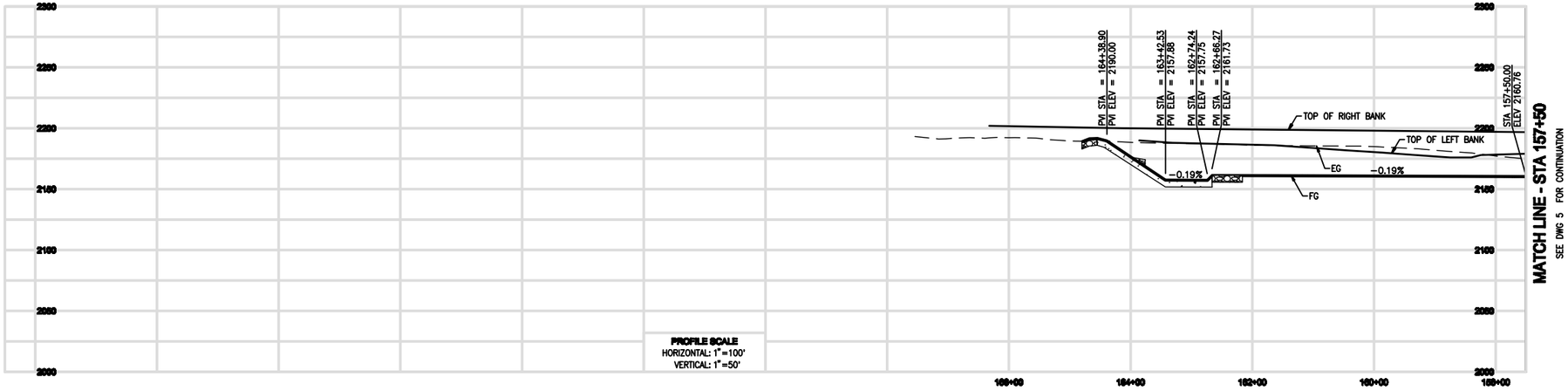

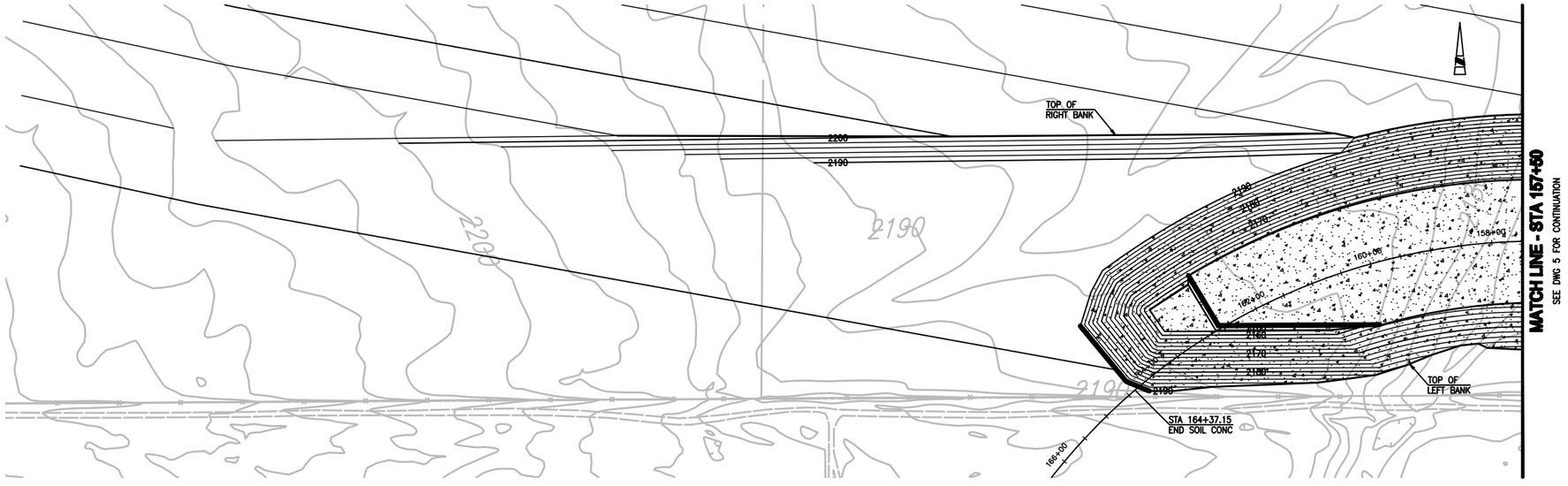

FOR DROP STRUCTURE DETAILS – SEE SHEET 3

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	TECH SPEC	ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER

PRELIMINARY STATUS	DATE	
LDE	–	–

REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS	DATE	
LDE	–	–

REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" REMAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	
DRAWN BY	RDL
CHECKED BY	–
LEAD DESIGNER	RDL
ENGINEER/TECH SPECIALIST	–
PROJECT ENGINEERING MANAGER	–
PROJECT MANAGER	GFD

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
GERARD F. DALZIEL
No. 36333
Exp. 06/30/10
CIVIL
STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
Lic. NO.: 36333 DATED: 04/30/10

AECOM USA, Inc.
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F 858.292.0960
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AECOM

CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

PLAN AND PROFILE
FROM STA 166+00 TO 157+50
–

SCALE	DRAWING SIZE
1" = 100'	ARCH D (36"X24")

DWG. NO.	REV
4	–

C-101.dwg
13-Nov-2009 - 08:17

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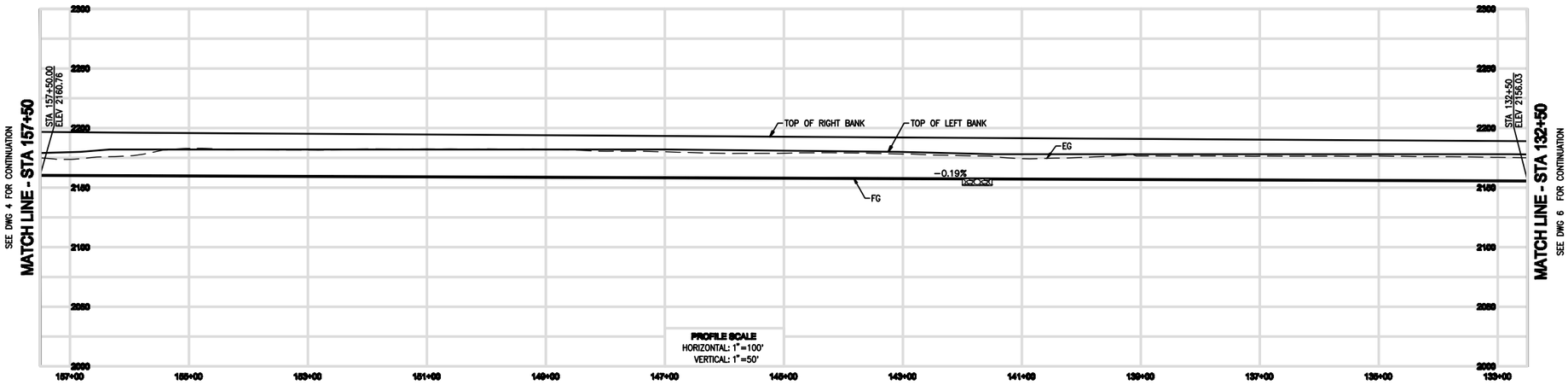
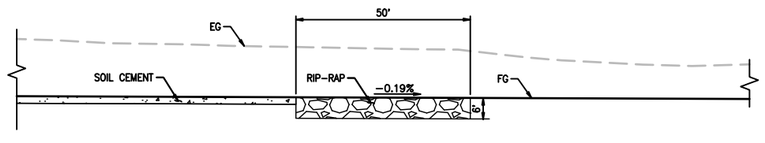
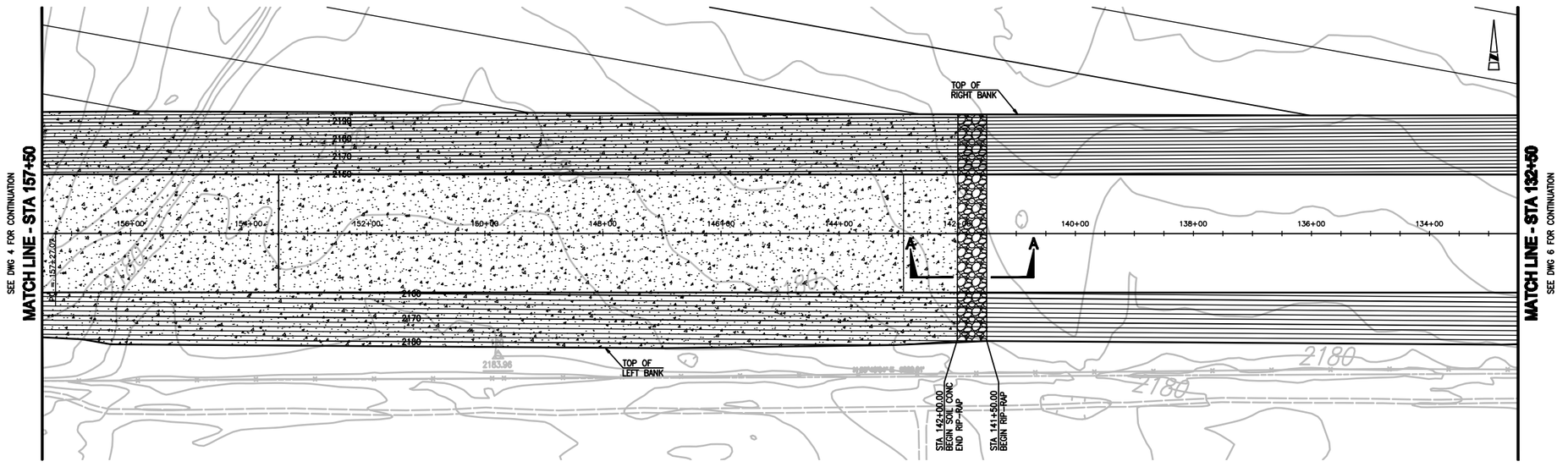




A-A CROSS SECTION
STA 141+75



FOR DROP STRUCTURE DETAILS – SEE SHEET 3

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	TECH SPEC	ENGINEER	PROJ ENGR MANAGER	PROJECT MANAGER

PRELIMINARY STATUS	DATE	
LDE	–	–

REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS	DATE	
LDE	–	–

REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL	
DRAWN BY	RDL
CHECKED BY	–
LEAD DESIGNER	RDL
ENGINEER/TECH SPECIALIST	–
PROJECT ENGINEERING MANAGER	–
PROJECT MANAGER	GFD

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
GERARD F. DALZIEL
No. 36333
Exp. 06/30/10
CIVIL
STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
Lic. NO.: 36333 DATE: 04/30/10

AECOM USA, Inc.
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AECOM

CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

PLAN AND PROFILE
FROM STA 157+50 TO STA 132+50
–

SCALE	DRAWING SIZE
1" = 100'	ARCH D (36"X24")

DWG. NO.	REV
5	–

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

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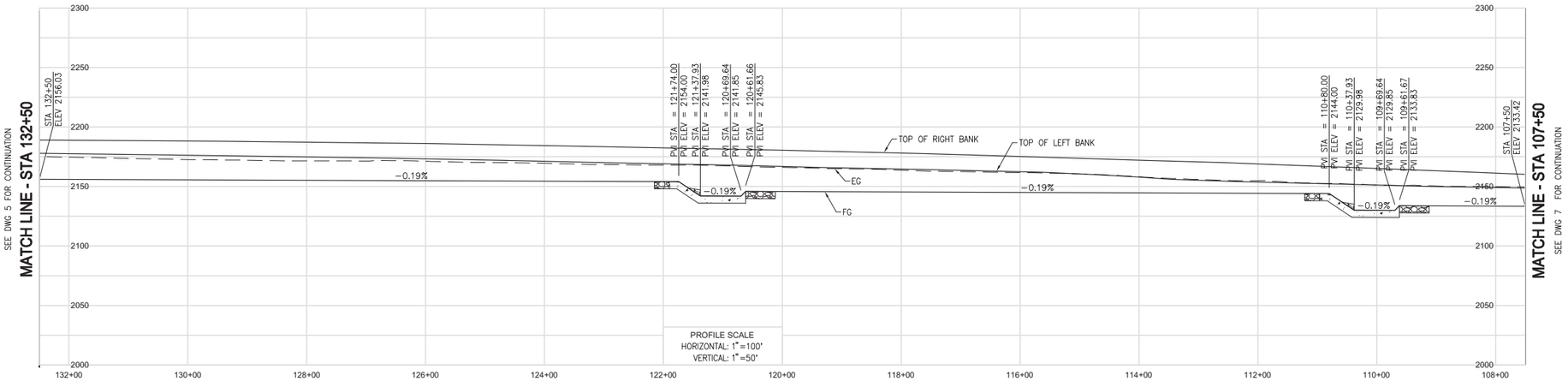
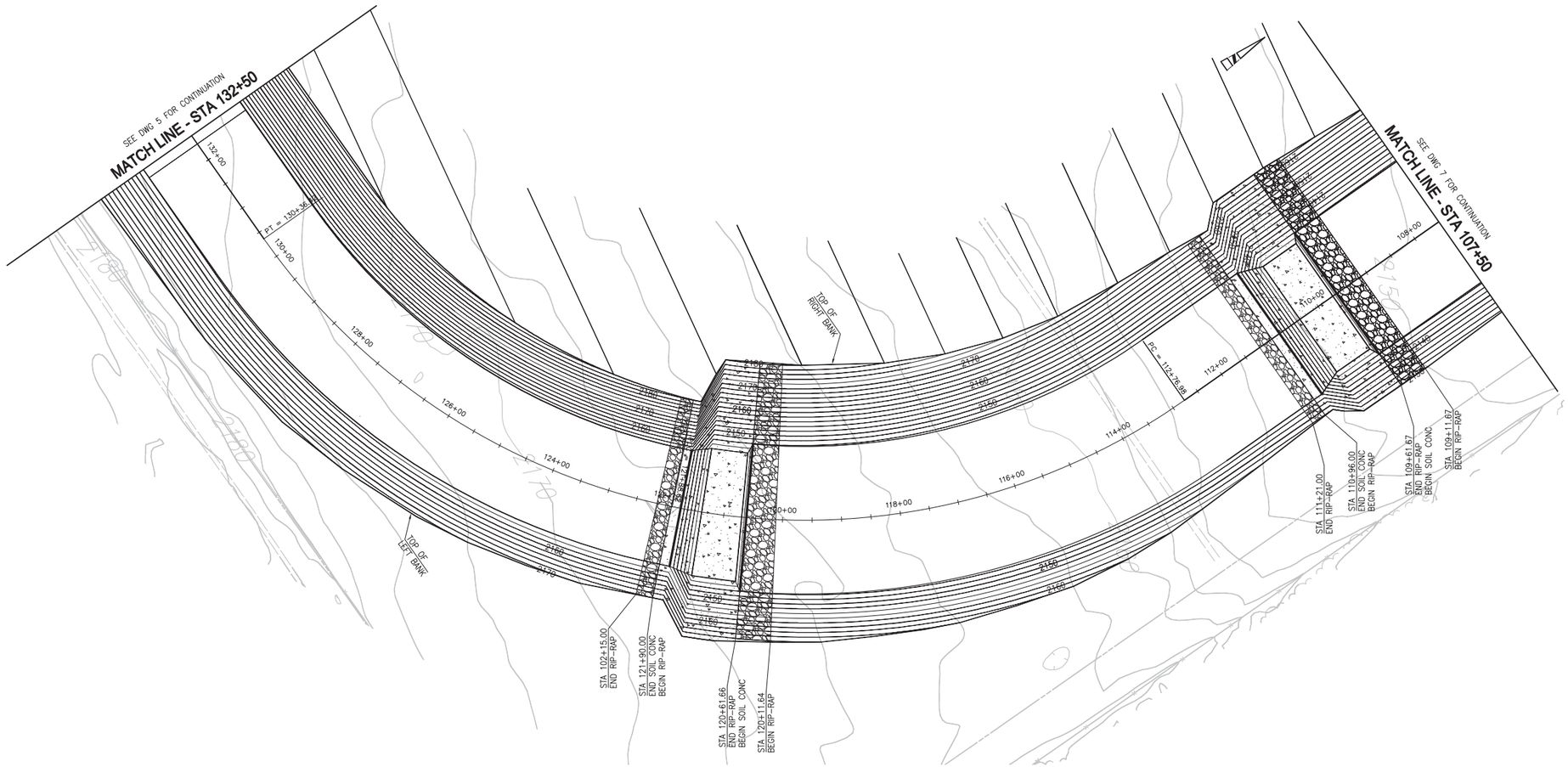
13-Nov-2009 - 08:19





FOR DROP STRUCTURE DETAILS – SEE SHEET 3

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	LEAD DISC	ENGINEERING MANAGER	PROJECT MANAGER

	DATE	
PRELIMINARY STATUS		REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE	–	–
APPROVED STATUS	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE	–	–

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: RDL	REGISTERED PROFESSIONAL ENGINEER GERARD F. DALZIEL No. 36333 Exp. 06/30/10 CIVIL STATE OF CALIFORNIA
CHECKED BY: –	
LEAD DESIGNER: RDL	
ENGINEER/TECH SPECIALIST: –	
PROJECT ENGINEERING MANAGER: –	
PROJECT MANAGER: GFD	

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
LIC. NO.: 36333 DATE: 06/30/10

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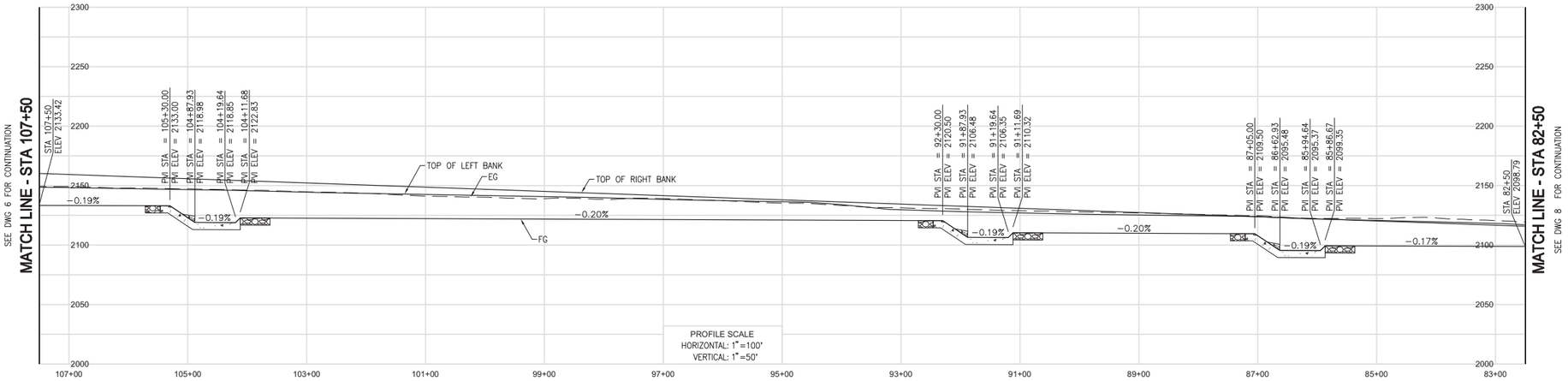
CLIENT/PROJECT TITLE

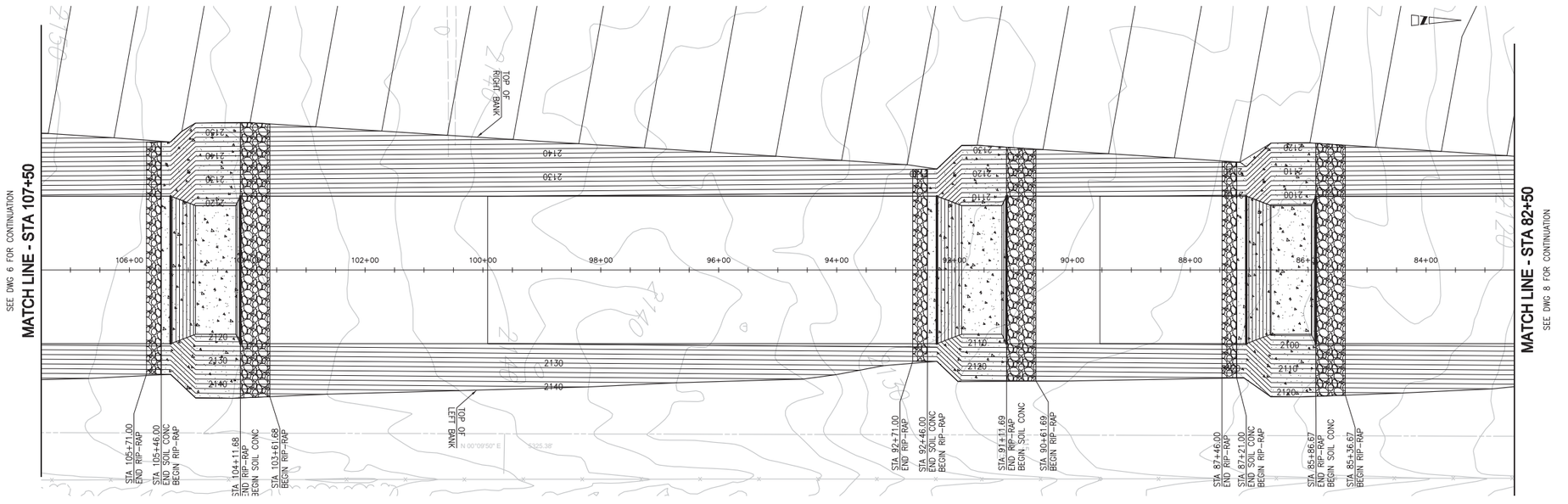
BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

PLAN AND PROFILE
FROM STA 132+50 TO STA 107+50
–

SCALE: 1" = 100'
DRAWING SIZE: ARCH D (36"X24")
DWG. NO.: – 6
REV: –

C-101.dwg
12-Nov-2009 - 20:52





FOR DROP STRUCTURE DETAILS – SEE SHEET 3

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	LEAD DISC ENGINEER	PROJECT ENGINEERING MANAGER	PROJECT MANAGER

PRELIMINARY STATUS	DATE	REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE –	–	
APPROVED STATUS	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE –	–	

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY RDL	REGISTERED PROFESSIONAL ENGINEER GERARD F. DALZIEL No. 36333 Exp. 06/30/10 CIVIL STATE OF CALIFORNIA
CHECKED BY –	
LEAD DESIGNER RDL	
ENGINEER/TECH SPECIALIST –	
PROJECT ENGINEERING MANAGER –	
PROJECT MANAGER GFD	

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
LIC. NO.: 36333 DATE: 06/30/10

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CLIENT/PROJECT TITLE

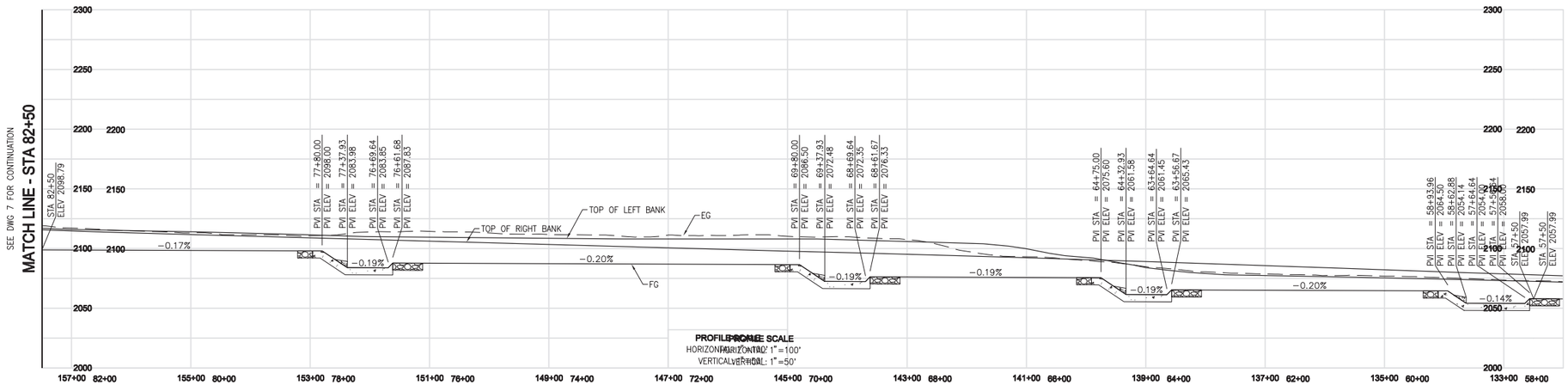
BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

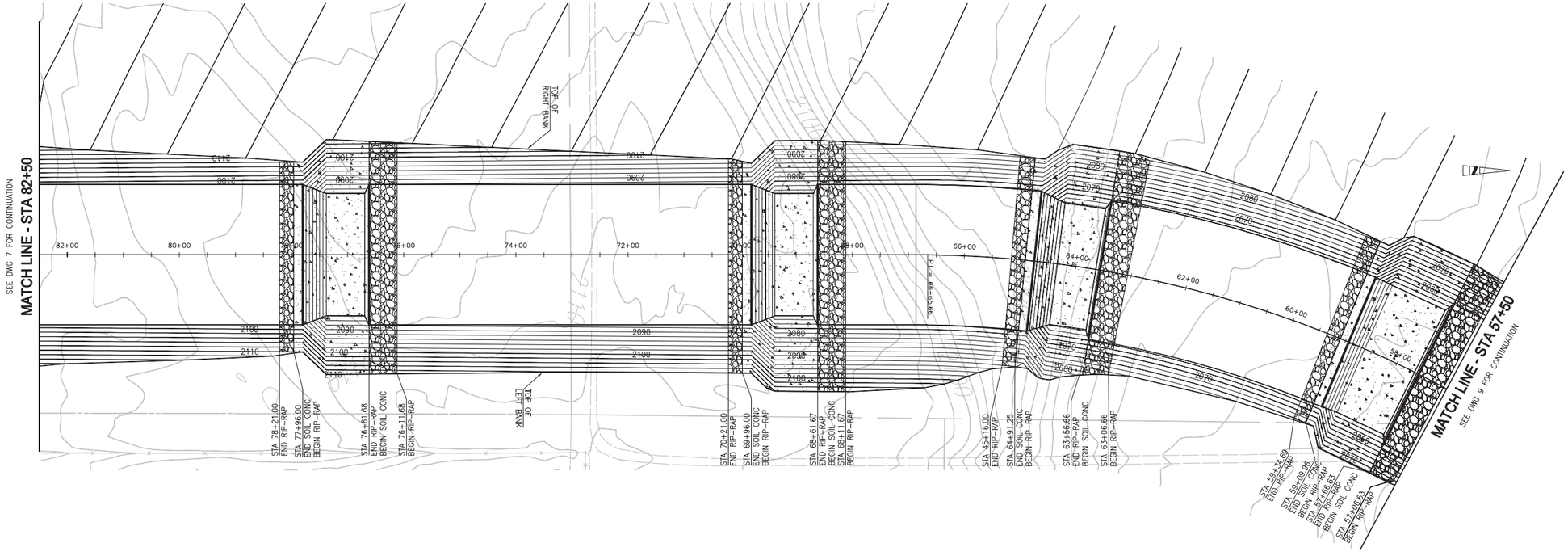
PLAN AND PROFILE
FROM STA 107+50 TO STA 82+50
–

SCALE	DRAWING SIZE
1" = 100'	ARCH D (36"X24")

DWG. NO.	REV
– 7	–

C-101.dwg
12-Nov-2009 – 20:53





FOR DROP STRUCTURE DETAILS – SEE SHEET 3

PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH SPEC	LEAD DISC ENGINEER	PROJECT MANAGER	PROJECT MANAGER

PRELIMINARY STATUS — DATE: – — LDE: – — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE: – — LDE: – — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL

DRAWN BY: RDL
CHECKED BY: –
LEAD DESIGNER: RDL
ENGINEER/TECH SPECIALIST: –
PROJECT ENGINEERING MANAGER: –
PROJECT MANAGER: GF'D

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER — GERARD F. DALZIEL — No. 36333 — Exp. 06/30/10 — CIVIL — STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: GERARD F. DALZIEL STATE: CA
LIC. NO.: 36333 DATE: 06/30/10

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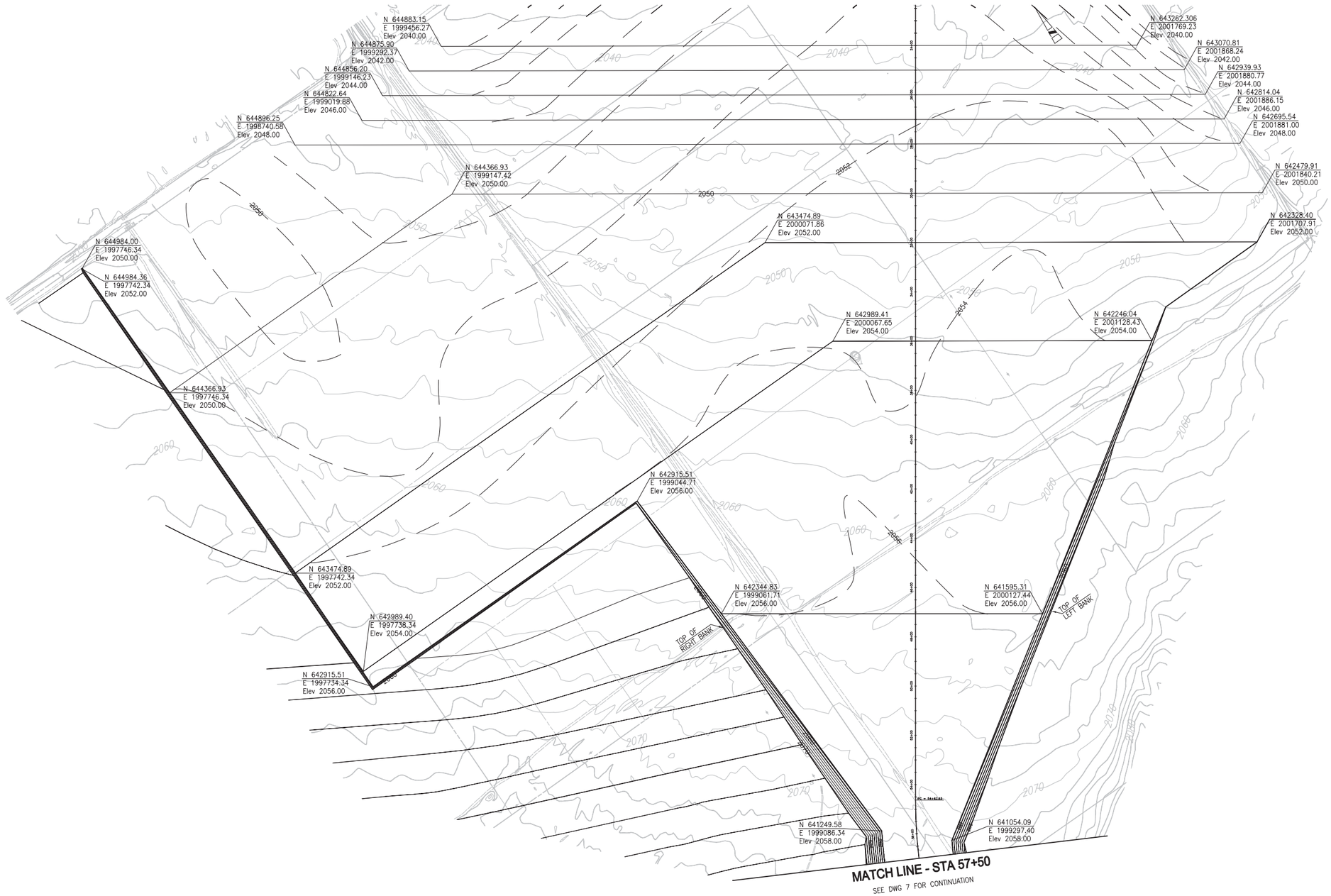
CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

PLAN AND PROFILE
FROM STA 82+50 TO STA 57+50
–

SCALE: 1" = 100' — DRAWING SIZE: ARCH D (36"X24")
DWG. NO.: 8 — REV: –

C-101.dwg
12-Nov-2009 - 20:53



PRELIMINARY REVIEW SET
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ SPECIALIST	LEAD DISC. ENGINEER	PROJECT ENGINEERING MANAGER	PROJECT MANAGER

PRELIMINARY STATUS — DATE
LDE – –
REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

APPROVED STATUS — DATE
LDE – –
REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL

DRAWN BY
RDL
CHECKED BY
–
LEAD DESIGNER
RDL
ENGINEER/TECH SPECIALIST
–
PROJECT ENGINEERING MANAGER
–
PROJECT MANAGER
GFD

PROFESSIONAL ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
GERARD F. DALZIEL
No. 36333
Exp. 06/30/10
CIVIL
STATE OF CALIFORNIA

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: ___ GERARD F. DALZIEL STATE: ___ CA
LIC. NO.: ___ 36333 ___ DATE: ___ 06/30/10

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CLIENT/PROJECT TITLE

BEACON SOLAR ENERGY
PERIPHERAL CHANNEL DESIGN
–

DIFFUSER GRADING PLAN
FROM STA 57+50 TO STA 48+00
–

SCALE 1" = 200'
DRAWING SIZE ARCH D (36"X24")
DWG. NO. 9
REV –

C-101.dwg
12-Nov-2009 – 20:53

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

AMENDED APPLICANT'S EXHIBIT LIST – SEQUENTIAL

DECEMBER 18, 2009

Ex. No.	Date	Title	Subject	Sponsor
1	3/13/2008	AFC Section 1.0: Executive Summary	ES	Kenny Stein
2	3/13/2008	AFC Section 2.0: Project Description	PD	Duane McCloud
3	3/13/2008	AFC Section 3.0: Closure	PD	Duane McCloud
4	3/13/2008	AFC Section 4.0: Alternatives	ALTS	Kenny Stein
5	3/13/2008	AFC Section 5.1: General Environmental Information	PD	Kenny Stein
6	3/13/2008	AFC Section 5.2: Air Quality	AIR	Sara Head
7	3/13/2008	AFC Section 5.3: Biological Resources	BIO	Lyndon Quon
8	3/13/2008	AFC Section 5.4: Cultural Resources	CUL	Rebecca Apple
9	3/13/2008	AFC Section 5.5: Geologic Hazards and Resources	GEO	Mike Flack
10	3/13/2008	AFC Section 5.6: Hazardous Materials Handling	HAZMAT	Russ Kingsley
11	3/13/2008	AFC Section 5.7: Land Use	LU	Jerry McLees
12	3/13/2008	AFC Section 5.8: Noise	NOISE	Duane McCloud
13	3/13/2008	AFC Section 5.9: Paleontological Resources	PALEO	Cara Corsetti, SWCA
14	3/13/2008	AFC Section 5.10: Public Health	PH	Greg Wolffe
15	3/13/2008	AFC Section 5.11: Socioeconomics	SOCIO	Addie Olazabal
16	3/13/2008	AFC Section 5.12: Soils	SOILS	Mike Flack
17	3/13/2008	AFC Section 5.13: Traffic and Transportation	TRAFF	John Wilson, Wilson Eng.
18	3/13/2008	AFC Section 5.14: Transmission Line Safety & Nuisance	T-LINE	Duane McCloud/Steve Richards
19	3/13/2008	AFC Section 5.15: Visual Resources	VIS	Merlyn Paulson / Brian Stormwind
20	3/13/2008	AFC Section 5.16: Waste Management	WASTE	Mike Arvidson
21	3/13/2008	AFC Section 5.17: Water Resources	WATER	Mike Flack
22	3/13/2008	AFC Section 5.18: Worker Safety	WS	Mike Arvidson
23	3/13/2008	AFC Appendix A: Surrounding Properties Assessor's Parcel Nos./Property Owners	PD	Kenny Stein

Ex. No.	Date	Title	Subject	Sponsor
24	3/13/2008	AFC Appendix B.1: Preliminary Geotechnical Constraints Evaluation	GEO	Bob Anders
25	3/13/2008	AFC Appendix B.2: Preliminary Geotechnical Investigation Report	GEO	Bob Anders
26	3/13/2008	AFC Appendix C.1: Civil Engineering Design Criteria	FD	Bob Anders
27	3/13/2008	AFC Appendix C.2: Mechanical Engineering Design Criteria	FD	Jared Foster
28	3/13/2008	AFC Appendix C.3: Control Engineering Design Criteria	FD	Jared Foster
29	3/13/2008	AFC Appendix C.4: Geologic and Foundation Design Criteria	FD	Bob Anders
30	3/13/2008	AFC Appendix C.5: Structural Engineering Design Criteria	FD	Bob Anders
31	3/13/2008	AFC Appendix C.6: Electrical Engineering Design Criteria	FD	Steve Richards
32	3/13/2008	AFC Appendix D: Therminol VP1 Heat Transfer Fluid MSDS	WASTE	Jared Foster
33	3/13/2008	AFC Appendix E: Air Quality Supporting Documentation	AIR	Sara Head
34	3/13/2008	AFC Appendix E.4 Air Quality Modeling Files CD	AIR	Sara Head
35	3/13/2008	AFC Appendix F: Biological Resources Supporting Documentation	BIO	Lyndon Quon
36	3/13/2008	AFC Appendix F: Biological Resources Supporting Documentation, Attachment E, Mojave Desert Tortoise and Mohave Ground Squirrel Habitat Assessment Reports	BIO	Alice Karl/Philip Leitner
37	3/13/2008	AFC Appendix G.1: Archaeological Report	CUL	Rebecca Apple
38	3/13/2008	AFC Appendix G.2: Built Structures Report	CUL	Rebecca Apple
39	3/13/2008	AFC Appendix H: Paleontological Resources Technical Report	PALEO	Cara Corsetti, SWCA
40	3/13/2008	AFC Appendix I: Phase I Site Assessments	WASTE	Jim Fickerson
41	3/13/2008	AFC Appendix J: Water Resources Supporting Documentation	WATER	Mike Flack
42	3/13/2008	AFC Appendix J.3.d: Raw Data and Aquifer Test Analysis (CD only)	WATER	Mike Flack
43	3/13/2008	AFC Appendix K.1: Water Agencies Correspondence	ALTS	Jared Foster
44	3/13/2008	AFC Appendix K.2: Los Angeles Department of Water & Power Correspondence	T-LINE	Scott Busa
45	3/13/2008	AFC Appendix K.3: Southern California Gas Company Correspondence	PD	Scott Busa
46	3/13/2008	AFC Appendix K.4: Kern County Agencies Correspondence	LU	Jerry McLees
47	3/13/2008	AFC Appendix K.5: Department of Defense Correspondence	LU	Kenny Stein
48	3/13/2008	AFC Appendix K.6: Department of Toxic Substances Control Correspondence	WASTE	Mike Arvidson
49	3/13/2008	AFC Appendix L: Drainage Plans	SOILS	Bob Anders

Ex. No.	Date	Title	Subject	Sponsor
50	3/13/2008	Application For FDOC	AIR	Sara Head/Russ Kingsley
51	4/8/2008	Data Adequacy Supplement, Air Quality	AIR	Sara Head
52	4/8/2008	Data Adequacy Supplement, Biological Resources	BIO	Jennifer Guigliano
53	4/8/2008	Data Adequacy Supplement, Cultural Resources	CUL	Rebecca Apple
54	4/8/2008	Data Adequacy Supplement, Geological Hazards	GEO	Mike Flack
55	4/8/2008	Data Adequacy Supplement, Land Use	LU	Jerry McLees
56	4/8/2008	Data Adequacy Supplement, Socioeconomics	SOCIO	Addie Olazabal
57	5/1/2008	Correspondence with Kern County Planning Department	LU	Kenny Stein/Jerry McLees
58	6/11/2008	Slide Presentation From Informational Hearing	ES	Scott Busa
59	7/2/2008	Summary of Pre-Application Field Meeting for Streambed Alteration Agreement	BIO	Kenny Stein/Jim Prine
60	7/16/2008	Responses to CEC Data Requests 1-3 & 7-12	AIR	Sara Head
61	7/16/2008	Responses to CEC Data Requests, Attachment DR-10	AIR	Sara Head
62	7/16/2008	Responses to CEC Data Requests 13-16 & 18-25	BIO	Jennifer Guigliano
63	7/16/2008	Responses to CEC Data Requests 17 & 43-44	H&H	Jennifer Guigliano/Bob Anders
64	7/16/2008	Responses to CEC Data Requests 26-35, with attachments	CUL	Rebecca Apple
65	7/16/2008	Responses to CEC Data Requests 36-42	SOCIO	Addie Olazabal
66	7/16/2008	Responses to CEC Data Requests 45-49, with Attachment DR-47	SOILS	Duane McCloud
67	7/16/2008	Responses to CEC Data Requests 50-53	T-LINE	Duane McCloud/Steve Richards
68	7/16/2008	Responses to CEC Data Requests 54-57, with Attachment DR-56 Phase I ESA for Natural Gas Pipeline Route	WASTE	Jim Fickerson
69	7/16/2008	Responses to CEC Data Requests 58-70	WATER	Mike Flack
70	7/16/2008	Responses to CEC Data Requests, Attachment DR-63	WATER	Mike Flack
71	7/19/2008	Streambed Alteration Agreement	BIO	Jennifer Guigliano/Jim Prine
72	8/18/2008	Supplemental Responses to CEC Data Requests 4, 5, 6, & 12, & Attachment DR-5	AIR	Sara Head
73	8/18/2008	Supplemental Responses to CEC Data Requests 17, 18 & 20, with Attachment DR-17	BIO	Jennifer Guigliano
74	8/18/2008	Supplemental Response to Data Requests 30, 32, 34 & 35, with Attachment DR-34 and DR-35	CUL	Rebecca Apple
75	8/18/2008	Supplemental Responses to CEC Data Requests 44 & 45, with Attachments DR-44 and DR-45	H&H	Jennifer Guigliano / Bob Anders

Ex. No.	Date	Title	Subject	Sponsor
76	9/2/2008	Supplemental Responses to CEC Data Requests 50-53, with Attachment DR-50 (SIS)	T-LINE	Duane McCloud/Steve Richards
77	9/19/2008	Responses to Questions From Rancho Seco Residents, Set One	ES	Meg Russell
78	10/13/2008	Revised Response to Data Request 14	BIO	Jennifer Guigliano
79	10/13/2008	Responses to CEC Data Requests 71-78	BIO	Jennifer Guigliano
80	10/13/2008	Responses to CEC Data Requests 79-80	CUL	Rebecca Apple
81	10/13/2008	Responses to CEC Data Requests 81-92	SOCIO	Addie Olazabal
82	10/13/2008	Responses to CEC Data Requests 93-95	H&H	Bob Anders
83	10/13/2008	Responses to CEC Data Requests 96-127, with Figures and Tables	WATER	Mike Flack
84	10/13/2008	Data Requests 113, Attachment DR-113, MODFLOW files	WATER	Mike Flack
85	10/23/2008	Supplemental Response to Data Requests 30, 32 & 34, with Attachment DR-32: Evaluation of Cultural Resources	CUL	Rebecca Apple
86	10/23/2008	Supplemental Responses to CEC Data Requests 101-103, 106-109, 112, 114-115, 117-123, with Tables and Figures	WATER	Mike Flack
87	10/29/2008	Botanical and Wildlife Special Status Species Spring Survey Report	BIO	Jennifer Guigliano
88	10/29/2008	Response to CDFG letter on BSEP Streambed Alteration Notification	BIO	Jennifer Guigliano
89	11/24/2008	Email from Kenny to Eric on Alternative Layouts	ALTS	Kenny Stein
90	11/26/2008	Supplemental Workshop Responses to Data Requests 14, 17 & 20	BIO	Jennifer Guigliano
91	11/26/2008	Confidential Supplemental Workshop Response to Data Request 34: Geomorph Maps and Cover Memorandum	CUL	Rebecca Apple
92	12/1/2008	Application for Incidental Take of Threatened or Endangered Species, Section 2081 of CESA	BIO	Jennifer Guigliano
93	12/5/2008	Responses to Questions From Rancho Seco Residents, Set Two	ES	Meg Russell
94	12/9/2008	Supplemental Workshop Responses to CEC Data Requests 96, 101, 112, 114, 118, & 121, with attachments	WATER	Mike Flack
95	12/12/2008	Email from Kenny to Eric on Auxiliary Loads	FD	Kenny Stein
96	12/12/2008	Email from Sara to Will Walters on Waste Loadout	AIR	Sara Head
97	12/15/2008	Beacon Waste Stream Quantities - Revised Table 5.16-6	WASTE	Janine Forrest
98	12/22/2008	Email from K. Stein Regarding Cut/Fill For Evaporation Ponds	FD	Kenny Stein
99	1/6/2009	Construction Greenhouse Gas Emissions Calculations	AIR	Sara Head / Howard Balentine
100	1/13/2009	Beacon Dry Cooling Evaluation	ALTS	Jared Foster/Gary Pratt

Ex. No.	Date	Title	Subject	Sponsor
101	1/13/2009	Email from K. Stein Regarding Control Temperature for HTF Freeze Pro	FD	Kenny Stein
102	1/16/2009	Email Response to CEC Request Regarding High TDS Water	WATER	Mike Flack
103	1/20/2009	Confidential - Beacon Solar Energy Project Revenue Data	PD	Scott Busa
104	1/21/2009	Geoarchaeological Trenching Plan	CUL	Craig Young, Far Western
105	1/23/2009	Email Correspondence Regarding Visible Plumes	VIS	Brian Stormwind
106	1/31/2009	Summary of Conference Call With Lahontan	WATER	Mike Flack
107	2/6/2009	Preliminary Results Beacon Solar Project Geoarchaeology (Supplemental Response to Data Request 34)	CUL	Craig Young, Far Western
108	2/10/2009	Response to RWQCB Comments on draft ROWD Application	WATER	Mike Flack
109	2/23/2009	Email Response to E. Solorio Regarding Sources of Groundwater Data, With Updated J.4 database	WATER	Mike Flack
110		Application for Low Effects HCP	BIO	Jennifer Guigliano
111	3/4/2009	Boundary Survey Sheets	LU	Jerry McLees
112	3/26/2009	Email Response to Request for Clarification on Resource Evaluations From M. McGuirt	CUL	Rebecca Apple
113	4/8/2009	PPSA Comments, Section IIA: Air Quality	AIR	Sara Head
114	4/8/2009	PPSA Comments, Section IIB: Biological Resources	BIO	Jennifer Guigliano
115	4/8/2009	PPSA Comments, Section IIC: Cultural Resources	CUL	Rebecca Apple
116	4/8/2009	PPSA Comments, Section IID: Hazardous Materials Management	HAZMAT	Russ Kingsley
117	4/8/2009	PPSA Comments, Section IIE: Noise and Vibration	NOISE	Duane McCloud
118	4/8/2009	PPSA Comments, Section IIF: Traffic and Transportation	TRAFF	Duane McCloud
119	4/8/2009	PPSA Comments, Section IIG: Visual Resources	VIS	Merlyn Paulson
120	4/8/2009	PPSA Comments, Section IIIA: Soil and Water Resources	WATER	Mike Flack / Jennifer Guigliano
121	4/8/2009	PPSA Comments, Section IIIB: Alternatives	ALTS	Kenny Stein
122	4/21/2009	Kern County resolutions approving LU applications	LU	Jerry McLees
123	5/1/2009	Landform Structure and Archaeological Sensitivity in the Beacon Solar Energy Project Area	CUL	Craig Young, Far Western
124	5/1/2009	PSA Comments, Introduction	ES	Kenny Stein
125	5/1/2009	PSA Comments, Executive Summary	ES	Scott Busa
126	5/1/2009	PSA Comments, Project Description	PD	Scott Busa
127	5/1/2009	PSA Comments, Alternatives	ALTS	Kenny Stein
128	5/1/2009	PSA Comments, Air Quality	AIR	Sara Head
129	5/1/2009	PSA Comments, Biological Resources	BIO	Jennifer Guigliano

Ex. No.	Date	Title	Subject	Sponsor
130	5/1/2009	PSA Comments, Attachment BIO-1: Desert Tortoise Removal Plan, April 2009	BIO	Alice Karl
131	5/1/2009	PSA Comments, Attachment BIO-2: Burrowing Owl Relocation Area Management Plan	BIO	Jennifer Guigliano
132	5/1/2009	PSA Comments, Cultural Resources	CUL	Rebecca Apple
133	5/1/2009	PSA Comments, Attachment CUL-1: Comments and Amendments to Cultural Resources Conclusions	CUL	Rebecca Apple
134	5/1/2009	PSA Comments, Attachment CUL-2: Proposed Cultural Resources Mitigation	CUL	Rebecca Apple
135	5/1/2009	PSA Comments, Hazardous Materials Management	HAZMAT	Duane McCloud
136	5/1/2009	PSA Comments, Land Use	LU	Duane McCloud
137	5/1/2009	PSA Comments, Noise	NOISE	Duane McCloud
138	5/1/2009	PSA Comments, Public Health	PH	Sara Head
139	5/1/2009	PSA Comments, Attachment Public Health-1: Health Risk Assessment	PH	Sara Head
140	5/1/2009	PSA Comments, Soil and Water	WATER	Mike Flack
141	5/1/2009	PSA Comments, Attachment Soil and Water-1: Draft Water Mitigation and Offset Plan	WATER	Mike Flack/Jennifer Guigliano
142	5/1/2009	PSA Comments, Attachment Soil and Water-2: Revised Table 112W	WATER	Mike Flack
143	5/1/2009	PSA Comments, Traffic and Transportation	TRAFF	Duane McCloud
144	5/1/2009	PSA Comments, Visual Resources	VIS	Merlyn Paulson
145	5/1/2009	PSA Comments, Waste Management	WASTE	Duane McCloud
146	5/1/2009	PSA Comments, Worker Safety and Fire Protection	WS	Duane McCloud
147	5/1/2009	PSA Comments, Engineering Assessment	FD	Duane McCloud
148	5/1/2009	PSA Comments, Geology and Paleontology	PALEO	Kenny Stein
149	5/1/2009	PSA Comments, General Conditions	FD	Duane McCloud
150	5/13/2009	Materials from CLOMR Meeting	H&H	Jennifer Guigliano
151	6/1/2009	Common Raven Monitoring, Management & Control Plan	BIO	Jennifer Guigliano
152	6/1/2009	Rerouted Wash Electronic Support Files	H&H	Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu
153	6/3/2009	Comments on CEC Groundwater Sampling Program	ALTS	Mike Flack
154	6/19/2009	PDR, Section 1.0: Intro & Section 5.0: Conclusions	FD	Kenny Stein
155	6/19/2009	PDR, Section 2.1: Staff Suggested Changes	FD	Kenny Stein
156	6/19/2009	PDR Section 2.1.1: Diversion Channel Redesign	H&H	Jennifer Guigliano/Serkan Mahmutoglu
157	6/19/2009	PDR Section 2.1.2: Water Treatment & Discharge Facilities	FD	Scott Stern/Dan Sampson
158	6/19/2009	PDR Section 2.1.3: Stormwater Retention and Erosion Control	FD	Bob Anders
159	6/19/2009	PDR Section 2.1.5: SCE Distribution Lines	FD	Scott Busa

Ex. No.	Date	Title	Subject	Sponsor
160	6/19/2009	PDR Section 2.1.6: Land Treatment Unit	FD	Janine Forrest
161	6/19/2009	PDR Section 2.1.7: Site Layout Adjustments	FD	Jared Foster
162	6/19/2009	PDR Section 2.1.8: Telecommunications System	FD	Scott Busa
163	6/19/2009	PDR Section 2.1.9: Solar Field Maintenance Vehicles	AIR	Duane McCloud
164	6/19/2009	PDR Section 2.1.10: Visual Impacts Reduction	VIS	Merlyn Paulson
165	6/19/2009	PDR Section 2.2: Beacon Proposed Project Refinements	FD	Duane McCloud
166	6/19/2009	PDR Section 3.1: Koehn Lake Alternative	ALTS	Mike Flack
167	6/19/2009	PDR Section 3.1.1: Water Treatment Facilities for Configuration 2	ALTS	Scott Stern/Dan Sampson
168	6/19/2009	PDR Section 3.1.2: Evaporation Pond Size for Configuration 2	ALTS	Janine Forrest
169	6/19/2009	PDR Section 3.2: Rosamond Waste Water Alternative	ALTS	Scott Busa
170	6/19/2009	PDR Section 4.1.1: Air Quality	AIR	Sara Head
171	6/19/2009	PDR Section 4.1.2: Biological Resources	BIO	Jennifer Guigliano
172	6/19/2009	PDR Section 4.1.4: Hazardous Materials Management	HAZMAT	Russ Kingsley
173	6/19/2009	PDR Section 4.1.6: Traffic and Transportation	TRAFF	Duane McCloud
174	6/19/2009	PDR Section 4.1.7: Visual Resources	VIS	Merlyn Paulson
175	6/19/2009	PDR Section 4.1.8: Waste Management	WASTE	Jared Foster/Janine Forrest
176	6/19/2009	PDR Section 4.2.1: Air Quality and Public Health Impacts	AIR	Sara Head
177	6/19/2009	PDR Section 4.2.1.2: Public Health Analysis for Propane	PH	Sara Head
178	6/19/2009	PDR Section 4.2.2: Biological Resources	BIO	Jennifer Guigliano
179	6/19/2009	PDR Section 4.2.3: Hazardous Materials Management	HAZMAT	Jared Foster / Howard Balentine
180	6/19/2009	PDR Section 4.2.4: Traffic and Transportation	TRAFF	Jared Foster
181	6/19/2009	PDR Section 4.2.5: Visual Resources	VIS	Merlyn Paulson
182	6/19/2009	PDR Section 4.2.6.1: Waste from Additional HTF Expansion Tanks	WASTE	Russ Kingsley
183	6/19/2009	PDR Section 4.2.7: Other Environmental Topic Areas	WS	Mike Arvidson
184	6/19/2009	PDR Section 4.3.1: Air Quality	ALTS	Sara Head
185	6/19/2009	PDR Section 4.3.5: Soil and Water Resources	ALTS	Mike Flack
186	6/19/2009	PDR Section 4.3.6: Traffic and Transportation	ALTS	Jared Foster
187	6/19/2009	PDR Section 4.3.7: Waste Management	ALTS	Jared Foster/Janine Forrest
188	6/19/2009	PDR Figure 1: Water Balance With On-Site Groundwater	WATER	Scott Stern/Dan Sampson
189	6/19/2009	PDR Figure 2: Water Balance With High TDS Water	ALTS	Scott Stern/Dan Sampson
190	6/19/2009	PDR Figure 3: Revised Site Layout	FD	Jared Foster
191	6/19/2009	PDR Figure 5: Revised Power Block Equipment Layout (with Propane)	FD	Jared Foster

Ex. No.	Date	Title	Subject	Sponsor
192	6/19/2009	PDR Figure 6: Revised Key One Line Diagram	T-LINE	Duane McCloud/Steve Richards
193	6/19/2009	PDR Figure 7: Water Supply Wells Located in the Koehn Sub-Basin	ALTS	Mike Flack
194	6/19/2009	PDR Attach. 1a, Draft Memorandum for Hydrologic & Hydraulic Analysis of Rerouted Channel for Beacon Solar Energy, June 2009	H&H	Gerard Dalziel
195	6/19/2009	PDR Attachment 1b: ReRouted Wash Mitigation Plan	BIO	Jennifer Guigliano
196	6/19/2009	PDR Attachment 2: Evaporation Pond Calculations	FD	Jared Foster/Janine Forrest
197	6/19/2009	PDR Attachment 3: Storm Water Management- Conceptual Retention and Grading Study	FD	Bob Anders
198	6/19/2009	PDR Attachment 4a: Burrowing Owl Survey Report for Emergency Access Road	BIO	Jennifer Guigliano
199	6/19/2009	PDR Attachment 4b: Desert Tortoise Survey Report for Emergency Access Road	BIO	Jennifer Guigliano
200	6/19/2009	PDR Attachment 4c: Cultural Resources Survey Report for Emergency Access Road	CUL	Rebecca Apple
201	6/19/2009	PDR Attachment 4d: Paleontological Resources Survey Report for Emergency Access Road	PALEO	Cara Corsetti, SWCA
202	6/19/2009	PDR Attachment 5: Groundwater Mitigation Plan	WATER	Mike Flack
203	6/19/2009	PDR Attachment 6: Amendment to Report of Waste Discharge	WATER	Mike Flack
204	6/19/2009	PDR Attachment 7a: Construction Emissions Related to Emergency Access Road	AIR	Sara Head
205	6/19/2009	PDR Attachment 7b: Operational Emissions Related to Propane Deliveries and Use	AIR	Sara Head
206	6/19/2009	PDR Attachment 7c: Boiler Manufacturer's Specifications	AIR	Sara Head
207	6/19/2009	PDR Attachment 7d: Additional Air Quality Impact Analyses	AIR	Sara Head
208	6/19/2009	PDR Attachment 8: Phase I Environmental Site Assessment for Additional Transmission Line Parcel	WASTE	Jim Fickerson
209	6/22/2009	Air Modeling Files Related to Project Design Refinements	AIR	Sara Head
210	6/29/2009	Email from J. Guigliano re rerouted wash electronic support files (MIKE21?)	H&H	Jennifer Guigliano
211	7/2/2009	Revised Application for FDOC	AIR	Sara Head/Russ Kingsley
212	7/16/2009	Email from K. Stein Regarding Maintenance Vehicle Comparisons	AIR	Kenny Stein/Glen King
213	7/17/2009	Application for Lot Line Adjustment	LU	Jerry McLees
214	7/20/2009	Response to Air Quality Questions From Workshop	AIR	Sara Head

Ex. No.	Date	Title	Subject	Sponsor
215	7/20/2009	Response to Request Regarding BSEP Subsurface Investigations	CUL	Rebecca Apple
216	7/20/2009	Response to Request for Predictive Sensitivity Groundwater Analysis	WATER	Mike Flack
217	7/20/2009	Response to Rerouted Wash Information Request	H&H	Jennifer Guigliano
218	7/26/2009	Emails from Jenn re FLO2D Models, Models on CD	H&H	Jennifer Guigliano/Serkan Mahmutoglu
219	8/1/2009	Email Regarding Red Rock Poppy	BIO	Kenny Stein
220	8/1/2009	Habitat Conservation Plan	BIO	Jennifer Guigliano
221	8/11/2009	Email to CEC Regarding Results of Offsite Well Sampling	ALTS	Mike Flack
222	8/18/2009	Email to CEC With Resubmittal of Revised Metals Results for Offsite Sampling	ALTS	Mike Flack
223	8/24/2009	Response to Letter From John Musick	LU	Scott Busa
224	8/30/2009	Arciero Well Data (from J. Musick)	ALTS	Mike Flack
225	9/11/2009	Email Regarding Updated Construction Water Impacts Assessment	WATER	Mike Flack
226	12/2/1997	LADWP's Draft Initial Study/Proposed Negative Declaration SAMDA Water Exploration, Fremont Valley Ranch Water Management Project	WATER	Mike Flack
227	4/1/2009	Stetson Groundwater Report (CA City)	WATER	Mike Flack
228	5/1/2009	PSA Comments, Attachment Worker Safety-1: Letter From Kern County Fire Dept.	WS	Jared Foster
229	6/21/2009	CEC Well Canvas	ALTS	Mike Flack
230	7/1/2009	CEC Well Canvas Photos	ALTS	Mike Flack
231	7/2/2009	DWR Well Data	WATER	Mike Flack
232	8/1/2009	KCAPCD Revised FDOC	AIR	Sara Head/Russ Kingsley
233	9/4/2009	Email From BLM Regarding Visual Impacts	VIS	Kenny Stein
234		Declaration of Addie Olazabal: Socioeconomics	SOCIO	Addie Olazabal
235		Declaration of Alice Karl: Biological Resources	BIO	Alice Karl
236		Declaration of Bob Anders: Geoarchaeology	GEO	Bob Anders
237		Declaration of Bob Anders: Hydrology & Hydraulics	H&H	Bob Anders
238		Declaration of Bob Anders: Soils	SOILS	Bob Anders
239		Declaration of Bob Anders: Facility Design	FD	Bob Anders
240		Declaration of Brian Stormwind: Visual	VIS	Brian Stormwind
241		Declaration of Cara Corsetti: Paleo	PALEO	Cara Corsetti, SWCA
242		Declaration of D. Craig Young: Cultural	CUL	Craig Young, Far Western
243		Declaration of Dan Sampson: Water	WATER	Dan Sampson
244		Declaration of Dan Sampson: Facility Design	FD	Dan Sampson
245		Declaration of Dan Sampson: Alternatives	ALTS	Dan Sampson
246		Declaration of Duane McCloud: Project Description	PD	Duane McCloud

Ex. No.	Date	Title	Subject	Sponsor
247		Declaration of Duane McCloud: Air Quality	AIR	Duane McCloud
248		Declaration of Duane McCloud: Hazardous Materials	HAZMAT	Duane McCloud
249		Declaration of Duane McCloud: Land Use	LU	Duane McCloud
250		Declaration of Duane McCloud: Noise	NOISE	Duane McCloud
251		Declaration of Duane McCloud: Soils	SOILS	Duane McCloud
252		Declaration of Duane McCloud: Traffic & Transportation	TRAFF	Duane McCloud
253		Declaration of Duane McCloud: Waste Management	WASTE	Duane McCloud
254		Declaration of Duane McCloud: Worker Safety	WS	Duane McCloud
255		Declaration of Duane McCloud: Transmission Line	T-LINE	Duane McCloud
256		Declaration of Duane McCloud: Facility Design	FD	Duane McCloud
257		Declaration of Gerard Dalziel: Hydology & Hydraulics	H&H	Gerard Dalziel
258		Declaration of Gary Pratt: Alternatives	ALTS	Gary Pratt
259		Declaration of Glen King: Air Quality	AIR	Glen King
260		Declaration of Greg Wolffe: Public Health	PH	Greg Wolffe
261		Declaration of Howard Balentine: Air Quality	AIR	Howard Balentine
262		Declaration of Howard Balentine: Hazardous Materials	HAZMAT	Howard Balentine
263		Declaration of Janine Forest: Waste Management	WASTE	Janine Forrest
264		Declaration of Janine Forest: Facility Design	FD	Janine Forrest
265		Declaration of Janine Forest: Alternatives	ALTS	Janine Forrest
266		Declaration of Jared Foster: Hazardous Materials	HAZMAT	Jared Foster
267		Declaration of Jared Foster: Traffic & Transportation	TRAFF	Jared Foster
268		Declaration of Jared Foster: Waste Management	WASTE	Jared Foster
269		Declaration of Jared Foster: Worker Safety	WS	Jared Foster
270		Declaration of Jared Foster: Facility Design	FD	Jared Foster
271		Declaration of Jared Foster: Alternatives	ALTS	Jared Foster
272		Declaration of Jennifer Guigliano: Biological Resources	BIO	Jennifer Guigliano
273		Declaration of Jennifer Guigliano: Hydology & Hydraulics	H&H	Jennifer Guigliano
274		Declaration of Jennifer Guigliano: Water	WATER	Jennifer Guigliano
275		Declaration of Jerry McLees: Land Use	LU	Jerry McLees
276		Declaration of Jim Fickerson: Waste Management	WASTE	Jim Fickerson
277		Declaration of Jim Prine: Biological Resources	BIO	Jim Prine
278		Declaration of John Wilson: Traffic & Transportation	TRAFF	John Wilson, Wilson Eng.
279		Declaration of Kenneth Stein: Executive Summary	ES	Kenny Stein
280		Declaration of Kenneth Stein: Project Description	PD	Kenny Stein

Ex. No.	Date	Title	Subject	Sponsor
281		Declaration of Kenneth Stein: Air Quality	AIR	Kenny Stein
282		Declaration of Kenneth Stein: Biological Resources	BIO	Kenny Stein
283		Declaration of Kenneth Stein: Land Use	LU	Kenny Stein
284		Declaration of Kenneth Stein: Paleontology	PALEO	Kenny Stein
285		Declaration of Kenneth Stein: Visual Resources	VIS	Kenny Stein
286		Declaration of Kenneth Stein: Facility Design	FD	Kenny Stein
287		Declaration of Kenneth Stein: Alternatives	ALTS	Kenny Stein
288		Declaration of Lyndon Quon: Biological Resources	BIO	Lyndon Quon
289		Declaration of Meg Russell: Executive Summary	ES	Meg Russell
290		Declaration of Merlyn Paulson: Visual Resources	VIS	Merlyn Paulson
291		Declaration of Mike Arvidson: Waste Management	WASTE	Mike Arvidson
292		Declaration of Mike Arvidson: Worker Safety	WS	Mike Arvidson
293		Declaration of Mike Flack: Geology	GEO	Mike Flack
294		Declaration of Mike Flack: Soils	SOILS	Mike Flack
295		Declaration of Mike Flack: Water (1)	WATER	Mike Flack
296		Declaration of Mike Flack: Water (2)	WATER	Mike Flack
297		Declaration of Mike Flack: Alternatives (1)	ALTS	Mike Flack
298		Declaration of Mike Flack: Alternatives (2)	ALTS	Mike Flack
299		Declaration of Philip Leitner: Biological Resources	BIO	Phil Leitner
300		Declaration of Rebecca Apple: Cultural Resources	CUL	Rebecca Apple
301		Declaration of Russ Kinglsey: Air Quality (1)	AIR	Russ Kingsley
302		Declaration of Russ Kinglsey: Air Quality (2)	AIR	Russ Kingsley
303		Declaration of Russ Kingsley: Hazardous Materials	HAZMAT	Russ Kingsley
304		Declaration of Russ Kingsley: Waste Management	WASTE	Russ Kingsley
305		Declaration of Sara Head: Air Quality (1)	AIR	Sara Head
306		Declaration of Sara Head: Air Quality (2)	AIR	Sara Head
307		Declaration of Sara Head: Public Health	PH	Sara Head
308		Declaration of Sara Head: Alternatives	ALTS	Sara Head
309		Declaration of Scott Busa: Executive Summary	ES	Scott Busa
310		Declaration of Scott Busa: Project Description	PD	Scott Busa
311		Declaration of Scott Busa: Facility Design	FD	Scott Busa
312		Declaration of Scott Busa: Land Use	LU	Scott Busa
313		Declaration of Scott Busa: Transmission Line	T-LINE	Scott Busa
314		Declaration of Scott Busa: Alternatives	ALTS	Scott Busa
315		Declaration of Scott Stern: Water	WATER	Scott Stern
316		Declaration of Scott Stern: Facility Design	FD	Scott Stern
317		Declaration of Scott Stern: Alternatives	ALTS	Scott Stern
318		Declaration of Serkan Mahmutoglu: Hydrology & Hydraulics	H&H	Serkan Mahmutoglu

Ex. No.	Date	Title	Subject	Sponsor
319		Declaration of Steve Richards: Facility Design	FD	Steve Richards
320		Declaration of Steve Richards: Transmission Line	T-LINE	Steve Richards
321	11/09	60% Hydrologic and Hydraulic Analysis of Rerouted Channel	H&H	Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 12/15/09)

APPLICANT	**COUNSEL FOR APPLICANT**	**ENERGY COMMISSION**
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APPLICANT CONSULTANT Sara Head, Vice President AECOM Environment 1220 Avenida Acaso Camarillo, CA 93012 Sara.head@aecom.com	**INTERESTED AGENCIES** California ISO e-recipient@caiso.com	Eric Solorio Project Manager esolorio@energy.state.ca.us Jared Babula Staff Counsel jbabula@energy.state.ca.us
Bill Pietrucha, Project Manager Jared Foster, P.E. Worley Parsons 2330 E. Bidwell, Suite 150 Folsom, CA 95630 Bill.Pietrucha@worleyparsons.com Jared.Foster@worleyparsons.com	**INTERVENORS** Tanya A. Gulesserian Marc D. Jacobs Adams Broadwell Joseph & Cardozo 601 Gateway Boulevard, Suite 1000 South San Francisco, CA 94080 **E-MAIL PREFERRED** tgulesserian@adamsbroadwell.com	Public Adviser's Office publicadviser@energy.state.ca.us

Declaration of Service

I, Lois Navarrot, declare that on December 21, 2009, I served and filed copies of Amended Applicant's Sequential Exhibit List (12/18/09) with the Docket Unit and the proof of service list located on the web page for this project at: www.energy.ca.gov/sitingcases/beacon. The document has been sent to the above parties in this proceeding and to the Commission's Docket Unit, in the following manner:

Applicant NextEra Energy – 2 CDs
Applicant Consultant AECOM Environment – 1 CD
Applicant Consultant Worley Parsons – 1 CD
California Independent System Operator – 1 CD
Intervenor CURE – 1 hard copy and 1 CD
Karen Douglas, Commissioner – 1 CD
Jeffrey D. Byron, Commissioner – 1 CD
Kenneth Celli, Hearing Officer – 2 hard copies
Eric Solorio, Project Manager – 1 hard copy and 1 CD
Jared Babula, Staff Counsel – 1 CD
Public Advisor's Office – 1 CD
Casey Weaver, CEC Staff – 1 CD
Vince Geronimo, Consultant, c/o CEC Staff – 1 CD
Dockets – 1 hard copy and 2 CDs

For Service to All Other Parties

_____ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service List.

For Filing with the Energy Commission

__X__ sending a hard copy and DVD via personal delivery to the address below;

OR

____ depositing in the mail an original and 12 paper copies as follow:

California Energy Commission
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

_____

Lois Navarrot

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

AMENDED APPLICANT'S EXHIBIT LIST - BY TOPIC AREA

DECEMBER 18, 2009

Ex. No.	Date	Title	Subject	Sponsor
Executive Summary				
1	3/13/2008	AFC Section 1.0: Executive Summary	ES	Kenny Stein
58	6/11/2008	Slide Presentation From Informational Hearing	ES	Scott Busa
77	9/19/2008	Responses to Questions From Rancho Seco Residents, Set One	ES	Meg Russell
93	12/5/2008	Responses to Questions From Rancho Seco Residents, Set Two	ES	Meg Russell
124	5/1/2009	PSA Comments, Introduction	ES	Kenny Stein
125	5/1/2009	PSA Comments, Executive Summary	ES	Scott Busa
279		Declaration of Kenneth Stein: Executive Summary	ES	Kenny Stein
289		Declaration of Meg Russell: Executive Summary	ES	Meg Russell
309		Declaration of Scott Busa: Executive Summary	ES	Scott Busa
Project Description				
2	3/13/2008	AFC Section 2.0: Project Description	PD	Duane McCloud
3	3/13/2008	AFC Section 3.0: Closure	PD	Duane McCloud
5	3/13/2008	AFC Section 5.1: General Environmental Information	PD	Kenny Stein
23	3/13/2008	AFC Appendix A: Surrounding Properties Assessor's Parcel Nos./Property Owners	PD	Kenny Stein
45	3/13/2008	AFC Appendix K.3: Southern California Gas Company Correspondence	PD	Scott Busa
103	1/20/2009	Confidential - Beacon Solar Energy Project Revenue Data	PD	Scott Busa
126	5/1/2009	PSA Comments, Project Description	PD	Scott Busa
246		Declaration of Duane McCloud: Project Description	PD	Duane McCloud
280		Declaration of Kenneth Stein: Project Description	PD	Kenny Stein

Ex. No.	Date	Title	Subject	Sponsor
310		Declaration of Scott Busa: Project Description	PD	Scott Busa
Air Quality				
6	3/13/2008	AFC Section 5.2: Air Quality	AIR	Sara Head
33	3/13/2008	AFC Appendix E: Air Quality Supporting Documentation	AIR	Sara Head
34	3/13/2008	AFC Appendix E.4 Air Quality Modeling Files CD	AIR	Sara Head
50	3/13/2008	Application For FDOC	AIR	Sara Head/Russ Kingsley
51	4/8/2008	Data Adequacy Supplement, Air Quality	AIR	Sara Head
60	7/16/2008	Responses to CEC Data Requests 1-3 & 7-12	AIR	Sara Head
61	7/16/2008	Responses to CEC Data Requests, Attachment DR-10	AIR	Sara Head
72	8/18/2008	Supplemental Responses to CEC Data Requests 4, 5, 6, & 12, & Attachment DR-5	AIR	Sara Head
96	12/12/2008	Email from Sara to Will Walters on Waste Loadout	AIR	Sara Head
99	1/6/2009	Construction Greenhouse Gas Emissions Calculations	AIR	Sara Head / Howard Balentine
113	4/8/2009	PPSA Comments, Section IIA: Air Quality	AIR	Sara Head
128	5/1/2009	PSA Comments, Air Quality	AIR	Sara Head
163	6/19/2009	PDR Section 2.1.9: Solar Field Maintenance Vehicles	AIR	Duane McCloud
170	6/19/2009	PDR Section 4.1.1: Air Quality	AIR	Sara Head
176	6/19/2009	PDR Section 4.2.1: Air Quality and Public Health Impacts	AIR	Sara Head
204	6/19/2009	PDR Attachment 7a: Construction Emissions Related to Emergency Access Road	AIR	Sara Head
205	6/19/2009	PDR Attachment 7b: Operational Emissions Related to Propane Deliveries and Use	AIR	Sara Head
206	6/19/2009	PDR Attachment 7c: Boiler Manufacturer's Specifications	AIR	Sara Head
207	6/19/2009	PDR Attachment 7d: Additional Air Quality Impact Analyses	AIR	Sara Head
209	6/22/2009	Air Modeling Files Related to Project Design Refinements	AIR	Sara Head
211	7/2/2009	Revised Application for FDOC	AIR	Sara Head/Russ Kingsley
212	7/16/2009	Email from K. Stein Regarding Maintenance Vehicle Comparisons	AIR	Kenny Stein/Glen King
214	7/20/2009	Response to Air Quality Questions From Workshop	AIR	Sara Head

Ex. No.	Date	Title	Subject	Sponsor
232	8/1/2009	KCAPCD Revised FDOC	AIR	Sara Head/Russ Kingsley
247		Declaration of Duane McCloud: Air Quality	AIR	Duane McCloud
259		Declaration of Glen King: Air Quality	AIR	Glen King
261		Declaration of Howard Balentine: Air Quality	AIR	Howard Balentine
281		Declaration of Kenneth Stein: Air Quality	AIR	Kenny Stein
301		Declaration of Russ Kinglsey: Air Quality (1)	AIR	Russ Kingsley
302		Declaration of Russ Kinglsey: Air Quality (2)	AIR	Russ Kingsley
305		Declaration of Sara Head: Air Quality (1)	AIR	Sara Head
306		Declaration of Sara Head: Air Quality (2)	AIR	Sara Head
Biological Resources				
7	3/13/2008	AFC Section 5.3: Biological Resources	BIO	Lyndon Quon
35	3/13/2008	AFC Appendix F: Biological Resources Supporting Documentation	BIO	Lyndon Quon
36	3/13/2008	AFC Appendix F: Biological Resources Supporting Documentation, Attachment E, Mojave Desert Tortoise and Mohave Ground Squirrel Habitat Assessment Reports	BIO	Alice Karl/Philip Leitner
52	4/8/2008	Data Adequacy Supplement, Biological Resources	BIO	Jennifer Guigliano
59	7/2/2008	Summary of Pre-Application Field Meeting for Streambed Alteration Agreement	BIO	Kenny Stein/Jim Prine
62	7/16/2008	Responses to CEC Data Requests 13-16 & 18-25	BIO	Jennifer Guigliano
71	7/19/2008	Streambed Alteration Agreement	BIO	Jennifer Guigliano/Jim Prine
73	8/18/2008	Supplemental Responses to CEC Data Requests 17, 18 & 20, with Attachment DR-17	BIO	Jennifer Guigliano
78	10/13/2008	Revised Response to Data Request 14	BIO	Jennifer Guigliano
79	10/13/2008	Responses to CEC Data Requests 71-78	BIO	Jennifer Guigliano
87	10/29/2008	Botanical and Wildlife Special Status Species Spring Survey Report	BIO	Jennifer Guigliano
88	10/29/2008	Response to CDFG letter on BSEP Streambed Alteration Notification	BIO	Jennifer Guigliano
90	11/26/2008	Supplemental Workshop Responses to Data Requests 14, 17 & 20	BIO	Jennifer Guigliano
92	12/1/2008	Application for Incidental Take of Threatened or Endangered Species, Section 2081 of CESA	BIO	Jennifer Guigliano
110		Application for Low Effects HCP	BIO	Jennifer Guigliano

Ex. No.	Date	Title	Subject	Sponsor
114	4/8/2009	PPSA Comments, Section IIB: Biological Resources	BIO	Jennifer Guigliano
129	5/1/2009	PSA Comments, Biological Resources	BIO	Jennifer Guigliano
130	5/1/2009	PSA Comments, Attachment BIO-1: Desert Tortoise Removal Plan, April 2009	BIO	Alice Karl
131	5/1/2009	PSA Comments, Attachment BIO-2: Burrowing Owl Relocation Area Management Plan	BIO	Jennifer Guigliano
151	6/1/2009	Common Raven Monitoring, Management & Control Plan	BIO	Jennifer Guigliano
171	6/19/2009	PDR Section 4.1.2: Biological Resources	BIO	Jennifer Guigliano
178	6/19/2009	PDR Section 4.2.2: Biological Resources	BIO	Jennifer Guigliano
195	6/19/2009	PDR Attachment 1b: ReRouted Wash Mitigation Plan	BIO	Jennifer Guigliano
198	6/19/2009	PDR Attachment 4a: Burrowing Owl Survey Report for Emergency Access Road	BIO	Jennifer Guigliano
199	6/19/2009	PDR Attachment 4b: Desert Tortoise Survey Report for Emergency Access Road	BIO	Jennifer Guigliano
219	8/1/2009	Email Regarding Red Rock Poppy	BIO	Kenny Stein
220	8/1/2009	Habitat Conservation Plan	BIO	Jennifer Guigliano
235		Declaration of Alice Karl: Biological Resources	BIO	Alice Karl
272		Declaration of Jennifer Guigliano: Biological Resources	BIO	Jennifer Guigliano
277		Declaration of Jim Prine: Biological Resources	BIO	Jim Prine
282		Declaration of Kenneth Stein: Biological Resources	BIO	Kenny Stein
288		Declaration of Lyndon Quon: Biological Resources	BIO	Lyndon Quon
299		Declaration of Philip Leitner: Biological Resources	BIO	Phil Leitner
Cultural Resources				
8	3/13/2008	AFC Section 5.4: Cultural Resources	CUL	Rebecca Apple
37	3/13/2008	AFC Appendix G.1: Archaeological Report	CUL	Rebecca Apple
38	3/13/2008	AFC Appendix G.2: Built Structures Report	CUL	Rebecca Apple
53	4/8/2008	Data Adequacy Supplement, Cultural Resources	CUL	Rebecca Apple
64	7/16/2008	Responses to CEC Data Requests 26-35, with attachments	CUL	Rebecca Apple

Ex. No.	Date	Title	Subject	Sponsor
74	8/18/2008	Supplemental Response to Data Requests 30, 32, 34 & 35, with Attachment DR-34 and DR-35	CUL	Rebecca Apple
80	10/13/2008	Responses to CEC Data Requests 79-80	CUL	Rebecca Apple
85	10/23/2008	Supplemental Response to Data Requests 30, 32 & 34, with Attachment DR-32: Evaluation of Cultural Resources	CUL	Rebecca Apple
91	11/26/2008	Confidential Supplemental Workshop Response to Data Request 34: Geomorph Maps and Cover Memorandum	CUL	Rebecca Apple
104	1/21/2009	Geoarchaeological Trenching Plan	CUL	Craig Young, Far Western
107	2/6/2009	Preliminary Results Beacon Solar Project Geoarchaeology (Supplemental Response to Data Request 34)	CUL	Craig Young, Far Western
112	3/26/2009	Email Response to Request for Clarification on Resource Evaluations From M. McGuirt	CUL	Rebecca Apple
115	4/8/2009	PPSA Comments, Section IIC: Cultural Resources	CUL	Rebecca Apple
123	5/1/2009	Landform Structure and Archaeological Sensitivity in the Beacon Solar Energy Project Area	CUL	Craig Young, Far Western
132	5/1/2009	PSA Comments, Cultural Resources	CUL	Rebecca Apple
133	5/1/2009	PSA Comments, Attachment CUL-1: Comments and Amendments to Cultural Resources Conclusions	CUL	Rebecca Apple
134	5/1/2009	PSA Comments, Attachment CUL-2: Proposed Cultural Resources Mitigation	CUL	Rebecca Apple
200	6/19/2009	PDR Attachment 4c: Cultural Resources Survey Report for Emergency Access Road	CUL	Rebecca Apple
215	7/20/2009	Response to Request Regarding BSEP Subsurface Investigations	CUL	Rebecca Apple
242		Declaration of D. Craig Young: Cultural	CUL	Craig Young, Far Western
300		Declaration of Rebecca Apple: Cultural Resources	CUL	Rebecca Apple
Geology				
9	3/13/2008	AFC Section 5.5: Geologic Hazards and Resources	GEO	Mike Flack
24	3/13/2008	AFC Appendix B.1: Preliminary Geotechnical Constraints Evaluation	GEO	Bob Anders
25	3/13/2008	AFC Appendix B.2: Preliminary Geotechnical Investigation Report	GEO	Bob Anders
54	4/8/2008	Data Adequacy Supplement, Geological Hazards	GEO	Mike Flack

Ex. No.	Date	Title	Subject	Sponsor
236		Declaration of Bob Anders: Geoarchaeology	GEO	Bob Anders
293		Declaration of Mike Flack: Geology	GEO	Mike Flack
Hazardous Materials				
10	3/13/2008	AFC Section 5.6: Hazardous Materials Handling	HAZMAT	Russ Kingsley
116	4/8/2009	PPSA Comments, Section IID: Hazardous Materials Management	HAZMAT	Russ Kingsley
135	5/1/2009	PSA Comments, Hazardous Materials Management	HAZMAT	Duane McCloud
172	6/19/2009	PDR Section 4.1.4: Hazardous Materials Management	HAZMAT	Russ Kingsley
179	6/19/2009	PDR Section 4.2.3: Hazardous Materials Management	HAZMAT	Jared Foster / Howard Balentine
248		Declaration of Duane McCloud: Hazardous Materials	HAZMAT	Duane McCloud
262		Declaration of Howard Balentine: Hazardous Materials	HAZMAT	Howard Balentine
266		Declaration of Jared Foster: Hazardous Materials	HAZMAT	Jared Foster
303		Declaration of Russ Kingsley: Hazardous Materials	HAZMAT	Russ Kingsley
Hydrology & Hydraulics				
63	7/16/2008	Responses to CEC Data Requests 17 & 43-44	H&H	Jennifer Guigliano/Bob Anders
75	8/18/2008	Supplemental Responses to CEC Data Requests 44 & 45, with Attachments DR-44 and DR-45	H&H	Jennifer Guigliano / Bob Anders
82	10/13/2008	Responses to CEC Data Requests 93-95	H&H	Bob Anders
150	5/13/2009	Materials from CLOMR Meeting	H&H	Jennifer Guigliano
152	6/1/2009	Rerouted Wash Electronic Support Files	H&H	Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu
156	6/19/2009	PDR Section 2.1.1: Diversion Channel Redesign	H&H	Jennifer Guigliano/Serkan Mahmutoglu
194	6/19/2009	PDR Attach. 1a, Draft Memorandum for Hydrologic & Hydraulic Analysis of Rerouted Channel for Beacon Solar Energy, June 2009	H&H	Gerard Dalziel
210	6/29/2009	Email from J. Guigliano re rerouted wash electronic support files (MIKE21?)	H&H	Jennifer Guigliano

Ex. No.	Date	Title	Subject	Sponsor
217	7/20/2009	Response to Rerouted Wash Information Request	H&H	Jennifer Guigliano
218	7/26/2009	Emails from Jenn re FLO2D Models, Models on CD	H&H	Jennifer Guigliano/Serkan Mahmutoglu
237		Declaration of Bob Anders: Hydrology & Hydraulics	H&H	Bob Anders
257		Declaration of Gerard Dalziel: Hydology & Hydraulics	H&H	Gerard Dalziel
273		Declaration of Jennifer Guigliano: Hydrology & Hydraulics	H&H	Jennifer Guigliano
318		Declaration of Serkan Mahmutoglu: Hydrology & Hydraulics	H&H	Serkan Mahmutoglu
321	11/09	60% Hydrologic and Hydraulic Analysis of Rerouted Channel	H&H	Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu
Land Use				
11	3/13/2008	AFC Section 5.7: Land Use	LU	Jerry McLees
46	3/13/2008	AFC Appendix K.4: Kern County Agencies Correspondence	LU	Jerry McLees
47	3/13/2008	AFC Appendix K.5: Department of Defense Correspondence	LU	Kenny Stein
55	4/8/2008	Data Adequacy Supplement, Land Use	LU	Jerry McLees
57	5/1/2008	Correspondence with Kern County Planning Department	LU	Kenny Stein/Jerry McLees
111	3/4/2009	Boundary Survey Sheets	LU	Jerry McLees
122	4/21/2009	Kern County resolutions approving LU applications	LU	Jerry McLees
136	5/1/2009	PSA Comments, Land Use	LU	Duane McCloud
213	7/17/2009	Application for Lot Line Adjustment	LU	Jerry McLees
223	8/24/2009	Response to Letter From John Musick	LU	Scott Busa
249		Declaration of Duane McCloud: Land Use	LU	Duane McCloud
275		Declaration of Jerry McLees: Land Use	LU	Jerry McLees
283		Declaration of Kenneth Stein: Land Use	LU	Kenny Stein
312		Declaration of Scott Busa: Land Use	LU	Scott Busa
Noise				
12	3/13/2008	AFC Section 5.8: Noise	NOISE	Duane McCloud
117	4/8/2009	PPSA Comments, Section IIE: Noise and Vibration	NOISE	Duane McCloud
137	5/1/2009	PSA Comments, Noise	NOISE	Duane McCloud
250		Declaration of Duane McCloud: Noise	NOISE	Duane McCloud

Ex. No.	Date	Title	Subject	Sponsor
Paleontology				
13	3/13/2008	AFC Section 5.9: Paleontological Resources	PALEO	Cara Corsetti, SWCA
39	3/13/2008	AFC Appendix H: Paleontological Resources Technical Report	PALEO	Cara Corsetti, SWCA
148	5/1/2009	PSA Comments, Geology and Paleontology	PALEO	Kenny Stein
201	6/19/2009	PDR Attachment 4d: Paleontological Resources Survey Report for Emergency Access Road	PALEO	Cara Corsetti, SWCA
241		Declaration of Cara Corsetti: Paleo	PALEO	Cara Corsetti, SWCA
284		Declaration of Kenneth Stein: Paleontology	PALEO	Kenny Stein
Public Health				
14	3/13/2008	AFC Section 5.10: Public Health	PH	Greg Wolffe
138	5/1/2009	PSA Comments, Public Health	PH	Sara Head
139	5/1/2009	PSA Comments, Attachment Public Health-1: Health Risk Assessment	PH	Sara Head
177	6/19/2009	PDR Section 4.2.1.2: Public Health Analysis for Propane	PH	Sara Head
260		Declaration of Greg Wolffe: Public Health	PH	Greg Wolffe
307		Declaration of Sara Head: Public Health	PH	Sara Head
Socioeconomics				
15	3/13/2008	AFC Section 5.11: Socioeconomics	SOCIO	Addie Olazabal
56	4/8/2008	Data Adequacy Supplement, Socioeconomics	SOCIO	Addie Olazabal
65	7/16/2008	Responses to CEC Data Requests 36-42	SOCIO	Addie Olazabal
81	10/13/2008	Responses to CEC Data Requests 81-92	SOCIO	Addie Olazabal
234		Declaration of Addie Olazabal: Socioeconomics	SOCIO	Addie Olazabal
Soils				
16	3/13/2008	AFC Section 5.12: Soils	SOILS	Mike Flack
49	3/13/2008	AFC Appendix L: Drainage Plans	SOILS	Bob Anders
66	7/16/2008	Responses to CEC Data Requests 45-49, with Attachment DR-47	SOILS	Duane McCloud
238		Declaration of Bob Anders: Soils	SOILS	Bob Anders
251		Declaration of Duane McCloud: Soils	SOILS	Duane McCloud
294		Declaration of Mike Flack: Soils	SOILS	Mike Flack
Traffic & Transportation				
17	3/13/2008	AFC Section 5.13: Traffic and Transportation	TRAFF	John Wilson, Wilson Eng.
118	4/8/2009	PPSA Comments, Section IIF: Traffic and Transportation	TRAFF	Duane McCloud
143	5/1/2009	PSA Comments, Traffic and Transportation	TRAFF	Duane McCloud
173	6/19/2009	PDR Section 4.1.6: Traffic and Transportation	TRAFF	Duane McCloud
180	6/19/2009	PDR Section 4.2.4: Traffic and Transportation	TRAFF	Jared Foster

Ex. No.	Date	Title	Subject	Sponsor
252		Declaration of Duane McCloud: Traffic & Transportation	TRAFF	Duane McCloud
267		Declaration of Jared Foster: Traffic & Transportation	TRAFF	Jared Foster
278		Declaration of John Wilson: Traffic & Transportation	TRAFF	John Wilson, Wilson Eng.
Transmission Line Safety & Engineering				
18	3/13/2008	AFC Section 5.14: Transmission Line Safety & Nuisance	T-LINE	Duane McCloud/Steve Richards
44	3/13/2008	AFC Appendix K.2: Los Angeles Department of Water & Power Correspondence	T-LINE	Scott Busa
67	7/16/2008	Responses to CEC Data Requests 50-53	T-LINE	Duane McCloud/Steve Richards
76	9/2/2008	Supplemental Responses to CEC Data Requests 50-53, with Attachment DR-50 (SIS)	T-LINE	Duane McCloud/Steve Richards
192	6/19/2009	PDR Figure 6: Revised Key One Line Diagram	T-LINE	Duane McCloud/Steve Richards
255		Declaration of Duane McCloud: Transmission Line	T-LINE	Duane McCloud
313		Declaration of Scott Busa: Transmission Line	T-LINE	Scott Busa
320		Declaration of Steve Richards: Transmission Line	T-LINE	Steve Richards
Visual Resource				
19	3/13/2008	AFC Section 5.15: Visual Resources	VIS	Merlyn Paulson / Brian Stormwind
105	1/23/2009	Email Correspondence Regarding Visible Plumes	VIS	Brian Stormwind
119	4/8/2009	PPSA Comments, Section IIG: Visual Resources	VIS	Merlyn Paulson
144	5/1/2009	PSA Comments, Visual Resources	VIS	Merlyn Paulson
164	6/19/2009	PDR Section 2.1.10: Visual Impacts Reduction	VIS	Merlyn Paulson
174	6/19/2009	PDR Section 4.1.7: Visual Resources	VIS	Merlyn Paulson
181	6/19/2009	PDR Section 4.2.5: Visual Resources	VIS	Merlyn Paulson
233	9/4/2009	Email From BLM Regarding Visual Impacts	VIS	Kenny Stein
240		Declaration of Brian Stormwind: Visual	VIS	Brian Stormwind
285		Declaration of Kenneth Stein: Visual Resources	VIS	Kenny Stein
290		Declaration of Merlyn Paulson: Visual Resources	VIS	Merlyn Paulson
Waste Management				
20	3/13/2008	AFC Section 5.16: Waste Management	WASTE	Mike Arvidson

Ex. No.	Date	Title	Subject	Sponsor
32	3/13/2008	AFC Appendix D: Therminol VP1 Heat Transfer Fluid MSDS	WASTE	Jared Foster
40	3/13/2008	AFC Appendix I: Phase I Site Assessments	WASTE	Jim Fickerson
48	3/13/2008	AFC Appendix K.6: Department of Toxic Substances Control Correspondence	WASTE	Mike Arvidson
68	7/16/2008	Responses to CEC Data Requests 54-57, with Attachment DR-56 Phase I ESA for Natural Gas Pipeline Route	WASTE	Jim Fickerson
97	12/15/2008	Beacon Waste Stream Quantities - Revised Table 5.16-6	WASTE	Janine Forrest
145	5/1/2009	PSA Comments, Waste Management	WASTE	Duane McCloud
175	6/19/2009	PDR Section 4.1.8: Waste Management	WASTE	Jared Foster/Janine Forrest
182	6/19/2009	PDR Section 4.2.6.1: Waste from Additional HTF Expansion Tanks	WASTE	Russ Kingsley
208	6/19/2009	PDR Attachment 8: Phase I Environmental Site Assessment for Additional Transmission Line Parcel	WASTE	Jim Fickerson
253		Declaration of Duane McCloud: Waste Management	WASTE	Duane McCloud
263		Declaration of Janine Forest: Waste Management	WASTE	Janine Forrest
268		Declaration of Jared Foster: Waste Management	WASTE	Jared Foster
276		Declaration of Jim Fickerson: Waste Management	WASTE	Jim Fickerson
291		Declaration of Mike Arvidson: Waste Management	WASTE	Mike Arvidson
304		Declaration of Russ Kingsley: Waste Management	WASTE	Russ Kingsley
Water				
21	3/13/2008	AFC Section 5.17: Water Resources	WATER	Mike Flack
41	3/13/2008	AFC Appendix J: Water Resources Supporting Documentation	WATER	Mike Flack
42	3/13/2008	AFC Appendix J.3.d: Raw Data and Aquifer Test Analysis (CD only)	WATER	Mike Flack
69	7/16/2008	Responses to CEC Data Requests 58-70	WATER	Mike Flack
70	7/16/2008	Responses to CEC Data Requests, Attachment DR-63	WATER	Mike Flack
83	10/13/2008	Responses to CEC Data Requests 96-127, with Figures and Tables	WATER	Mike Flack
84	10/13/2008	Data Requests 113, Attachment DR-113, MODFLOW files	WATER	Mike Flack

Ex. No.	Date	Title	Subject	Sponsor
86	10/23/2008	Supplemental Responses to CEC Data Requests 101-103, 106-109, 112, 114-115, 117-123, with Tables and Figures	WATER	Mike Flack
94	12/9/2008	Supplemental Workshop Responses to CEC Data Requests 96, 101, 112, 114, 118, & 121, with attachments	WATER	Mike Flack
102	1/16/2009	Email Response to CEC Request Regarding High TDS Water	WATER	Mike Flack
106	1/31/2009	Summary of Conference Call With Lahontan	WATER	Mike Flack
108	2/10/2009	Response to RWQCB Comments on draft ROWD Application	WATER	Mike Flack
109	2/23/2009	Email Response to E. Solorio Regarding Sources of Groundwater Data, With Updated J.4 database	WATER	Mike Flack
120	4/8/2009	PPSA Comments, Section IIIA: Soil and Water Resources	WATER	Mike Flack / Jennifer Guigliano
140	5/1/2009	PSA Comments, Soil and Water	WATER	Mike Flack
141	5/1/2009	PSA Comments, Attachment Soil and Water-1: Draft Water Mitigation and Offset Plan	WATER	Mike Flack/Jennifer Guigliano
142	5/1/2009	PSA Comments, Attachment Soil and Water-2: Revised Table 112W	WATER	Mike Flack
188	6/19/2009	PDR Figure 1: Water Balance With On-Site Groundwater	WATER	Scott Stern/Dan Sampson
202	6/19/2009	PDR Attachment 5: Groundwater Mitigation Plan	WATER	Mike Flack
203	6/19/2009	PDR Attachment 6: Amendment to Report of Waste Discharge	WATER	Mike Flack
216	7/20/2009	Response to Request for Predictive Sensitivity Groundwater Analysis	WATER	Mike Flack
225	9/11/2009	Email Regarding Updated Construction Water Impacts Assessment	WATER	Mike Flack
226	12/2/1997	LADWP's Draft Initial Study/Proposed Negative Declaration SAMDA Water Exploration, Fremont Valley Ranch Water Management Project	WATER	Mike Flack
227	4/1/2009	Stetson Groundwater Report (CA City)	WATER	Mike Flack
231	7/2/2009	DWR Well Data	WATER	Mike Flack
243		Declaration of Dan Sampson: Water	WATER	Dan Sampson
274		Declaration of Jennifer Guigliano: Water	WATER	Jennifer Guigliano
295		Declaration of Mike Flack: Water (1)	WATER	Mike Flack
296		Declaration of Mike Flack: Water (2)	WATER	Mike Flack
315		Declaration of Scott Stern: Water	WATER	Scott Stern

Ex. No.	Date	Title	Subject	Sponsor
Worker Safety				
22	3/13/2008	AFC Section 5.18: Worker Safety	WS	Mike Arvidson
146	5/1/2009	PSA Comments, Worker Safety and Fire Protection	WS	Duane McCloud
183	6/19/2009	PDR Section 4.2.7: Other Environmental Topic Areas	WS	Mike Arvidson
228	5/1/2009	PSA Comments, Attachment Worker Safety-1: Letter From Kern County Fire Dept.	WS	Jared Foster
254		Declaration of Duane McCloud: Worker Safety	WS	Duane McCloud
269		Declaration of Jared Foster: Worker Safety	WS	Jared Foster
292		Declaration of Mike Arvidson: Worker Safety	WS	Mike Arvidson
Facility Design and Engineering				
26	3/13/2008	AFC Appendix C.1: Civil Engineering Design Criteria	FD	Bob Anders
27	3/13/2008	AFC Appendix C.2: Mechanical Engineering Design Criteria	FD	Jared Foster
28	3/13/2008	AFC Appendix C.3: Control Engineering Design Criteria	FD	Jared Foster
29	3/13/2008	AFC Appendix C.4: Geologic and Foundation Design Criteria	FD	Bob Anders
30	3/13/2008	AFC Appendix C.5: Structural Engineering Design Criteria	FD	Bob Anders
31	3/13/2008	AFC Appendix C.6: Electrical Engineering Design Criteria	FD	Steve Richards
95	12/12/2008	Email from Kenny to Eric on Auxiliary Loads	FD	Kenny Stein
98	12/22/2008	Email from K. Stein Regarding Cut/Fill For Evaporation Ponds	FD	Kenny Stein
101	1/13/2009	Email from K. Stein Regarding Control Temperature for HTF Freeze Pro	FD	Kenny Stein
147	5/1/2009	PSA Comments, Engineering Assessment	FD	Duane McCloud
149	5/1/2009	PSA Comments, General Conditions	FD	Duane McCloud
154	6/19/2009	PDR, Section 1.0: Intro & Section 5.0: Conclusions	FD	Kenny Stein
155	6/19/2009	PDR, Section 2.1: Staff Suggested Changes	FD	Kenny Stein
157	6/19/2009	PDR Section 2.1.2: Water Treatment & Discharge Facilities	FD	Scott Stern/Dan Sampson
158	6/19/2009	PDR Section 2.1.3: Stormwater Retention and Erosion Control	FD	Bob Anders
159	6/19/2009	PDR Section 2.1.5: SCE Distribution Lines	FD	Scott Busa
160	6/19/2009	PDR Section 2.1.6: Land Treatment Unit	FD	Janine Forrest
161	6/19/2009	PDR Section 2.1.7: Site Layout Adjustments	FD	Jared Foster
162	6/19/2009	PDR Section 2.1.8: Telecommunications System	FD	Scott Busa

Ex. No.	Date	Title	Subject	Sponsor
165	6/19/2009	PDR Section 2.2: Beacon Proposed Project Refinements	FD	Duane McCloud
190	6/19/2009	PDR Figure 3: Revised Site Layout	FD	Jared Foster
191	6/19/2009	PDR Figure 5: Revised Power Block Equipment Layout (with Propane)	FD	Jared Foster
196	6/19/2009	PDR Attachment 2: Evaporation Pond Calculations	FD	Jared Foster/Janine Forrest
197	6/19/2009	PDR Attachment 3: Storm Water Management-Conceptual Retention and Grading Study	FD	Bob Anders
239		Declaration of Bob Anders: Facility Design	FD	Bob Anders
244		Declaration of Dan Sampson: Facility Design	FD	Dan Sampson
256		Declaration of Duane McCloud: Facility Design	FD	Duane McCloud
264		Declaration of Janine Forest: Facility Design	FD	Janine Forrest
270		Declaration of Jared Foster: Facility Design	FD	Jared Foster
286		Declaration of Kenneth Stein: Facility Design	FD	Kenny Stein
311		Declaration of Scott Busa: Facility Design	FD	Scott Busa
316		Declaration of Scott Stern: Facility Design	FD	Scott Stern
319		Declaration of Steve Richards: Facility Design	FD	Steve Richards
Alternatives				
4	3/13/2008	AFC Section 4.0: Alternatives	ALTS	Kenny Stein
43	3/13/2008	AFC Appendix K.1: Water Agencies Correspondence	ALTS	Jared Foster
89	11/24/2008	Email from Kenny to Eric on Alternative Layouts	ALTS	Kenny Stein
100	1/13/2009	Beacon Dry Cooling Evaluation	ALTS	Jared Foster/Gary Pratt
121	4/8/2009	PPSA Comments, Section IIIB: Alternatives	ALTS	Kenny Stein
127	5/1/2009	PSA Comments, Alternatives	ALTS	Kenny Stein
153	6/3/2009	Comments on CEC Groundwater Sampling Program	ALTS	Mike Flack
166	6/19/2009	PDR Section 3.1: Koehn Lake Alternative	ALTS	Mike Flack
167	6/19/2009	PDR Section 3.1.1: Water Treatment Facilities for Configuration 2	ALTS	Scott Stern/Dan Sampson
168	6/19/2009	PDR Section 3.1.2: Evaporation Pond Size for Configuration 2	ALTS	Janine Forrest
169	6/19/2009	PDR Section 3.2: Rosamond Waste Water Alternative	ALTS	Scott Busa
184	6/19/2009	PDR Section 4.3.1: Air Quality	ALTS	Sara Head
185	6/19/2009	PDR Section 4.3.5: Soil and Water Resources	ALTS	Mike Flack
186	6/19/2009	PDR Section 4.3.6: Traffic and Transportation	ALTS	Jared Foster

Ex. No.	Date	Title	Subject	Sponsor
187	6/19/2009	PDR Section 4.3.7: Waste Management	ALTS	Jared Foster/Janine Forrest
189	6/19/2009	PDR Figure 2: Water Balance With High TDS Water	ALTS	Scott Stern/Dan Sampson
193	6/19/2009	PDR Figure 7: Water Supply Wells Located in the Koehn Sub-Basin	ALTS	Mike Flack
221	8/11/2009	Email to CEC Regarding Results of Offsite Well Sampling	ALTS	Mike Flack
222	8/18/2009	Email to CEC With Resubmittal of Revised Metals Results for Offsite Sampling	ALTS	Mike Flack
224	8/30/2009	Arciero Well Data (from J. Musick)	ALTS	Mike Flack
229	6/21/2009	CEC Well Canvas	ALTS	Mike Flack
230	7/1/2009	CEC Well Canvas Photos	ALTS	Mike Flack
245		Declaration of Dan Sampson: Alternatives	ALTS	Dan Sampson
258		Declaration of Gary Pratt: Alternatives	ALTS	Gary Pratt
265		Declaration of Janine Forest: Alternatives	ALTS	Janine Forrest
271		Declaration of Jared Foster: Alternatives	ALTS	Jared Foster
287		Declaration of Kenneth Stein: Alternatives	ALTS	Kenny Stein
297		Declaration of Mike Flack: Alternatives (1)	ALTS	Mike Flack
298		Declaration of Mike Flack: Alternatives (2)	ALTS	Mike Flack
308		Declaration of Sara Head: Alternatives	ALTS	Sara Head
314		Declaration of Scott Busa: Alternatives	ALTS	Scott Busa
317		Declaration of Scott Stern: Alternatives	ALTS	Scott Stern

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 12/15/09)

APPLICANT	**COUNSEL FOR APPLICANT**	**ENERGY COMMISSION**
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Declaration of Service

I, Lois Navarrot, declare that on December 21, 2009, I served and filed copies of Amended Applicant's Subject Matter Exhibit List (12/18/09) with the Docket Unit and the proof of service list located on the web page for this project at: www.energy.ca.gov/sitingcases/beacon. The document has been sent to the above parties in this proceeding and to the Commission's Docket Unit, in the following manner:

Applicant NextEra Energy – 2 CDs
Applicant Consultant AECOM Environment – 1 CD
Applicant Consultant Worley Parsons – 1 CD
California Independent System Operator – 1 CD
Intervenor CURE – 1 hard copy and 1 CD
Karen Douglas, Commissioner – 1 CD
Jeffrey D. Byron, Commissioner – 1 CD
Kenneth Celli, Hearing Officer – 2 hard copies
Eric Solorio, Project Manager – 1 hard copy and 1 CD
Jared Babula, Staff Counsel – 1 CD
Public Advisor's Office – 1 CD
Casey Weaver, CEC Staff – 1 CD
Vince Geronimo, Consultant, c/o CEC Staff – 1 CD
Dockets – 1 hard copy and 2 CDs

For Service to All Other Parties

_____ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service List.

For Filing with the Energy Commission

__X__ sending a hard copy and DVD via personal delivery to the address below;

OR

____ depositing in the mail an original and 12 paper copies as follow:

California Energy Commission
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

_____

Lois Navarrot

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 12/15/09)

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I, Lois Navarrot, declare that on December 21, 2009, I served and filed copies of **Exhibit 321, 60 Percent Design Drawings and Supporting Hydrologic and Hydraulic Analysis** with the Docket Unit and the proof of service list located on the web page for this project at: www.energy.ca.gov/sitingcases/beacon. The document has been sent to the above parties in this proceeding and to the Commission's Docket Unit, in the following manner:

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Lois Navarrot