

Instream Flow Study
SUMMARY

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

Work Completed as of 4/1/18:

SSWD completed Step 1 (site selection) and the majority of Step 2 (field data collection). Site selection was completed in August 2017, resulting in a 0.9-mile-long Study site at RM 15 and a 0.75-mile-long Study site at RM 8. This included a visit to each site with interested Relicensing Participants. Study site selection maps for each study site location are provided as attachments to this summary (Figure 1 and Figure 2). Field Data Collection consists of several components. Model topography (channel topography) was fully characterized at both study sites by November 2017. Additional topographic data were collected in February 2018. Processed channel topography was integrated with processed and publically available LiDAR data in March 2018. Preliminary Study site surfaces in two dimensional aerial view are provided as attachments to this summary (Figure 3 and Figure 4). These surfaces are preliminary and require additional QA/QC prior to use in the overall model. Three dimensional views of surface samples of each study site are also provided as attachments to this summary (Figure 5 through Figure 8). The majority of model calibration (hydraulic calibration) data collection was completed by February 2018. Model calibration data were collected at both Study sites at stable flows of approximately 23 cfs and 300 cfs as recorded by the Wheatland gage (USGS 11424000). Additional flows and correlating downstream model boundary conditions at each site were measured at approximately 17 cfs and 827 cfs as recorded by the Wheatland gage. Actual stream discharges measured on site during model calibration data collection efforts are provided in Table 1. An additional stream discharge of approximately 212 cfs and correlating downstream model boundary were measured on site at the upstream Study side during hydrograph transition. Reach-wide level loggers were installed in January 2018 after previously being blown out by high flows in December of 2017.

Table 1. Calibration Discharge Summary Table

Location	Date	Measured Discharge (cfs) ¹	Hydrograph Note	Wheatland Gage (cfs) ²
Upstream Study Site	12/14/2017	674.09	Stable	827
	1/19/2018	17.03	Stable	23
	2/20/2018	15.9	Stable	16.9
	2/21/2018	332.93	Stable	300
	2/21/2018	211.86	Transitioning	--
Downstream Study Site	12/14/2017	734.53	Stable	827
	1/18/2018	15.63	Stable	22.3

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

	2/19/2018	12.94	Stable	17.5
	2/22/2018	319.66	Stable	300

¹ Measured discharges above 200 cfs are an average of three or more individual discharge measurements utilizing an acoustic Doppler current profiler (ADCP). Measured discharges below 200 cfs were measured manually utilizing a recently calibrated Swoffer current velocity meter and USGS top setting wading rod.

² Wheatland gage flows are approximate and showed only minor variation from the values provided on each correlating day.

Key Findings:

There are no key findings to report at this time because the model is in development.

Associated Data Files:

The six data files listed in Table 2 below are available on SSWD’s public relicensing website (www.sswdrelicensing.com).

Table 2. Data files associated with Study summary.

File Name	Data Description	File Type and Size
Figure 1 Draft Final Study Site Selection Map Upstream Study Site	Upstream Study site location and aerial view with study site boundaries and habitat type.	PDF, 832 kB
Figure 2 Draft Final Study Site Selection Map Downstream Study Site	Downstream Study site location and aerial view with study site boundaries and habitat type.	PDF, 785 kB
Figure 3 Upstream Study Site Surface Aerial View	Two dimensional aerial image from AcrGlobe of the partially processed upstream Study site surface.	PDF, 691 kB
Figure 4 Downstream Study Site Surface Aerial View	Two dimensional aerial image from AcrGlobe of the partially processed downstream Study site surface.	PDF, 664 kB
Figure 5 and 6 Upstream Study Site 3D Surface Samples	Two three dimensional images from ArcScene detailing a sample of the partially processed upstream Study site.	PDF, 791 kB
Figure 7 and 8 Downstream Study Site 3D Surface Samples	Two three dimensional images from ArcScene detailing a sample of the partially processed downstream Study site.	PDF, 852 kB

Variances from Study:

There were four Study variances. The first variance was that data collection was not completed by October 2017 as outlined in the Plan due to very high flows in the Bear River during that period. Data collection will be completed as flows allow and will not impact the overall success of the Study.

The second variance was that installation of reach-wide level loggers (for one year) was impacted by high flows in the Bear River during 2017. Loggers have been reinstalled and will be maintained for one-year and removed in January 2019.

The third variance is that model calibration flows are different than the target flows specified in the Plan but are reasonable and valuable for model development. The flows specified in the Plan were identified as targets and both the low and high flow calibrations collected to date were based on the available river conditions. The difference between the target flows and actual flows during the low and high flow calibration efforts will not impact the overall model results. Data at the mid flow calibration target of 75 cfs has not been measured yet because that flow, or one close to it, has not been available. SSWD will continue to monitor river conditions and collect these data as soon as possible.

The fourth variance is that due to the delays in data collection described above, the hydraulic and habitat modeling is also delayed from October 2017 to a new target of June 2018.

Remaining Work:

Study requirements remaining include 1) field data collection of substrate and cover type mapping, riparian mapping, and acquisition of additional model calibration data (mid flow, 75 cfs target) which are anticipated to be completed by April 2018 (depending on flow in the Bear River); 2) target species HSC will be completed by June 2018; 3) hydraulic modeling, aquatic habitat modeling and effective habitat analysis which will be completed by June 2018; 4) model report preparation which will be completed by June 2018; and 5) reach-wide level logger download and maintenance which will extend into January 2019.

SSWD expects the Study to be completed by January 2019.

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