

**Approval Blocks****Design Engineer's Statement:**

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

\_\_\_\_\_  
Rob Hansen, P.E. #50417\_\_\_\_\_  
Date**EPC Contractor/Developer's Statement:**

I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan.

\_\_\_\_\_  
Brian Vickers, authorized person  
JSI Construction Group, LLC  
1710 29<sup>th</sup> Street, Suite 1068  
Boulder, CO 80301\_\_\_\_\_  
Date**El Paso County:**

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

\_\_\_\_\_  
Jennifer Irvine, P.E.  
County Engineer / ECM Administrator\_\_\_\_\_  
Date

Conditions:

Change to Joshua Palmer

Name updated

## **I. GENERAL LOCATION AND DESCRIPTION**

### **A. Site Location**

The following final drainage report details the hydrologic assessment conducted for the proposed Pike Solar Project (the “Project”). The Project will be a 175 megawatt (MW) photovoltaic solar facility and up to 75 MW battery energy storage system consisting of photovoltaic modules aligned in arrays Wording removed single-axis tracking system. Although the property boundary area encompasses a total of 4,050 acres in El Paso County, Colorado, the Project will only be constructed on approximately 1,240 acres of the property.

As shown on the Vicinity and Effective FIRM Panel Map in Appendix A, the property lies just to the southeast of the City of Fountain and is bound by Squirrel Creek Road to the north, Hammer Road to the east, Hanover Road to the south, and Old Pueblo Road to the west (the “Site”). Specifically, the proposed Site is located in Sections 1, 11, 12, 13, 14 23, 24, 25, 26, 35, and 36, Township 16 South, Range 65 West of the 6<sup>th</sup> Principal Meridian and Sections 6, 7, 18, 30, and 31, Township 16 South, Range 64 West of the 6<sup>th</sup> Principal Meridian, El Paso County, Colorado.

### **B. Description of Property**

Currently the Site is undeveloped with shortgrass prairies and rangelands covering the landscape. For this reason, the site has been primarily utilized for cattle grazing to date. Williams Creek and its tributaries weave in and out of the project boundary before exiting and flowing approximately 6 miles before ultimately reaching its confluence with Fountain Creek. Since the site is situated towards the central portion of the Williams Creek drainage basin, the natural slopes range from flat to 8.35 percent to include numerous ridges as well and more gently sloping overland flow paths. The soils within the site vary throughout and include Ascalon Sandy Loam, Blendon Sandy Loam, Heldt Clay Loam, Midway Clay Loam, Nelson-Tassel Fine Sandy Loam, Olney Sandy Loam, Razor-Midway Compel, Ustic Torrifluvents, Wilid Silt Loam, Wiley Silt Loam, Fort Loam, Fort Sandy Loam, and Manzanola Silty Clay Loam. These soil types encompass hydrologic soil groups (HSGs) B, C, and D. Additional detail regarding the on-site soils can be found in the USDA Web Soil Survey report included in Appendix B.

All mapped drainageways within the Project site are currently mapped as Zone A, indicating an area of 1% annual flood hazard without determined base flood elevations (BFEs), as shown on the Vicinity and Effective FIRM Panel Map in Appendix A.

## **II. DRAINAGE BASINS AND SUBBASINS**

### **A. Major Drainage Basins**

The Site is situated near the center of the Williams Creek sub-watershed, and due to the configuration of the project, most of the on-site runoff enters Williams Creek before ultimately exiting the property. Still, the Site represents only a small portion of the total drainage area of Williams Creek, with the total contributing area for runoff being approximately eight times greater than the property boundary area.

The Site falls within five (5) FEMA Flood Insurance Rate Map (FIRM) panels: 08041C0967G, 08041C0970G, 08041C1000G, 08041C1160G, and 08041C1180G. All of Williams Creek and its major tributary that fall within the project site are mapped as Zone A, while the remaining minor tributaries and the remainder of the site are mapped as Zone X floodplain, indicating an area of minimal flood hazard. The effective flood hazard areas are shown on the Vicinity and FIRM Panel Map included in Appendix A.

**Subbasin C7.5**

Subbasin C7.5 is situated in the southern portion of the Site just south of Subbasin C7.3 and includes a small portion of Array Area #7. This subbasin will include a solar panel array and gravel access roads. All runoff from this subbasin flows south through Subbasin C7.7 via one of the unnamed tributaries before ultimately reaching Williams Creek.

**Subbasin C7.6**

Subbasin C7.6 is situated in the southern portion of the Site just east of Subbasin C7.4. This subbasin will include only gravel access roads. All runoff from this subbasin flows south through Subbasin C7.7 to Williams Creek.

**Subbasin C7.7**

Subbasin C7.7 is situated in the southern portion of the Site just south of Subbasins C7.4 and C7.5 and includes the majority of Array Area #7. This subbasin will include a solar panel array, inverters, staging areas, and gravel access roads. The majority of runoff from this subbasin will flow to the south through one of the unnamed tributaries before ultimately reaching Williams Creek. A small portion of runoff from this subbasin flows south directly to Williams Creek. A small portion

**Subbasin C8.0**

Subbasin C8.0 is situated in the central portion of the Site just south of Subbasin C6.0 and includes the majority of Array Area #5. This subbasin will include a solar panel array, inverters, staging area, ~~BESS site~~, the substation, and gravel access roads. All runoff from this subbasin flows south through one of the unnamed tributaries before ultimately reaching Williams Creek. BESS wording removed

**Subbasin C8.1**

Subbasin C8.1 is situated in the southern portion of the Site just south of Subbasin C8.0 and includes the western edge of Array Area #7. This subbasin will include solar panel arrays and gravel access roads. All runoff from this subbasin flows south to one of the unnamed tributaries before ultimately reaching Williams Creek.

**Subbasin D1.0**

Subbasin D1.0 is located in the southern portion of the Site at the northern end of Array Area #8. This subbasin will include a solar panel array, inverters, and gravel access roads. All runoff from this subbasin flows west to Subbasin O5.0 where it enters one of the unnamed tributaries before ultimately reaching Williams Creek.

**Subbasin D2.0**

Subbasin D2.0 is located in the southern portion of the Site near the northern end of Array Area #8 just south of Subbasin D1.0. This subbasin will include a solar panel array, inverters, and gravel access roads. All runoff from this subbasin flows west to Subbasin O5.0 where it enters one of the unnamed tributaries before ultimately reaching Williams Creek.

**Subbasin D3.0**

Subbasin D3.0 is located in the southern portion of the Site in the central section of Array Area #8 just south of Subbasin D2.0. This subbasin will include a solar panel array, inverters, and gravel access roads. All runoff from this subbasin flows to the west directly to Williams Creek.

**Subbasin D4.0**

Subbasin D4.0 is located in the southern portion of the Site in the central section of Array Area #8 just south of Subbasin D3.0. This subbasin will include a solar panel array, inverters, and

## Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018)

Sheet 1 of 1

**Designer:** Rob Hansen  
**Company:** CORE Consultants  
**Date:** July 17, 2022  
**Project:** Pike Solar  
**Location:** El Paso County

### SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth = 0.60 inches  
 Depth of Average Runoff Producing Storm,  $d_6$  = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM)

4819 shown on figure

Area Type	UIA:RPA	UIA:RPA	UIA:RPA	UIA:RPA	UIA:RPA			
Area ID	Typ.	O&M	Substation 1	Substation 2	Substation 3			
Downstream Design Point ID	Typ.	O&M	SUB	SUB	SUB			
Downstream BMP Type	None	None	None	None	None			
DCIA (ft <sup>2</sup> )	--	--	--	--	--			
UIA (ft <sup>2</sup> )	2,000	4,338	42,000	9,318	2,202			
RPA (ft <sup>2</sup> )	1,800	4,329	32,809	8,173	3,470			
SPA (ft <sup>2</sup> )	--	--	--	--	--			
HSG A (%)	0%	0%	0%	0%	0%			
HSG B (%)	0%	0%	0%	0%	0%			
HSG C/D (%)	100%	100%	100%	100%	100%			
Average Slope of RPA (ft/ft)	0.050	0.050	0.030	0.040	0.040			
UIA:RPA Interface Width (ft)	100.00	144.00	298.26	326.90	138.80			

### CALCULATED RUNOFF RESULTS

Area ID	Typ.	O&M	Substation 1	Substation 2	Substation 3			
UIA:RPA Area (ft <sup>2</sup> )	3,800	8,667	74,809	17,491	5,672			
L / W Ratio	0.38	0.42	0.84	0.16	0.29			
UIA / Area	0.5263	0.5005	0.5614	0.5327	0.3882			
Runoff (in)	0.00	0.00	0.00	0.00	0.00			
Runoff (ft <sup>3</sup> )	0	0	0	0	0			
Runoff Reduction (ft <sup>3</sup> )	83	181	1750	388	92			

### CALCULATED WQCV RESULTS

Area ID	Typ.	O&M	Substation 1	Substation 2	Substation 3			
WQCV (ft <sup>3</sup> )	83	181	1750	388	92			
WQCV Reduction (ft <sup>3</sup> )	83	181	1750	388	92			
WQCV Reduction (%)	100%	100%	100%	100%	100%			
Untreated WQCV (ft <sup>3</sup> )	0	0	0	0	0			

### CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

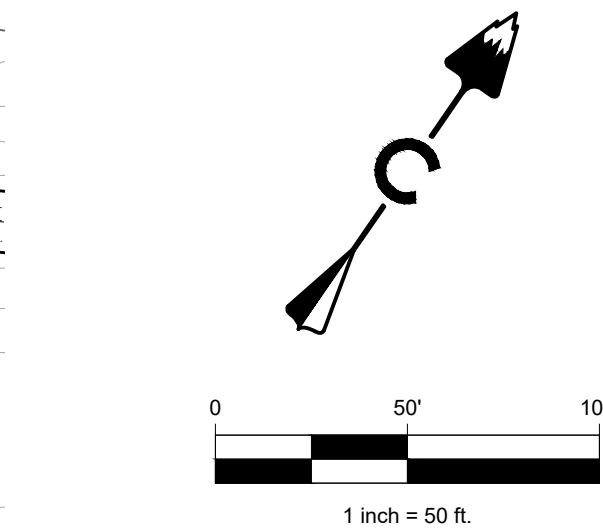
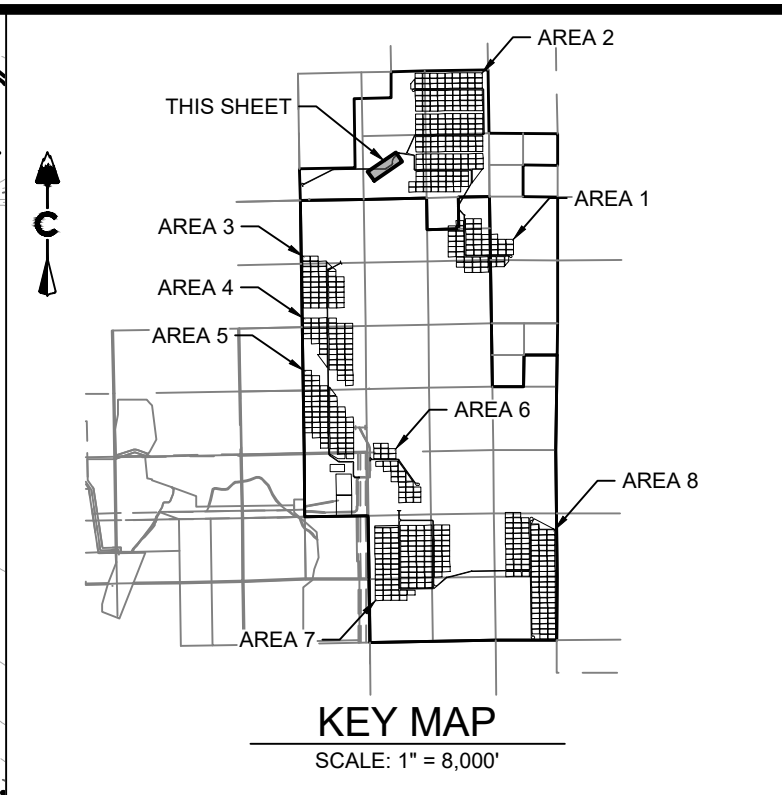
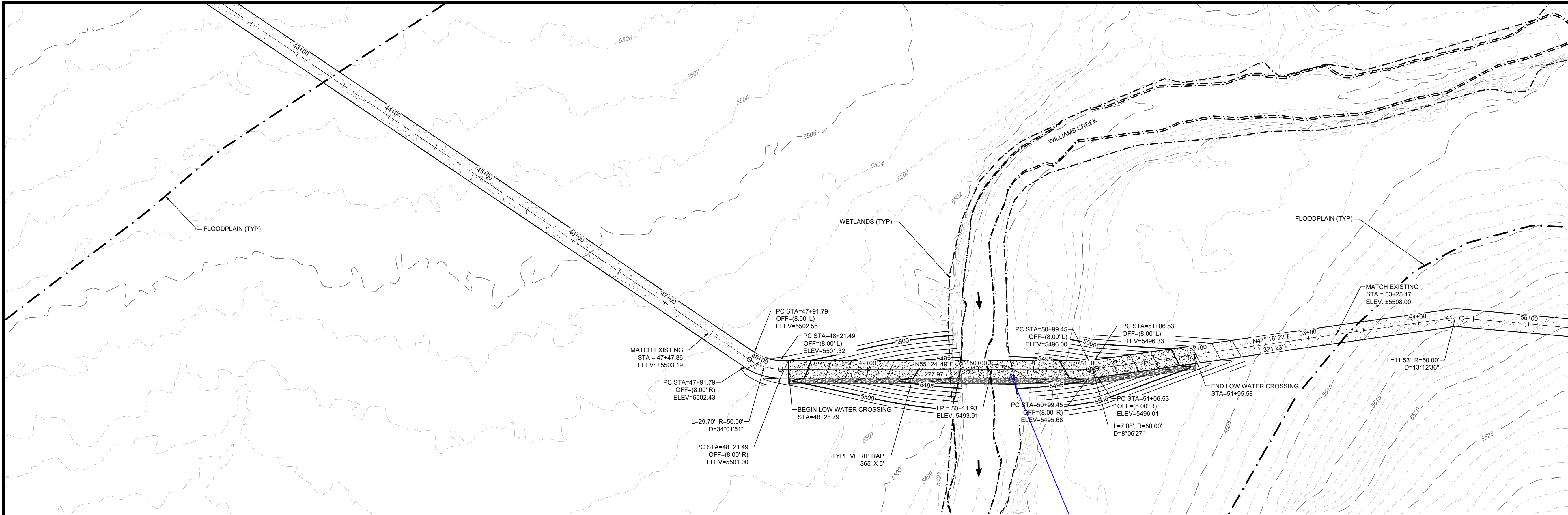
Downstream Design Point ID	Typ.	O&M	SUB					
DCIA (ft <sup>2</sup> )	0	0	0					
UIA (ft <sup>2</sup> )	2,000	4,338	53,520					
RPA (ft <sup>2</sup> )	1,800	4,329	44,451					
SPA (ft <sup>2</sup> )	0	0	0					
Total Area (ft <sup>2</sup> )	3,800	8,667	97,971					
Total Impervious Area (ft <sup>2</sup> )	2,000	4,338	53,520					
WQCV (ft <sup>3</sup> )	83	181	2,230					
WQCV Reduction (ft <sup>3</sup> )	83	181	2,230					
WQCV Reduction (%)	100%	100%	100%					
Untreated WQCV (ft <sup>3</sup> )	0	0	0					

### CALCULATED SITE RESULTS (sums results from all columns in worksheet)

Total Area (ft <sup>2</sup> )	110,438
Total Impervious Area (ft <sup>2</sup> )	59,858
WQCV (ft <sup>3</sup> )	2,494
WQCV Reduction (ft <sup>3</sup> )	2,494
WQCV Reduction (%)	100%
Untreated WQCV (ft <sup>3</sup> )	0

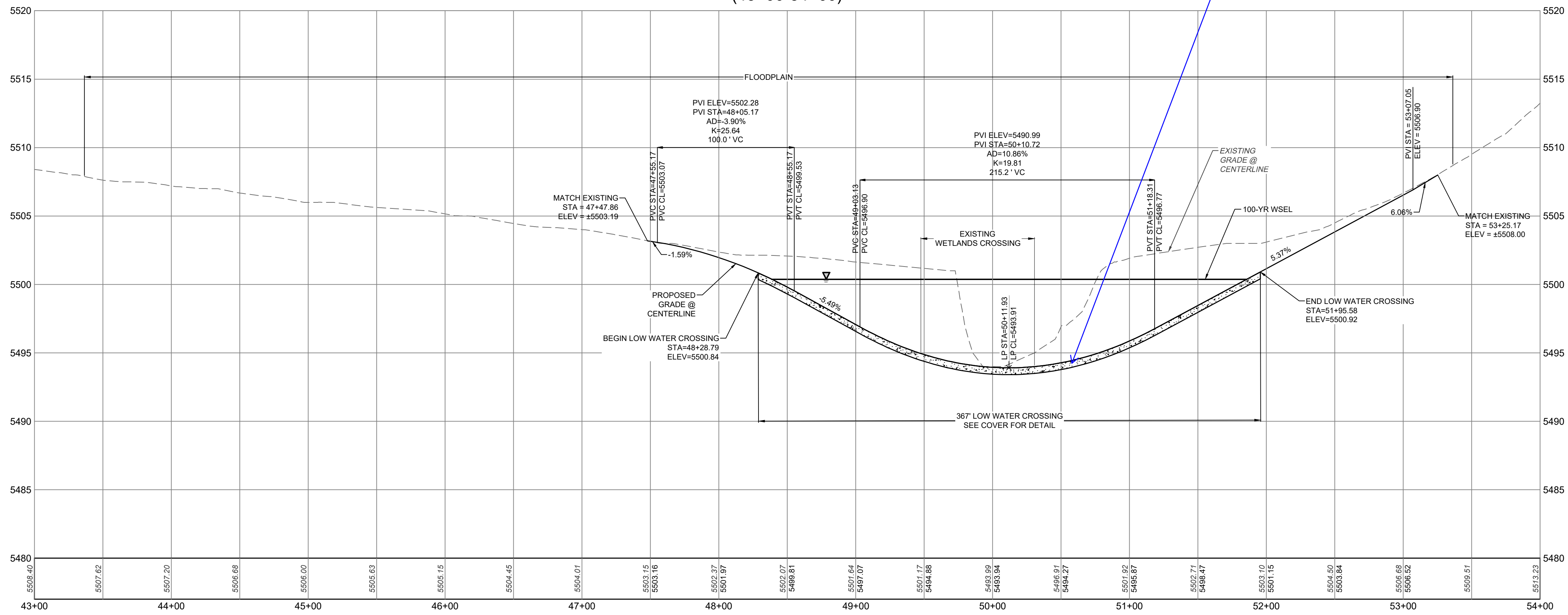


7/10/2022 2:08 PM X:\20-104 PIKE SOLAR\CIVIL\CADD\PLANS\FILING 1\CD\SFLOOD PLAN CROSSINGS.DWG



LEGEND	
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROJECT BOUNDARY
	CENTERLINE
	PROPOSED SOLAR TRACKER
	PROPOSED INVERTER
	PROPOSED FENCE
	EXISTING FENCE
	POWER POLES
	GUY WIRE
	WATER VALVES
	FIRE HYDRANTS
	EXISTING STORM MANHOLES
	EXISTING STORM & STUB OUT
	FLOODPLAIN
	JURISDICTIONAL WATER FEATURES
	WILLIAMS CREEK RES. EXPANSION
	EXISTING STORM
	EXISTING WATER
	EXISTING ELECTRIC
	EXISTING TELEPHONE
	EXISTING FIBER OPTIC
	EXISTING GAS
	EXISTING OVER HEAD ELECTRIC

## FLOODPLAIN CROSSING #1 (43+00-54+00)



Label proposed material or provide cover sheet or detail on this sheet

Detail added to floodplain crossing sheets

Know what's below.  
Call before you dig.



#	REVISION DESCRIPTION	DATE	BY
1	1ST SUBMITTAL	02/15/21	DB
2	BID SET	04/07/21	DB
3	SIGNATURE SET	02/04/22	RH
4	REVISED SIGNATURE SET	07/15/22	RH

PIKE SOLAR  
EL PASO COUNTY, COLORADO  
CONSTRUCTION DOCUMENTS  
FLOOD PLAN CROSSINGS #1 P&P

NOT FOR CONSTRUCTION

DESIGNED BY: BB  
DRAWN BY: TP  
CHECKED BY: DB

JOB NO.  
20-194  
SHEET  
50 OF 67

CORE CONSULTANTS, INC.  
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LAND DEVELOPMENT  
ENERGY  
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