

Benthic Macroinvertebrate Study
SUMMARY

Consistent with Section 6.0 of the *benthic Macroinvertebrate Study Plan* (Plan) that was filed with FERC on January 9, 2017,¹ the SSWD provides the following summary for the *benthic Macroinvertebrate Study* (Study). The summary includes a description of work completed to date, key findings, variances, and remaining work. Links to associated data files are also included. The SSWD considers these data to be public.

Work Completed as of 6/1/18:

SSWD completed all four steps of the Study; step 1 (select sampling sites) and step 2 (collect SWAMP data), step 3 (analyze SWAMP data) and step 4 (QA/QC SWAMP data). SSWD selected two sampling locations; one upstream of the Pleasant Grove Bridge (and Dry Creek) and one downstream of the Highway 70 Bridge (downstream of Dry Creek). Data at each location was collected using the California State Water Resources Control Board’s Surface Water Ambient Monitoring Program (SWAMP) Protocol (Ode et. Al. 2016²). Step 3 (analyze SWAMP data) and step 4 (QA/QC SWAMP data) were completed by HDR (habitat) and EcoAnalysts (BMI identification and CSCI calculation). SSWD transcribed and summarized all physical habitat data collected during sampling and QA/QCed those results. EcoAnalysts is a qualified taxonomy laboratory according to the requirements outlined in the SWAMP protocol and worked with the Moss Landing Laboratory for CSCI calculations.

Key Findings:

Physical habitat data and benthic macroinvertebrates were collected at two locations in the Bear River. A summary of the site characteristics are provided in Table 1 and a summary of some of the BMI results are provided in Table 2. The CSCI score for the site upstream of Pleasant Grover Bridge was 0.47, indicating a “very likely altered” site and the score for the site downstream of Highway 70 Bridge was 0.70, indicating a “likely altered” site.

Table 1. Site characteristics.

Category	Metric	Bear River Upstream of Pleasant Grove	Bear River Downstream of Highway 70
Water Quality	Water Temperature (°C)	25.4	25.9
	Dissolved Oxygen (mg/L)	8.6	10.1
	Specific Conductivity (µS)	89	155.7
	pH	7.6	7.78
Site Characteristics	Reach Length (m)	250	150
	Flow (cfs)	15.2	36.4
	Habitat Composition (% of Site)		

¹ The Plan is available on SSWD’s public relicensing website (www.sswdrelicensing.com) under ‘Study Plans.’

² Ode, P.R., A.E., Fetscher, and L.B. Busse. 2016. Standard Operating Procedures for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat. California State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) Bioassessment SOP 004

	Pool	66	35
	Glide	12	0
	Riffle	19	40
	Run	4	25
	Dominant Thalweg Substrate Composition (% of site)		
	Bedrock	0	0
	Boulder	0	0
	Cobble	10	0
	Gravel, Course	71	35
	Gravel, Fine	15	20
	Sand	0	20
	Fines	0	24
Transect Characteristics	Average Sample Plot Depth (cm)	52.5	63.2
	Average Wetted Width (m)	13.5	9.7
	Average Bankful Width (m)	34	16.1
	Average Bankful Height (m)	1.7	1.2
	Riparian Canopy Cover (%)	23	70

Table 2. BMI Summary Statistics.

Metric	Bear River Upstream of Pleasant Grove	Bear River Downstream of Highway 70
MMI_Score	0.49	0.69
Clinger_PercentTaxa	33%	42%
Clinger_PercentTaxa_predicted	54%	50%
Coleoptera_PercentTaxa	7%	13%
Coleoptera_PercentTaxa_predicted	13%	13%
Taxonomic_Richness	13.55	23.05
Taxonomic_Richness_predicted	34.05	33.71
EPT_PercentTaxa	34%	32%
EPT_PercentTaxa_predicted	43%	44%
Shredder_Taxa	0	0
Shredder_Taxa_predicted	1.8	1.8
Intolerant_Percent	0%	0%
Intolerant_Percent_predicted	15%	15%

Associated Data Files:

The three data files listed below in Table 3 are available on SSWD’s public relicensing website (www.sswdrelicensing.com).

Table 3. Data files associated with Study summary.

File Name	Data Description	File Type and Size
CFW_BMI_Water Quality and Physical Habitat	Water quality and physical habitat data collected at two locations using SWAMP methods.	Excel; 122 KB
CFW_BMI_SWAMP_Taxonomic Results	Taxonomic results of SWAMP samples at two locations. Identification and data package by EcoAnalysts	Excel; 266 KB
CFW_BMI_CSCI_Output	Nine files representing the output of CSCI calculation for two BMI sampling sites.	Excel, 26 KB

Variations from Study:

None.

Remaining Work:

None.