

# **ANNUAL IMPLEMENTATION REPORT (AIR)**

**Prepared by**

**NOAA's National Marine Fisheries Service**

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## **Summary Report for the Shasta River Template Safe Harbor Agreement Implementation in 2022**

Per Section 6.6.4 of the Shasta River Template Safe Harbor Agreement (SHA), each year NOAA's National Marine Fisheries Service (NMFS) will review reports provided by Permittees and the Shasta Watershed Conservation Group (SWCG), and prepare a public Annual Implementation Report (AIR), documenting implementation of the Site Plan Agreements and actions taken toward achievement of Net Conservation Benefit. A summary of the Beneficial Management Activities that were accomplished (by Entity) during, or before, the 2022 reporting period include:

- Montague Conservation Water District (MWCD) - Permit # 23287 installed 6,800 ft. of main canal lining, provided 2,700 acre-feet of water for beneficial in-stream habitat and continued efforts to enter into 1707 for exchange water program with Hidden Valley Ranch (HVR). MWCD also obtained funding for additional lining of main canal.
- Emmerson Investments Inc. (EII) - Permit #s 23286, 23290, 23291 re-plumbed supply lines and created berms to eliminate tailwater impacts. EII completed numerous evaluations for various projects leading to project identification/design needed for grant requests. EII collaborated with other entities, NGOs for grant funding for mutual adjacent projects - none adopted, approved, or funded. Received funding and executed contract for diversion consolidation project design for Hole in the Ground Ranch (HIG).
- Parks Creek Ranches (PCR) - Permit #s 23288, 23271 completed all riparian fencing as outlined in site plan and alternative stock watering infrastructure. PCR collaborated with other Entities, NGOs on Shasta River Habitat Improvement Design and Implementation Project and continued efforts with other adjacent permittees towards project designs and implementation.
- Grenada Irrigation District (GID) - Permit # 23280 obtained CEQA approval and 70% funding for design and continued effort to obtain a 1707 agreement. GID also agreed to participate in the Shasta River Habitat improvement and implementation project through CalTrout.
- Novy Ranches - Permit # 23284 collaborated with CalTrout to participate in a grant for implementation of LWD project in Mid-Shasta. Novy Ranches also continued monitoring tailwater berms to prevent warm water releases into Shasta River. Continued efforts to utilized approved funding for implementation of Novy Zenkus Rice diversion project and allowed monitoring for temperature and dissolved oxygen compliance through collaboration with the Shasta Valley Resource Conservation District (SVRCD).

- Rice Livestock - Permit # 23289 received partial implementation grant funds for Huseman Ditch Project. Worked with SVRCD to move the Novy Zenkus Rice fish passage project, awaiting SWB staff final decision on water rights use.
- Cardoza Ranch - Permit # 23278 fish screen and diversion relocation with pipeline functioning as designed and managed as intended. Section 1707 is in final stages of approval.
- Nicoletti Ranches - Permit # 23434 participated in grant requests for funding Huseman Ditch Improvement Project and continue to seek funding through grants for Shasta River Habitat Restoration Improvement and Implementation Project.
- Hidden Valley Ranch (HVR) - Permit # 23285 had no major projects to report as all completed prior to this year, but continued effort to seek 1707 agreement for implementation of Exchange Water Program with MWCD. HVR contributed zero warm tailwater to stream as a result of reduced or no spring flows due to drought and continued monitoring program through SVRCD and SSWD.
- Edson Foulke (EF) – Permit 23279 obtained partial grant funding for the engineering of new diversion and ditch efficiency project. The preliminary engineering completed to combine EF and PCR diversions, as well as partial completion of engineering of ditch efficiency project
- Most of the effectiveness stations have been installed and are operational. The last station to be installed, SRabvPC, will be installed with project implementation on Hole in the Ground Ranch. The monitoring contract with the Shasta Valley Resource Conservation District to rate and maintain stations was in place during 2022.
- Eyasco continued to work on the reporting dashboard to house all the monitoring station data, as well as annual reports and supplemental information provided to the agencies by the permittees.

The following sections contain summaries, by permittee, of the accomplishments reported on the 2022 Annual Reports received by NMFS in April 2023.

### **1. Montague Water Conservation District**

Montague Water Conservation District (MWCD/District) is a public irrigation district that owns and operates Dwinnell Reservoir located in the southern portion of Shasta Valley and provides irrigation water to users within the district boundary, located in the northern portion of Shasta Valley with diversions on both the Shasta River and Parks Creek. MWCD owns Dwinnell Reservoir, the property under the high-water mark of Dwinnell Reservoir and the property along the Shasta River immediately below Dwinnell Reservoir where much of the water operations for the irrigation district occurs. The Site Plan Agreement (SPA) incorporates and extends MWCD's

Conservation Habitat Enhancement and Restoration Project (CHERP) as well as additional measures proposed in the Safe Harbor Agreement. CHERP is a package of restoration projects MWCD has committed to and is currently implementing and will also be reported annually as SHA actions.

For the purposes of this report, activities on MWCD Property have the potential to influence all sub-reaches identified in the Template Safe Harbor Agreement. See Table 1 below for MWCD’s reported progress on SHA commitments.

Table 1: Status of various Shasta SHA projects associated with MWCD’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Parks Creek Bypass Flows	Maintain bypass flows and additional bypass: 10/1-2/28                  6.0 cfs 3/1 -9/31                    16.00 cfs	<b>In progress</b>	Sought grant funding for new flow commitments. Reporting at PME is available, but rating curve ineffective.
Flow Releases	Continue to release flows for environmental purposes per CHERP.	<b>In progress</b>	Interim Commitments to Shasta River were conducted. Reporting is available. The water year was considered a very dry year. MWCD provided over 2,662 acre-feet for instream benefit to the Shasta River. MWCD also secured a Health and Safety exemption and an LCS for the Shasta River in 2022.
Gage operations	Operate, maintain and keep the following gage locations: MPD, PME, DRE, SRX, SRD, DSW, DFB  Maintain and Operate flow and temperature gauges to measure and verify prior rights, environmental water, Flying L pumps and seeps	<b>In progress</b>	Reporting is available. Two additional measurements were taken for flow rating curve at PME but more are needed.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Flying L	Connecting the Flying L pumps to the Shasta River to release up to 5.5 cfs of water with temperatures under 13.2 C when water released from Dwinnell exceed 18 C during the summer months	<b>Completed and Maintained</b>	Reporting is available. MWCD switched to using a McCrometer 3000 flow meter in 2022, which provides more consistent and accurate flow data.
Petition	Change petition for municipal and environmental water	<b>In progress</b>	Waiting for SWRCB process to continue. MWCD is part of Batch 1707.
Cross Canal Enlargement	Enlarge the cross canal to allow for larger volumes of water to be released to the Upper Shasta for flushing flows	<b>Completed</b>	Work completed-Channel is functioning well. Highest release was 30 cfs
Riparian source	Develop a Riparian cutting and seed source for over story riparian species on MWCD property below Dwinnell Reservoir. Maintain and enhance riparian habitat along Cross Canal, coldwater habitat and Shasta River within MWCD ownership	<b>In progress</b>	Riparian establishment is occurring along cross canal, Shasta River and Cold-Water habitat
Cold Water Habitat	Permittee will construct a lateral cold water habitat near the base of Dwinnell Reservoir at the confluence of MWCDs Cross Canal and the Shasta River to ensure cold water refugia.	<b>Completed and Maintained</b>	Structure complete and functioning- need technical input to maximize habitat quality

Project Name	Project Description	Current Status	Description of Progress
Cold Water Habitat	Plant and maintain riparian habitat enhancement associated with cold water habitat on the MWCD owned reach of Shasta River	<b>In progress</b>	<p>This work was completed but more planting could occur based on positive results. Riparian establishment is occurring along cross canal, Shasta River and Cold Water habitat</p> <p>Structure is completed and functioning well. Aquatic vegetation covers much of the habitat during the summer and riparian trees planted in 2020 are 3-8' tall with high survival rates exceeding still exceeding 50%. MWCD is seeking technical input to maximize production in Cold Water Habitat from UC Davis watershed sciences.</p>
Seldom Seen	Provide access and continue to work with partners to ensure completion of Seldom Seen legacy diversion structure to provide fish passage on Shasta River on MWCD property	<b>Completed</b>	
Shasta River Flow Strategy	Implement additional summer flow release of 2 cfs in Very dry year when prior rights is not released	<b>Maintained</b>	MWCD abided by this term except for a few instances where the back-up diesel generator did not automatically start both pumps when electrical power was

Project Name	Project Description	Current Status	Description of Progress
			interrupted. Electrical service was very poor this year, including outages for Weed fire. The system mostly worked very well and the issue was resolved that caused both pumps not to turn back on. MWCD added alarms from Eyasco that would warn staff when pump discharge changed by more than 1.0 cfs. This allowed excellent notification when pump conditions changed.
Habitat Improvements	Install LWD and spawning gravel on MWCD property below the Dam	<b>Completed</b>	This work was completed in 2020. MWCD will accept more tree planting. The work conducted in 2020 is overgrown by vegetation (tullies and difficult to see)
MWCD - Canal Lining	Main Canal Lining: Line and maintain up to 8.4 miles of MWCD's Main Canal where delivery loss is highest. Provide 515 (value determined through loss investigations) af per mile of canal lined for instream benefit for life of Agreement. As interim measure, continue Interim Settlement Model averaging to determine instream flow contribution to Shasta River until Main Canal Lining is complete, then implement MWCD increased flow commitments based on water year type for the life of this agreement	<b>In progress</b>	1.3 miles of canal lining were installed in 2022. 6,000 feet were installed in 2021 and up to 6,000 feet will be installed in 2023.



<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
MWCD - Secondary POD	Build a secondary POD in Lower Shasta to deliver more water instream through agreement area to irrigate lower portion of the District- Only when temp is under 18 degrees and all rights are being met- estimated to occur a max 60 days between April 1- June 1 on good to average WY, include 1707	<b>In progress</b>	MWCD has a 1707 petition in to SWB for approval- project on hold until SWB approval
MWCD- Secondary POD	Add new Point of Diversion: Assess and if feasible, construct, operate, and maintain new Point of Diversion (POD) in lower Shasta River to allow up to 10 cfs to remain instream to seasonally enhance flows in Upper Parks Creek.	<b>In progress</b>	This project is on hold until MWCD's point of diversion is retrofitted and a determination is made about the validity of WC 1701-1707 in this scenario.
Exchange Agreements	Exchange water for HVR and HIG for spring water	<b>In progress</b>	Worked with HVR to implement exchange methodology and reporting. HVR infrastructure is ready for exchange if SWRCB approval is gained. Hole in the Ground Ranch is working to finalize the design of their water conservation project that will also allow for cold water substitution.
1707	Continue to work with SWRCB to obtain approval of submitted Change Petition to add Fish and Wildlife and Municipal uses as additional beneficial uses of water and protect	<b>In progress</b>	Petition approval continues but progress is slow.

Project Name	Project Description	Current Status	Description of Progress
Fish Passage	<p>Continue to use existing infrastructure to provide fish passage on Parks Creek. E.1.b1</p> <p>Continue to seek funding for Parks Creek screening and passage project. E.1.b2</p> <p>Implement, operate, and maintain fish passage and fish screening facility at the Parks Creek diversion. Provide by-pass flows to PCE as MWCD agreed upon in Upper Parks Creek Flow Plan when constructed.</p> <p>Continue to evaluate alternatives and constraints for future fish passage above Dwinnell Reservoir, as described in E.3.b1</p>	<b>In progress</b>	<p>Grant was written and submitted, but not funded.</p> <p>MWCD has submitted an initial proposal to assess fish passage at Dwinnell Dam, assess Parks Creek by-pass options and monitor conditions above Dwinnell to evaluate existing conditions for coho salmon.</p>
Flow Strategy	Participate in Shasta River reach-wide diversion management strategy	<b>In progress</b>	Strategy is developed and implementation projects are getting installed that support the flow strategy. Monitoring is improving. MWCD is assisting HIG Ranch with HIG diversion combine design and implementation
Flow Strategy	Re-do Parks POD to limit flows and ensure bypass is meeting PCE minimum flow requirements	<b>In progress</b>	Strategy is developed and assessment and design work has been accomplished. MWCD submitted and implementation grant for MWCD's Parks Creek diversion

## **2. Seldom Seen Ranch**

The Seldom Seen Ranch is located north of Lake Shastina and west of Big Springs Road. The Property shares an eastern and northeastern boundary with the Shadow Hills subdivision. To the north lie the Hidden Valley Ranch and Hole in the Ground Ranch and to the west, the Shasta Springs Ranch.

The Property is used primarily for beef cattle production and is currently managed as an integrated unit with three other ranches owned and managed by the Permittee. The three contiguous properties, Hole in the Ground Ranch, Shasta Springs Ranch, and Seldom Seen Property, are managed for pasture for beef cattle, while the Hay Ranch is mainly hay production for winter feed to support the three cattle ranches. Using hay from the Hay Ranch during the winter minimizes the amount of grazing necessary to maintain the cattle at the other sites, which allows the pasture grasses to be maintained at very high levels of ground cover. The high level of ground cover minimizes surface erosion and fine sediment contribution to the sensitive aquatic systems on the Enrolled Property, and inhibits the establishment of noxious weeds.

The Shasta River flows through the Property. The Seldom Seen Spring is a hydrologically unique feature of the landscape of the Enrolled Property. It is not accessible to fish. It is an unreliable spring that emerges in some years in the vicinity of 122.389W, 41.544N, under wet hydrologic conditions. The spring drains north to the Shasta River, flowing in a channel for approximately 500-feet, across a gentle slope before dropping into the river, 10± vertical feet in 75± feet linear distance, through heavy riparian vegetation. In years when it flows, it appears as a small seep in February through April, but relatively quickly can increase to more than two cfs, sometimes to as much as nine cfs. Usually in June, if not sooner, the flow just as quickly diminishes to zero. This water is not used for irrigation on the Property.

For the purposes of this report, activities on the Seldom Seen have the potential to influence the Upper Shasta River sub-reach identified in the Template Safe Harbor Agreement. See Table 2 below for Seldom Seen's reported progress on SHA commitments.

Table 2: Status of various Shasta SHA projects associated with Seldom Seen’s Site Plan.

Project Name	Description	Current Status	Description of Progress
Prior Rights Management	Continue to irrigate with groundwater, utilizing the stored “Prior Rights” downstream, per current Upper Shasta River Flow Management Strategy	<b>Maintained</b>	See HIG monitoring data
HVR project	Agree to continue cooperation in project to upgrade HVR diversion system adjusting stocking to reflect loss of pasture productivity	<b>Completed</b>	Full project to improve HVR diversion system was completed in 2021, with the pipeline across EII completed in 2018 or 2019. Conveyance across EII Seldom Seen Ranch between the POD in Shasta River and HVR south property line is now in pipe, replacing former earthen ditch conveyance. In addition to conceding the potential loss of pasture productivity from ditch-loss sub irrigation, EII provided access for construction activities, staging of materials and equipment, and pre- and post-project monitoring and site review.
Soil Moisture Sensors	Agree to include Enrolled Property pastures in Project Area for testing effectiveness of soil moisture sensor technology, or other appropriate technology, to increase irrigation efficiency, implement routine use where appropriate, and adjust water management accordingly	<b>In progress</b>	Initiated program for testing effectiveness in coordination with UC Cooperative Extension. Summary provided to NMFS for review as ShSp Soil Moisture Pilot Progress_2022

<b>Project Name</b>	<b>Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Re-plumb wheel lines	Agree to re-plumb supply for wheel lines eliminating drain water entering channel as warmed surface water	<b>Completed</b>	EII re-plumbed supply lines and created a berm for the wheel-lines to eliminate drain water from entering the stream channel as warmed surface flow. No photo is available for 2022.
Fish Passage	Agree to eliminate Covered Species passage barrier at Diversion 156 (Seldom Seen)	<b>Completed</b>	Project to construct a roughened channel at site of POD 156 in Shasta River was implemented and completed in 2019 and 2020.
Beaver Management	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	<b>In progress</b>	Collecting distribution and related data, drafting preliminary draft document.
LWD and Spawning Gravel	Install 23 LWD structures	<b>In progress</b>	Project that added 5 LWD structures was completed in 2020.
Riparian Habitat Enhancement	Permittee agrees to work collaboratively with NMFS and CDFW to seek funding and implement riparian planting projects where existing riparian habitat is less than site- potential; at various locations in sub-reach from Riverside Road to property line	<b>In progress</b>	Project that planted 460+/- trees of riparian species; completed in 2020;
Wet Crossings	Two vehicle/livestock crossings/ watering access lanes will be maintained as rocked fords.	<b>No progress</b>	No maintenance activities needed in 2021

<b>Project Name</b>	<b>Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
CMP Crossing	One vehicle crossing will be maintained in appropriately-sized CMP	<b>No progress</b>	No maintenance activities needed 2021
Spawning Gravel Enhancement	Agree to provide access to implement spawning gravel enhancement, up to 11 sites	<b>No progress in 2022</b>	Project that added two riffle habitats (67' total length), corresponding gravel beds (49' total length), and a stockpile of 60 yd <sup>3</sup> of spawning gravels was completed in 2020.
Assessments	Assessment of survival of riparian planting complete in 2020	<b>Completed</b>	EII Ranches Riparian Planting Summary_2022 submitted to NMFS for review
	Riparian habitat site potential analysis completed	<b>Completed</b>	Shasta Springs Ranches Riparian Site Potential Analysis-5Jan2023 Submitted to NMFS for review
	Spawning surveys conducted on Shasta River	<b>Completed</b>	2022-2023 EII spawning Surveys memo Final submitted

### **3. Hidden Valley Ranch**

Hidden Valley Ranch (HVR) is owned and operated by Hidden Valley Ranch LLC. The HVR is located within the Covered Area along Big Springs Road in central Siskiyou County (41°34'57" N latitude, 122°26'18" W longitude). The HVR includes a total of 431± acres, with 150 ± acres under irrigation at the time of this agreement. The HVR is generally a cow/calf operation with a small segment of the operation producing sheep. Approximately 1.5 miles of the Shasta River is adjacent to the HVR, for the purposes of this report, activities on HVR have the potential to influence the Upper Shasta River sub-reach identified in the Template Safe Harbor Agreement. See Table 3 below for HVR's reported progress on SHA commitments.

Table 3: Status of various Shasta SHA projects associated with HVR’s Site Plan.

Project Name	Project Description	Current Status	Description of Progress
Bunk house and West 40 Pipeline Maintenance	Maintain existing pipeline infrastructure as described in E.1. and continue irrigation practices to reduce tailwater temperature impacts	<b>Maintained</b>	Performed as required. Tail water reduced to near zero due to drought conditions and constant monitoring of available irrigation water. West forty pasture received no irrigation water after May and Bunkhouse was cut to approximately 40%coverage. See addendum report for photos
Cold Water Exchange with HVR, including spring connection	Efficiency projects on HVR to allow for exchange of MWCD water and keep cold spring water instream-exchange of water no net increase of instream flow= Provide a maximum of 3 cfs spring water for instream contribution from June 1 –September 15	<b>1707 Petition submitted - Completed</b>	No exchange flows due to springs being dry
Fall Spring Contribution	Continue to release spring water into the river at the end of the irrigation season (November1-March 1)	<b>Maintained</b>	The lower spring was released to river and continuous monitoring of flow was initiated in 2022 - will report next year.
Additional Spring Water Contributions	Additional spring water will be released to Shasta when spring source produces over 2.25 cfs- tracked via real-time meter	<b>Maintained</b>	Routine practice when springs deliver. Currently, springs dry since May, 2020.
Tailwater Re-use	Collect tailwater in open ditches and reuse on HVR	<b>Maintained</b>	Ongoing practice
Diversion Management	Participate in a reach-wide diversion management strategy	<b>Maintained</b>	Continue to participate as required and directed through curtailment orders and directives.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Tailwater Berms	Build berms along a 2 key pastures to reduce the chances of tailwater from re-entering the river and allowing for percolation and subsurface return	<b>Completed/ maintained</b>	Completed and used as intended.
Prior Rights Pipeline	Pipe Prior Rights ditch in exchange for 0.5 cfs spring water released to the river	<b>Completed/ Maintained</b>	Project completed and performed as required with available resources.
Fish Passage	Maintain unimpeded fish passage conditions at the HVR diversion and agrees to yearly inspection	<b>Completed/ Maintained</b>	No impediment observed during 2021. Sight was monitored during fish screen improvement project with no impact to diversion or fish passage. NOAA note- New fish screen changed channel - no annual inspection necessary, as not a passage issues
Fish Screen	Relocate the fish screen to channel, construct a pipeline from new fish screen location to existing pipeline	<b>Completed/ Maintained</b>	Completed December 2021. Performed as designed in 2022
Beaver BMP		<b>Maintained</b>	4 beaver dams now exist on HVR reach, 2 in riparian zone 2 and 2 in riparian zone 1, none pose any risk to HVR operations or infrastructure
Leave woody debris	Leave wood debris from existing trees	<b>Maintained</b>	Complied, no effort to remove down woody debris or other habitat infrastructure from stream bed or riparian zones.



<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Habitat Improvements	Implement large woody debris (upto 24 sites) projects on the ranch and build spring alcove	<b>Partially completed</b>	Complied as part of spawning beds improvement project of 2020. Spawning survey completed by CADFW personnel on Nov. 12, 2022 with negative results.
Riparian maintenance	Perform yearly maintenance on existing riparian fencing	<b>Maintained</b>	Performed continuously during routine fence inspections, usually weekly. Work typically limited to reconnection of wire strand to fence post with clips or broken wire spliced back together.
Crossings	Maintain crossings and stock water	<b>Maintained</b>	Wet crossings required no work. Electric fence material replaced with new Sept. 2022 at both crossings
Fencing	Replace up to 50% of riparian fencing if needed due to flood damage as stipulated	<b>Maintained</b>	No action required
Habitat Improvements	Enhance existing alcoves where spring water will re-enter channel	<b>Completed</b>	Alcove enhancement was completed in 2021
Spawning Gravel Enhancement	Place gravels within the reach at five locations	<b>Partially completed</b>	Beds completed in 2020 and currently impacted by the development of two low beaver dams. Photos in addendum document.  Spawning surveys observed no redd activity in 2022

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Riparian Planting	Plant riparian trees	<b>Maintained</b>	No projects identified in this reporting period. Previous planting in riparian zone 1 is showing strong success. See riparian photos in appendix.
Riparian Grazing Plan	Implement the riparian grazing plan as described in Section E.3.d and outlined in Appendix X.	<b>Maintained</b>	Riparian zone 3 only riparian zone grazed during reporting period due to unfavorable feed conditions. Log attached submitted to NMFS for review.
Pasture management	Will cross fence to better manage stubble height	<b>Maintained</b>	Limited ability to meet this requirement due to lack of irrigation to 60% of west forty and bunkhouse pastures. Herd size reduced in numbers and moved more frequently due to reduced growth of available pastures
Assessment/ Studies	Allow access for studies	<b>Maintained</b>	Access agreements in place for PIT tag array for CADFW use when they choose. Continue to participate as required for reviews by Agency personnel with notice.
Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures- <b>HVR US and HVR DS</b>	<b>In progress</b>	HVR US was installed as part of the efficiency pipeline project and is reported on Eyasco for agency review- along with POD monitoring stations- included in attachment of this report.

Project Name	Project Description	Current Status	Description of Progress
1707 Completions	Work with SWB to finish existing 1707 petitions to get real water instream and develop others for Parks	In progress	Petitions submitted to SWB

#### 4. Hole in the Ground Ranch

The Hole in the Ground Ranch is located north of Lake Shastina, and west of Big Springs Road. The Property shares a western and southwestern boundary with the Shasta Springs and Seldom Seen ranches, also owners by the Permittee. The south fence line is also common with the Hidden Valley Ranch (HVR). To the north lie the Cardoza Ranch and the Big Springs Ranch Wildlife Area. On the northeast and east are other small private landowners.

The Property is used primarily for beef cattle production and is currently managed as an integrated unit with other ranches owned by the Permittee. Three contiguous properties, including the Hole in the Ground are managed for pasture for beef cattle, while the Hay Ranch is managed for hay for winter feed to support the three cattle ranches. Using hay from the Hay Ranch during the winter minimizes the amount of grazing necessary to maintain the cattle at the other sites, which allows the pasture grasses to be maintained at very high levels of ground cover. The high level of ground cover minimizes surface erosion and fine sediment contribution to the sensitive aquatic systems on the other three ranches, and inhibits the establishment of noxious weeds. Maintaining the cattle locally, year-round, helps control the introduction of non-endemic species, e.g., invasive plants. Streams flowing through the Enrolled Property include the Shasta River, Parks Creek, and Hole in the Ground Creek. The confluences of the creeks with the Shasta River are off the property.

For the purposes of this report, activities on the Property have the potential to influence the Upper Shasta River and Lower Parks Creek sub-reaches as identified in the Template Agreement. See Table 4 below for Hole in the Ground Ranch’s reported progress on SHA commitments.

Table 4: Status of various Shasta SHA projects associated with the HIG’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Cattle Access	Cattle access to the channel will be excluded or restricted to crossings, watering access points, and/or limited season/stocking/duration that conserves water quality	<b>No progress</b>	No Changes in 2022
Tailwater berms	Agree to continue maintenance of tailwater berms	<b>No progress</b>	No Changes in 2022
Maintain concrete ditches	Agree to maintain concrete ditch lining on Pump Diversion distribution system	<b>No Progress</b>	No Changes in 2022
Diversion Combine/Cold Water Exchange	Agree to redesigning and rebuilding Gravity Diversion and pump diversion in order to facilitate Upper Shasta River Diversion Management Plan	<b>In progress</b>	90% design contract awarded and planning underway. Additional work scheduled for 2023.
Soil Moisture testing	Agree to include Enrolled Property pastures in testing effectiveness of soil moisture sensor technology to increase diversion efficiency, implement routine use where appropriate, and adjust water management accordingly	<b>In progress</b>	Participating in pilot project with U.C. Extension. Summary included with report attachments.

Project Name	Project Description	Current Status	Description of Progress
Tailwater Reduction	Hole in the Ground Creek tailwater reduction	<b>Completed</b>	A solution was developed in-house and completed sometime before 2021. Ranch personnel constructed a tailwater capture basin, distantly off-channel (i.e., approximately 3,100 feet of linear distance) upslope from Hole in the Ground Creek. The design allows passive overflow into ditches that disrupt the former overland, concentrated flow pattern, redistribute the water along the upslope field boundary, and use percolation and evapotranspiration to eliminate the return flow as warmed surface water to the creek channel at the bottom of the field. Monitoring of the creek channel bank under a variety of hydrologic conditions since the implementation of this solution has verified the success of the project. Monitoring will continue. The need for further actions is currently not expected.
Fish Passage	Agree to maintain fish passage through the roughened channel at the POD for the two HIG diversions on the Shasta River	<b>No progress</b>	No instream work needed during reporting period

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Cardoza Diversion	Allow for new crossing at Cardoza diversion	<b>Completed</b>	Project to move the diversion and replace multiple CMP with a multi-plate CM arch, return channel bottom to grade, create instream habitat complexity, add spawning gravels, and add woody species to the riparian zone was completed in 2021. Access for construction activities, staging of materials and equipment, and pre- and post-project monitoring and site review was provided for the term originally requested. Upon request, providing an access obligation for additional years of access for monitoring, in consideration of drought conditions post-project.
Beaver Management Plan	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	<b>In progress</b>	Collecting distribution and related data, drafting preliminary draft document.
Riparian fencing	Fencing along HIG creek	<b>No progress</b>	Used UAV to map vegetation for fence alignment planning
Riparian Exclusion Maintenance	Agree to maintain riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan. Will replace at least 20% of riparian fencing if needed due to high flow damage	<b>No progress</b>	No Change - no photos

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Riparian fencing	Fence 40% of remaining Parks Creek	<b>In progress</b>	Project planning has been initiated and grant applications are in preparation.
Riparian Grazing Planning	UCCE riparian grazing planning for Parks Creek and Rattlesnake fields, around Cardoza	<b>Maintained</b>	Project planning has been initiated and grant applications are in preparation
Riparian Grazing Planning	UCCE riparian grazing planning for HIG creek	<b>Maintained</b>	Project planning has been initiated and grant applications are in preparation
Cattle Management for Parks Overflow	HIG will add, as appropriate, measures for cattle management to safeguard water quality including fencing the Parks Creek overflow channel. Such measures include temporary or permanent fencing depending on the need indicated by water quality in the area.	<b>In progress</b>	Initial monitoring event was completed in 2022. The old channel was walked and inspected for evidence of recent flowing water conditions (e.g., sediment transport and deposition, vegetation changes). There were no observations of flow conditions that would transport nutrients to the historic channel and hence to the fish bearing waters in the lowest subreach at the confluence with the Shasta River. The monitoring is limited to the extent on EII property, the boundary of which is more than one-half mile linear distance (not channel distance) upstream from the Shasta River, separated by lands controlled by two other property owners. Additional monitoring under a variety of hydrologic conditions is planned.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Livestock crossings	Seven livestock/vehicle crossings will be maintained as rocked fords	<b>No Progress</b>	Maintained includes routine inspection or monitoring for repairs. No crossing repairs were necessary in 2022; therefore, there are no photos of crossing repairs for 2022.
Studies and supplementation	Agree to participate in studies to refine Upper Shasta River Flow Management Strategy, including role of Seldom Seen Spring	<b>In progress</b>	<p>Diversion data submitted for Hole in the Ground is included in this report.</p> <p>Completed assessment monitoring the survival of riparian plantings located at the Cardoza POD Upgrade (Attachment "EII Ranches Riparian Planting Summary_2022")</p> <p>Completed spawning surveys conducted on reaches of Parks Creek and the Shasta River for the 2022-2023 spawning season (Attachment "2022-2023 ELL spawning surveys memo final 022723").</p> <p>Completed riparian habitat site potential analysis, see Attachment "Shasta Springs Ranches Riparian Site Potential Analysis_5Jan2023"</p>

## **5. Shasta Big Spring Wildlife Area**

The California Department of Fish and Wildlife (CDFW) purchased the Big Springs Ranch Wildlife Area (BSRWA) from The Nature Conservancy (TNC) in 2019. CDFW will operate the property as a State Wildlife Area for the purposes of protecting and enhancing natural habitats



for fish and wildlife, and providing public use opportunities that are compatible with the long-term conservation needs of fish and wildlife populations and their habitats. Permittee may consider the use of cattle as a management tool for wildlife habitat benefits based on an adaptive management approach.

BSRWA includes two ranches covering a total of 6,000± acres. Approximately five miles of the Shasta River and 1.5 miles of Big Springs Creek are included within the BSRWA property boundaries. The ranch lies within what has been designated as the **Mid Shasta Reach and the Big Spring Creek Reach** in the Template Agreement. See Table 5 below for BSRWA’s reported progress on SHA commitments.

Table 5. Status of various Shasta SHA projects associated with BSRWA’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
1707 Dedications	Maintain diversions and 1707 dedications	<b>Maintained</b>	Dedications were managed in cooperation with our neighbor to the east, the water master and the state water board.
Tailwater Management	Continue to manage tailwater returns	<b>Maintained</b>	
Diversion Management Plan	Continue acceptable diversion management plan	<b>In progress</b>	The remaining culvert is cleaned as needed.  Flow monitoring stations were installed on the Nelson Pump, div 243, HIG Creek and the Big Ditch (div 241).
Real-time Monitoring Stations	Operate real time monitoring at stations to track improvements on the Enrolled Property	<b>In progress</b>	Flow and temp monitoring stations were installed during 2022 on all diversions and in various instream locations but not until diversion had ceased. Eyasco has any data associated with the current measuring devices.
Big Springs Lake outfall culvert	Clear Big Springs Lake outfall culvert and add a monitoring device to outfall	<b>In progress</b>	Flow and temp monitoring stations will be installed during 2022 on all diversions and in various instream locations.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Cardoza Easement	Provide easement for the proposed Cardoza pump station	<b>Completed</b>	Project completed in early 2021- see Cardoza reporting
Stockwater	Continue to maintain off-channel stock water troughs	<b>Maintained</b>	Various leaks and faulty valves were repaired and/or replaced.
Nelson Fish Screen	Nelson Fish Screen Evaluation and replacement	<b>Maintained</b>	This screen was maintained daily while in use.
Little Springs Culverts	Until culverts are removed Permittee agrees to clean clogged culverts along Little Springs Creek	<b>Maintained</b>	The remaining culvert is cleaned as needed. A skimmer has also been installed to prevent large items from becoming lodged in the culvert.
Little Springs Passage	Remove the two culverts and provided unimpeded fish passage at the third upstream of the County road on Little Springs Creek for fish passage and water quality	<b>In progress</b>	Two of the three culverts have been removed. The Fisheries Technical team will explore fish passage solutions for the remaining culvert.
Beaver Management	Implement beaver management	<b>Maintained</b>	Debris was removed daily from the remaining Little Springs culvert.
Woody debris	Continue to leave woody debris from existing trees	<b>Completed</b>	

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
LWD	Implement large wood enhancement on the BSC and Shasta River as specified on Habitat Improvement Map	<b>In progress</b>	Fisheries Technical team will investigate the best approach for the pilot project.
Alcoves and off channel	Enhance up to four spring alcoves along the Shasta River and build off-channel habitat along the Shasta River as specified on Habitat Improvement map	<b>In progress</b>	Fisheries Technical team will investigate the best approach for the pilot project.
Riparian fencing	Will continue to perform yearly maintenance as needed on existing riparian fencing	<b>Maintained</b>	Fencing maintained
Riparian	Implement riparian restoration projects on Little Spring Creek and Big Springs Creek	<b>No progress</b>	
Riparian Grazing	If riparian grazing occurs, Permittee will implement the riparian grazing plan	<b>In progress</b>	No riparian grazing occurred.
Spawning Gravel Enhancement	Implement spawning gravel enhancement if deemed appropriate on the Shasta River portion of BSRWA as specified on Habitat Improvement Map	<b>In progress</b>	Fisheries Technical team will develop an approach.
Pasture Management	Permittee will require lessee to rotate cattle through the pastures as part of Permittee's pasture management	<b>In progress</b>	There was no Lessee during this cycle.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Public outreach	Spawning tours, etc.	<b>In progress</b>	
Assessments/ Studies	Allow the Parties to use data from existing studies on the ranch to further understand Covered Species habitat use on the Enrolled Property	<b>In progress</b>	Fisheries Technical team will develop an approach.
Studies	Allow access for studies	<b>In progress</b>	Various ROEs have been issued and more are in process
Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, install needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	<b>Maintained</b>	Flow and temp monitoring devices were not in place on Div 241, 243, Nelson Pump, HIG ck or LSC mouth during this reporting period; therefore, diversion data and flow/temp are not available for these locations.

## **6. Cardoza Ranch**

The Cardoza Ranch is located along Louie Road in central Siskiyou County (41°35'00'' N latitude, 122°26'49''W longitude). The ranch operation influences both the Lower Parks and Mid Shasta reaches as designated within the Agreement; however, the river corridor is not directly adjacent to the property. The Parks Creek overflow, a small tributary to the Shasta River, runs through the Ranch. The Cardoza Ranch includes a total of 497± acres, with 165 ± acres under irrigation. See Table 6 below for Cardoza Ranch's reported progress on SHA commitments.

Table 6: Status of various Shasta SHA projects associated with Cardoza Ranch’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Efficiency Pipeline	Construct pipeline infrastructure to increase efficiency and reduce tailwater production	<b>Completed</b>	Spring 2021
Cardoza new POD, Fish Screen and Pipeline Project	Construct, properly manage and maintain a new point of diversion on the Shasta River at the Louie Road bridge and abandon existing flashboard diversion structure on Parks Creek	<b>Completed</b>	2021- diversion data attached
Interim flow management on Parks	Interim flow management efforts to improve water quality, timing and duration until the diversion is moved to the Shasta and Implement an interim strategy to improve passage until new point of diversion is constructed	<b>Completed</b>	Diversion was moved- interim management not necessary
Tailwater collection and re-use	Collect tailwater in open ditches and reuse as described in Section E.3.a.	<b>Completed</b>	Tailwater ditch was cleaned and spoils were disposed of upland to avoid sediment entering waterways

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Pasture Grazing Management	Add cross fencing to manage pasture grazing to keep grass between 4 to 6 inches.	<b>In progress</b>	2000-feet of cross fencing installed in 2021, no work in 2022
Stock water	Permittee agrees to installation of a stock water system in conjunction with the proposed efficiency piping project.	<b>Completed</b>	Spring 2021
Soil Moisture Sensing program	Install several soil moisture sensor stations to help inform irrigators when to start irrigation rotations, could help reduce water use by informing LO's of reduced ET during Spring and Fall and between rotations to keep water instream- quantified benefit is unknown	<b>Completed</b>	Installed Spring 2021 – soil moisture sensor data attached. Monitored real-time to manage irrigation
Effectiveness Monitoring	Monitoring report from POD move	<b>In progress</b>	UCD is still monitoring project benefits until 2024- will submit when completed.
	Access to maintain existing pit tag array and trap and tag fish	<b>In progress</b>	UCD is maintaining pit tag at old POD

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
1707 Completions	Work with SWB to finish existing 1707 petitions to get real water instream and develop others for Parks	<b>In progress</b>	SWB drafted supplemental decree orders- will be approved in 2023

### **7. Grenada Irrigation District**

Grenada Irrigation District (GID), a Special District of Siskiyou County, is located in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). GID owns four parcels including a small reach of the Shasta River, as well as provides irrigation water to the GID comprising approximately 1477 irrigated acres. Only two parcels located on or near the Shasta River that include intake and pumping infrastructure are included within the Agreement. Approximately 300-feet of the Shasta River is within GID ownership, designated to be in the Mid Shasta Reach in the Agreement. See Table 7 below for GID’s reported progress on SHA commitments.

Table 7: Status of various Shasta SHA projects associated with GID’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Upgraded POD	Maintain upgraded diversion facility	<b>Maintained</b>	Regular maintenance was performed at the upgraded diversion site.
GID Efficiency Improvement	Implement conveyance pipeline to reduce transmission loss. Conserved water will be provided for instream benefit when the project is implemented. Estimated 1,136 acre-feet will be conserved on an average year	<b>In progress</b>	GID has a completed set of plans and CEQA document for the pipeline project. We are seeking appropriate funding sources that would consider such a project. We feel as soon as we make progress towards the 1707 application we will have a higher likelihood of securing funding. I would also note that the emergency drought based curtailment have also created challenges to seeking funding in 2022.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
1707 Petition	Conserved water will be provided for instream benefit through SWRCB Change Petition and Water Code 1707	<b>In progress</b>	GID has been actively engaged in the TNC 1707 application. We have communicated regularly with the SWB and supplied responses to protestants to the GID 1707 application. We continue to address any issues to allow the 1707 to be implemented.
Stream Gaging	Work with agencies and SWCG to use streamflow gage at GID riffle to reduce flow variability resulting from GID diversion and curtailment	<b>In Progress</b>	GID diverted water for 11 days in 2022 due to the SWB curtailment order on the Shasta River. We worked with the SSWM and utilized the SPU gauge as well as gauges at A12, Montague and Yreka to monitor flows to reduce variability. The logging of GID pump volumes was not recorded at the flow meter but recoded manually in our daily pump log. The CDEC recoding is being fixed prior to the 2023 irrigation season. GID will also contact with the SVRCD to install a backup flow monitoring device in our delivery canal prior to the 2023 irrigation season. GID Diversion and SPU flows and temp attached
Diversion management	Participate in a reach-wide diversion management strategy	<b>In progress</b>	Worked with the SSWM and other water users on the Shasta to coordinate a diversion strategy that met the curtailment requirements and minimized impact on the reach.



<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Passage/Screening	Maintain unimpeded fish passage conditions at the GID diversion. Maintain self-cleaning fish screen at the GID diversion point.	<b>Maintained</b>	Monitored and maintained the GID self-screening screen through the year.
Habitat Complexity	Will maintain the instream barb structures opposite of the Fish Screen	<b>Maintained</b>	Monitored Barbs to insure they were working as designed and that they were not impacted by higher flow volumes in the river.
Riparian Fencing	Perform yearly maintenance on existing riparian fencing	<b>Completed</b>	Regular checks on current riparian fencing.
Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	<b>Maintained</b>	Have worked with 3rd party and DWR to maintain gages on the diversion site.

## **8. Belcampo-North Annex**

Belcampo-North Annex Property (North Annex) is owned and operated by Outpost M-R LLC (Permittee). North Annex is located within the Covered Area between Interstate 5 and the Shasta River in central Siskiyou County (41°37'58.93" N latitude, 122°29'35.62" W longitude).

Belcampo includes a total of 4167± acres, with 1503 ± acres under irrigation. Approximately four miles of the Shasta River is adjacent to the North Annex, within what has been designated

as the **Mid Shasta Reach** in the Agreement. See Table 8 below for Outpost M-R LLC’s reported progress on SHA commitments for the North Annex.

Table 8: Status of various Shasta SHA projects associated with North Annex’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Existing Pipeline	Maintain existing pipeline infrastructure	<b>Maintained</b>	All existing pipelines (irrigation and stockwater) were maintained and repaired as needed
Tailwater	Continue irrigation practices to capture, reuse and reduce tailwater impacts	<b>Maintained</b>	All tailwater was captured and returned to irrigation system via return pump
Stockwater	Continue to maintain stock water systems	<b>Maintained</b>	
Riparian Grazing	Will continue to maintain riparian areas by managing livestock grazing within the riparian area	<b>Maintained</b>	
Pasture Grazing	Will continue to holistically and intensively manage livestock grazing on the Enrolled Property	<b>Maintained</b>	Cattle were rotationally grazed on the property, following the principles of holistic management

Project Name	Project Description	Current Status	Description of Progress
Grazing	Permittee produces many livestock species and management is more intensive than cattle production. The riparian grazing plan will require additional consideration from UC Extension Service. Permittee agrees to work with UC Extension Service to develop a riparian grazing plan by the end of the first year of agreement	<b>Maintained</b>	Change: Beef cattle are the only species produced by or managed on the property as of October, 2020. For all of 2021 and moving forward, only cattle will be incorporated in the grazing/pasture management.

### 9. Grenada Novy Ranches

The Grenada Novy Ranches is owned by Lowell L. Novy in sole proprietorship, DBA Novy Ranches. The Grenada Ranch is located along Highway A-12, approximately three miles east of Interstate 5, in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). The Grenada Ranch includes a total of ±1085 acres, with ±586 acres under irrigation based on GIS coverage. Novy Ranches has, and for the term of the Permit, will continue to lease pasture commonly referred to the Zenkus Property. The Zenkus Property is 73 irrigated acres and is contiguous to and surrounded by either the Novy or Rice property. The Grenada Novy Ranches reporting is inclusive of the Zenkus Property hereinafter. Inclusive of the Zenkus Property, the Grenada Novy Ranches is managing 659 acres under the Agreement.

Grenada Novy Ranches is located within the lower part of the Mid-Shasta Reach and is adjacent to the Rice Livestock Company, Inc. Ranch. The Enrolled Property is adjacent to approximately 12,400 feet of the Shasta River. See Table 9 below for Novy's reported progress on SHA commitments.

Table 9: Status of various Shasta SHA projects associated with Grenada Novy Ranch’s Site Plan

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Tailwater Reduction	Continue irrigation practices to ensure there are no tailwater impacts	<b>Maintained</b>	Evaluate berms regularly as part of pasture management.
Novy Pump Maintenance	Installed Novy Pump in 2007 to replace usage of the Huseman Ditch, thus leaving at least 5.5 cfc in stream for additional 3.5 miles. Continue to maintain pump to standards	<b>Maintained</b>	Main Novy Pump is visually inspected 1-2 times per day, when pumping.
Tailwater Berms	Installed 6 tailwater berms throughout Novy Ranches from 2009 to 2013 to reduce tailwater inputs and water quality impacts. Continue to monitor and repair tailwater berms as needed	<b>Maintained</b>	Evaluate berms regularly throughout the year.
Novy Pump	Implement efficiency project on Novy pump	<b>In progress</b>	Upon finalization and determination of water rights NOV, work will continue. At this time, the determination is stalling this project.

Project Name	Project Description	Current Status	Description of Progress
Novy Rice Zenkus-Novy Commitment	Implementation of efficiency project on the Novy, Rice, Zenkus Riparian Diversion conserving up to 5 cfs conveyance and Novy Riparian Pump Efficiency Project.	<b>In progress</b>	Utilizing new headgate and flow measuring device which was installed at POD 08/12/21  Novy's are optimistic that Water Control Board will give final approval to move forward with the Fish Passage and Water Efficiency project for Novy/Rice/Zenkus Diversion. RCD has had several meetings with WCB & State Water Board, providing additional detail showing how the NRZ pipeline will contain water management systems to address water right issues yet waiting to be determined; hinging upon requested but yet to be received historic information. RCD has recently submitted a new grant request for the NRZ via NFWF. Novy's believe that they have a strong project that deserves the financing and will benefit/enhance fish passage and water efficiency.
Soil Moisture Sensing program	Work with U.C. Extension to further understand soil moisture and further optimize irrigation efficiency	<b>In progress</b>	Novy Ranches continues to use hand-held moisture sensors throughout the ranch. Novy Ranches will implement the ideal Moisture Sensors, following advisement and instruction via UC Extension/RCD.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Reach wide flow strategy	Participate in a reach-wide diversion management strategy	<b>In progress</b>	Abided by SHA Flow Management System. Closely worked with Siskiyou County Watermasters to assist with other pulse flows and assist with other adjudicated irrigation rotations outside of SHA.
Fish Passage	Maintain unimpeded fish passage conditions at the Novy Pump diversion	<b>Maintained</b>	Maintained fish cone screen daily, confirming it worked each day the pump was in use.
NRZ Interim Measures	Manage and adjust flashboards and by-pass volume at Novy, Rice, Zenkus diversion structure based on fish passage objectives	<b>Maintained</b>	Maintained a 4' or more opening at all times at flashboard dam. This has been a practice since 1976.
Riparian Grazing	Continue to minimize the potential impacts of grazing in riparian areas by limiting the season of use and by maintaining an approximate 6" stubble heights for herbaceous vegetation	<b>Maintained</b>	Cattle grazed from 07/13/22 through 08/03/22, after the ducks and geese have fledged their brood. Closed riparian gates when grass got to 4" in height.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Riparian fencing	Continue to perform yearly maintenance on existing riparian fencing	<b>Maintained</b>	Fencing is a never-ending job and we have kept good fence throughout this year.
Riparian Planting	Maintain the few remaining trees/shrubs from four test plots along the Shasta River that were planted in 2015.	<b>Maintained</b>	Trees planted as part of test plots did not survive. However, willow trees in Riparian section#1 naturally recruited.
Pasture Management	Continue to utilize pasture rotation to avoid overgrazing	<b>Maintained</b>	While Novy Ranches has culled a number of cattle, we are still working towards the optimum number during a drought year.
Assessments	Continued participation in temperature monitoring at ingress, middle and egress and DO monitoring at the ingress of the Grenada Novy Ranches Shasta Reach via RCD	<b>Maintained</b>	Ethan Brown on-site every 3 weeks to download DO and temp info, while maintaining equipment and batteries for continuous reporting. This year Novy's have asked Ethan to keep equipment in the water past Oct, 2022 to continue to actively collect data.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Assessments	Allow access for studies that support objectives of the Agreement and as approved under the Agreement.	<b>Maintained</b>	SVRCD has continued to collect DO and temperature readings. Graphs attached.

**10. Rice Livestock Company, Inc.**

Rice Livestock Company, Inc. (Rice) is located along Highway A-12, approximately three miles east of Interstate 5, in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). Rice includes a total of 2,100 acres, with approximately 379 acres under irrigation. Approximately 1.8 river miles of the Shasta River is within ownership of Rice, within what has been designated the **Mid-Shasta Reach** in the Agreement. See Table 10 below for Rice's reported progress on SHA commitments.

Table 10: Status of various Shasta SHA projects associated with Rice's Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Maintain Huseman POD and Screen	Maintain the Huseman Ditch diversion and fish screen. Continue diversion reduction realized through the Huseman Ditch efficiency project of 2011. Maintain pipeline infrastructure provided with the Huseman Ditch efficiency project of 2011. Continue remote control of Huseman Pump which allows users to turn off pump remotely reducing tail water.	<b>Maintained</b>	Installed new flow meter. Remote control of Huseman pump no longer working but hope to get new system in with Huseman pipeline project.  Sought funding for design and implementation of Huseman Ditch project.



<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Tailwater Management	Huseman Fields 1 and 2: Improve berm and develop catch ditch to deliver and re-distribute excess tail-water water to under irrigated property.	<b>In progress</b>	Work done last year to improve berms in field 2 by making them taller and fixing any washed out areas. Berms remained in good shape throughout 2022.
Tailwater Management	Novy-Zenkus- Rice Riparian -Gravel Pit Field. Improve berm at Shasta River.	<b>Maintained</b>	We plan to incorporate berm improvement project with NRZ pipeline project.  Continued maintenance and plan to improve.
NRZ Efficiency Pipeline	Implementation of efficiency project including piping to increase delivery efficiency on the Novy-Rice-Zenkus conveyance and provide irrigation efficiency through flood valves and piping of irrigation laterals	<b>In progress</b>	Project was awarded funding and continuing to resolve neighbors' water right dispute with funding source.
Huseman-Rice/Nicoletti Commitment	Change NRCS design, Permit and Plan (CEQA) Pipeline and Implement efficiency project to reduce diversion from 11.9 cfs to 9 cfs	<b>In progress</b>	SVRCD submitted proposal for design funding for Huseman Ditch. Flow meter data was unable to be downloaded by 3rd party. Flow meter sent to McCrometer to repair and download and get repaired.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Reach wide flow strategy	Participate in a reach-wide flow strategy as outlined in the Mid-Shasta Flow Strategy	<b>In progress</b>	Provided bypass flows as identified in Mid-Shasta flow strategy for both NRZ and Huseman ditches. The real-time data was submitted and RCD has access to real-time data.
Fish passage and screening	Maintain unimpeded fish passage conditions at the Huseman Diversion and Maintain Huseman Ditch Fish Screen	<b>Maintained</b>	Checked regularly for proper water flow by fish screen.
NRZ fish passage	Maintain flashboards at Novy- Zenkus-Rice diversion in consideration of fish passage until fish passage and screening project is implemented. Participate in assessment leading to design and implementation of a fish screening and passage facility meeting NMFS and CDFW criteria.	<b>Maintained</b>	Checked regularly for proper fish passage and board placement.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
NRZ fish passage	Participate in current design and permitting process to improve fish passage and protection at Novy Zenkus Rice Riparian Diversion. Upon completion of approved design, seek funding and aid in construction of a new diversion structure at the Novy-Zenkus- Rice Diversion that is passable for all life stages	<b>In progress</b>	Waiting for WCB determination of funding of NRZ implementation project.
Beavers	Implement beaver Best Management Practices	<b>Maintained</b>	We check for signs of beaver activity regularly but there are no beaver problems on our stretch of the river.
Riparian fencing	Maintain existing cattle exclusion fencing to protect riparian areas. Continue to perform yearly maintenance on existing riparian fencing, crossing and existing alternative stock watering systems	<b>Maintained</b>	Maintain fences throughout the year and monitor alternative stock water troughs to be sure they are producing adequate water.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Pasture Management	Continue to utilize pasture rotation to avoid overgrazing	<b>Maintained</b>	Cattle are rotated on a continuous basis to avoid overgrazing.
Pasture Management	Maintain soil moisture probe in Field #4.	<b>In progress</b>	Part of Huseman Ditch implementation project.
Pasture Management	Maintain Alternative Stock Watering systems	<b>Maintained</b>	Stock water systems are maintained and functioning.
Pasture Management	Participate in developing design, seeking funding and installation of Alternative stock watering systems on fields irrigated by NRZ riparian diversion.	<b>In progress</b>	Waiting for WCB determination of funding of NRZ implementation project
Effectiveness Monitoring	Diversion monitoring station will be maintained and operated as designed. Provide yearly data	<b>Maintained</b>	NRZ & Huseman diversion monitoring systems are maintained and monitored for proper collection of data. The data was submitted and attached.

**11. NB Ranches, Inc.**

NB Ranches, Inc. (Nicoletti) is located along DeSoza Lane, approximately three miles east of Interstate 5 near Grenada, in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). The NB Ranches is located on the Shasta River, within the Mid-Shasta Reach and includes a total of 357.2 acres, with approximately 257.4 acres under irrigation based on GIS coverage. Approximately 1.2 river miles of the Shasta River is within the ownership of NB Ranches. See Table 11 below for Nicoletti’s reported progress on SHA commitments.

Table 11: Status of various Shasta SHA projects associated with Nicoletti’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Maintain 2nd POD	Maintain the existing Huseman second point of diversion that conserves an estimate 240 af compared to previous point of diversion	<b>Maintained</b>	
Hayfield lateral	Install lateral to reduce tailwater impacts	<b>In progress</b>	Working with Gary Black on finding funding for this project - include copy of final proposal from RCD
SWRA tailwater re-use	Manage fields to reduce tailwater returns from outside sources to reduce diversion	<b>Maintained</b>	SWRA tailwater is collected in long sump and reused on pastures.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Fish Passage	Maintain unimpeded fish passage conditions at the Huseman Diversion	<b>Maintained</b>	Photo of huseman fish screen in photo log
Riparian fencing	Continue to perform yearly maintenance on existing riparian fencing	<b>Maintained</b>	Fence is regularly checked and maintained as needed.
Watering lanes	Maintain existing watering lanes for stock water	<b>Maintained</b>	Three active watering lanes that are rocked
Grazing Management Plan	Participate in the development of and implementation of a UC Extension guided riparian grazing plan	<b>Completed</b>	Grazing Plan prepared

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Rotation grazing	Continue to utilize pasture rotation to avoid over grazing	<b>Maintained</b>	Riparian area was not grazed in 2021
Huseman-Rice/Nicoletti Commitment	Participate in design and implement Nicoletti component of Huseman Ditch piping to reduce diversion volume	<b>In progress</b>	Flowmeter installed at the pumping station and functioning.  Have submitted 3 applications for funding of design and implementation. Partial funding for implementation has been secured. An alternatives analysis is under development. Summary of alternatives will be shared with agencies and the preferred alternative will be taken to completed design when funding is secured.
Soil Moisture Sensing program	Install several soil moisture sensor stations to help inform irrigators when to start irrigation rotations, could help reduce water use by informing LO's of reduced ET during Spring and Fall and between rotations to keep water instream-quantified benefit is unknown	<b>In progress</b>	Priced watermark sensors

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Effectiveness Monitoring	Diversion monitoring station will be maintained and operated as designed. Provide yearly data	<b>Maintained</b>	Diversion monitoring station on Huseman - flowmeter reading was downloaded and attached. Real-time station installed at SBG in 2023, SVRCD collected data for 2022, which is attached.

## **12. Edson Foulke Ditch Company**

Edson Foulke Yreka Ditch Company (Edson-Foulke), an association consisting of six individual members that divert water through a single delivery system commonly known as the Edson-Foulke or China Ditch. The water diverted through Edson-Foulke ditch is a combination of multiple shared water rights. Edson Foulke, owns no real property and operates it's diversion through an easement on Parks Creek Ranch.

The furthest point of use is 15.45 ditch miles north of Parks Creek diversion point. The location of Edson Foulke diversion is within the **Upper Parks Creek Reach** of the Agreement. See Table 12 below for Edson-Foulke's reported progress on SHA commitments.

Table 12: Status of various Shasta SHA projects associated with Edson-Foulke's Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Maintain POD	Maintain diversion facility and diversion operation	<b>Maintained</b>	Routine maintenance/cleaning occurred for headgate, fish screen and canal



Project Name	Project Description	Current Status	Description of Progress
Water Conservation	Assess, design, permit and implement a water conservation project on Edson-Foulke Ditch that conserves 3.0 cfs when the ditch is operating at 60% capacity or greater. By-pass the 3.0 cfs of conserved water prior to diverting for irrigation or stock watering purposes.	<b>In progress</b>	Conservation project has been designed and engineered. Now seeking grant funding to implement project. Several grants have been applied for but none have been approved.
Edson-Foulke and Parks Creek Ranch diversion #1 &2 Delivery Efficiency Project	To implement Upper Parks Creek Flow Plan, design and construct a diversion facility which includes: programmable, automated head gate and flow gage for the diverted volume. Facility will also include streamflow gage facility located above or below diversion, based on feasibility and design	<b>In progress</b>	Concept of a shared point of diversion with Parks Creek ranch has been designed. Need additional funding to complete designs and implement.
Fish Passage	Maintain unimpeded fish passage at EF Parks Creek diversion except when surface flows cease	<b>In progress</b>	Maintained a clear channel in stream at the point of diversion for fish passage

Project Name	Project Description	Current Status	Description of Progress
Fish Screen Maintenance	Maintain Edson - Foulke Fish Screen and by-pass	<b>Maintained</b>	Routine maintenance occurred on the fish screen while diversion was operating and flows were maintained through the bypass

**13. Parks Creek Ranch**

Parks Creek Ranch (PCR) is owned by Outpost M R, LLC and operated by Belcampo Farms. PCR is located within the Covered Area along Old Highway 99 and Stewart Springs Road in central Siskiyou County (41°26’54.26” N latitude, 122°27’46.39”W longitude). PCR includes a total of 3,970± acres, with 1,480 ± acres under irrigation from Parks Creek and Spring Creek. Approximately 6.5 miles of Parks Creek flows through PCR within the reach designated as the Upper Parks Creek Reach of the Covered Area. See Table 13 below for PCR’s reported progress on SHA commitments.

Table 13. Status of various Shasta SHA projects associated with PCR’s Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
<p>Edson-Foulke and Parks Creek Ranch diversion #1 &amp;2 Delivery Efficiency Project</p>	<p>Participate in diversion facilities assessment, design and implementation to combine operate and maintain diversions #1, #2 and the Parks Creek Ranch Edson-Foulke right. Delivery efficiency and irrigation efficiency improvements to conserve water and meet the objectives of the Upper Parks Creek Flow Strategy. Site may also include Edson-Foulke Ditch Parks Creek Diversion. 2.8 cfs (1.2 cfs 1st priority, 1.6 cfs 23rd priority) would be provided for instream benefit prior to diverting.</p>	<p><b>In progress</b></p>	<p>PCR made some progress working with Gary Black in 2022 to assess diversion facility needs, irrigation improvement opportunities, and possible diversion combination with Edson Foulke. PCR is ready to move forward; however, the project has not been selected for design or implementation funding opportunities.</p>
<p>Edson-Foulke and Parks Creek Ranch diversion #3, #4, #5 &amp; 6 Delivery Efficiency Project</p>	<p>Participate in diversion facilities assessment, design and implementation to combine, operate, and maintain diversions #3, #4, #5 and potentially #6 to improve irrigation delivery efficiency and irrigation efficiency to conserve water and meet the objectives</p>	<p><b>No progress</b></p>	<p>PCR made some progress working with Gary Black in 2022 to assess diversion facility needs, irrigation improvement opportunities, and possible diversion combination of #3, #4, #5, #6. PCR is ready to move forward; however, the project has not been selected for design or implementation funding opportunities.</p>

Project Name	Project Description	Current Status	Description of Progress
Maintain crossing and lanes	Continue to maintain crossings and stock watering lanes	<b>Not Necessary</b>	Full exclusion fencing complete. Stockwatering lanes not used, unless emergency. Crossings maintained.
Fish Passage	Maintain unimpeded fish passage conditions at all Enrolled Property diversions	<b>Maintained</b>	
Fish Screen	Operate and maintain the existing panel fish screens at all of the PODs	<b>Maintained</b>	
Riparian Fencing	Continue to perform yearly maintenance on existing 2.5 miles of riparian fencing	<b>Maintained</b>	Fence checked and maintained.
Riparian Fencing	Continue to seek funding and implement riparian fencing along the west side of Parks Creek for approx. 2.9 miles of Parks Creek that does not have riparian fencing.	<b>Complete</b>	Over 20,000 feet riparian exclusion fencing, completing Reach 2, 3, 4, and 5 of the upper Parks Creek. This completes the properties plans for all riparian exclusion fencing, per our site plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Riparian Planting	Seek funding, provide materials and assist with riparian planting from Old Hwy 99 to I-5	<b>In progress</b>	Some planting done by SVRCD
Riparian Grazing Plan	Work to develop and Implement the riparian grazing plan with UC Extension service	<b>Maintained</b>	
Alternative Stock Water	Assess, design and implement efficient alternative livestock watering system to aid adult migration and spawning by reducing diversion volume to 1.2 cfs.E.3.a5	<b>In progress</b>	Stockwater system designed and implemented in 2021 through upper parks creek areas reach 2,3, 4, and 5. Alternative stock water needs to be developed in reach 1, west of HWY99. Cattle currently drink out of irrigation ditches.
Effectiveness Monitoring Program	Maintain existing network, Install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	<b>In progress</b>	UPC, MPD, PME and PCE are all attached

#### 14. Shasta Springs Ranch

Shasta Springs Ranch is located north of Edgewood, California, and east of Interstate 5. The headquarters are accessed from Slough Road, which roughly approximates the west boundary, though the easement is not exclusively on or associated with the property line. The Permittee’s other properties, the Hole in the Ground and Seldom Seen ranches, share boundaries to the north and northeast. One other private landowner borders the Ranch to the east, south, and west.

Parks Creek and Kettle Springs Creek flow through the Enrolled Property. Significant springs, two of which are sometimes referred to as Black Meadow and Bridge Field, emerge at the west margin of the ridge between Lake Shastina and the Ranch. The water from these and other unnamed springs is collected in manmade and natural channels, eventually flowing into Parks Creek, approximately 4.5 miles upstream of the confluence with the Shasta River.

For the purposes of this Report, activities on the Ranch have the potential to influence the mid- and Lower Parks Creek sub-reaches. See Table below for Shasta Springs’ reported progress on SHA commitments.

Table 14: Status of various Shasta SHA projects associated with Shasta Springs’ Site Plan.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Cattle Access	Cattle access to the channel will be excluded or restricted to crossings, watering access points, and/or limited season/stocking/duration that conserves water quality	<b>No Progress</b>	
Maintain Tailwater Berms	Agree to continue maintenance of tailwater berms	<b>No Progress</b>	

Project Name	Project Description	Current Status	Description of Progress
Minimize Tailwater	Continue irrigation practices to minimize/eliminate tailwater	<b>No Progress</b>	
Kettle Springs Project	Continue to operate and maintain new (2017) Kettle Springs spring source management structure, as designed	<b>No Progress</b>	Kettle Spring diversion was reported in Acre-feet/month- Data attached
Bypass Upper Parks Flow	Participate in, including bypassing flow from Upper reach, Parks Creek Flow Strategy	<b>Maintained</b>	We do not have 2021 data available. We will include the 2022 data in the 2022 Annual Report.
Mid Parks Evaluation	Agree to further evaluation to determine feasibility of getting spring water on east margins of fields east of the Mid-Parks Creek to alcoves or reconfigured Mid-Parks reach (Mid-Parks Creek Project)	<b>In progress</b>	We have conducted field reviews and meetings to begin scoping the feasibility study.
Parks 1 and Parks 4 Diversion Combine	Combine EII Parks 1 and 4 diversions, would leave Parks 1 water (2 cfs) instream at times during spring season (March 1- June 1) to extend migration through reach and add efficiency and management flexibility in combination with Bridgefield and Blackmeadow work- probably a SHRP and CatX.	<b>No progress</b>	Seeking funding partners.

<b>Project Name</b>	<b>Project Description</b>	<b>Current Status</b>	<b>Description of Progress</b>
Parks #5 operation	Continue to maintain and operate Parks #5 improved POD infrastructure, complying with current CDFW requirements for passage, bypass flows, and screening	<b>No progress</b>	
Kettle Springs Tailwater	Agree to construct enhanced tailwater berm if applied irrigation is found to still be creating tailwater returning to Kettle Springs Creek as surface water	<b>In progress</b>	Tailwater evaluation was completed and submitted for review.
Bridgefield and North Slough Water Quality Eval	Agree to conduct water quality investigation of Bridge Field Springs Creek and the North Slough	<b>In progress</b>	Supplemental report was performed and submitted for review.
Redd/spawner survey	Continue to conduct redd/spawner surveys	<b>Maintained</b>	Surveys conducted and report submitted for review.
I-5 Passage Improvement	Agree to continue cooperation in project to eliminate potential salmon migration barrier on upstream landowner (Parks Creek under I-5)	<b>Completed</b>	Completed
Beaver Management Plan	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	<b>In progress</b>	Collecting distribution and related data, drafting preliminary draft document.



Project Name	Project Description	Current Status	Description of Progress
Riparian Grazing Management Plan	In the sub-reaches of Parks Creek without exclusion fencing, Cattle access to the channel and riparian zone will be restricted to crossings and/or limited season/ stocking/ duration that conserves habitat quality, consistent with recommendations of UCCE Range Conservation Specialists (Attachment Tate & Rivers, 2016)	<b>Maintained</b>	We acknowledge this requirement and submitted photo point images in our 2021 report. We have established additional photopoints during 2022 and will include those locations in the 2022 Annual Report.
Wheat Field Fencing	Shasta Springs Ranch will temporarily or permanently fence the Wheat Field pasture, if necessary, to achieve the stated management goals.	<b>In progress</b>	Seeking funding partners
Soil Moisture Sensing program	Agree to include additional pastures in Study Area to research applicability of soil moisture monitoring technology and incorporate into irrigation management where appropriate	<b>In Progress</b>	Soil Moisture Sensing evaluation was completed and submitted for review

Project Name	Project Description	Current Status	Description of Progress
Riparian Fencing	Agree to maintain existing riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan developed in consultation with UCCE Range Conservation Specialists	<b>No progress</b>	
Riparian Fencing	Will replace, out-of-pocket, up to 20% of riparian fencing damaged by high flow events and seek additional funding if necessary to complete repairs	<b>No progress</b>	
Riparian Planting	Permittee agrees to monitor survival of riparian plantings at Parks#5 and replace damaged beaver enclosures until cuttings are established	<b>In progress</b>	Supplemental study was submitted by permittee.
Cattle Access/crossings	Seven livestock/ vehicle crossings/ watering access lanes will be maintained as rocked fords (Section E.1.d.) One instream stock water only access point will be maintained with rock and panels, minimizing erosion potential to bank	<b>No Progress</b>	

Project Name	Project Description	Current Status	Description of Progress
Riparian Grazing	In the subreaches of Parks Cr. without exclusion fencing, Cattle access to the channel and riparian zone will be restricted to crossings and/or limited season/ stocking/duration that conserves habitat quality, consistent with recommendations of UCCE Range Conservation Specialists	<b>No progress</b>	
Effectiveness Monitoring Program	Reasonable access for monitoring salmonid use of created/restored habitat at Kettle Springs and Mid Park, East side Pastures and Spring Channel Renovation Projects.	<b>In progress</b>	Spawning surveys were performed in 2022- supplemental report was submitted

## Effectiveness Monitoring Data

The effectiveness monitoring station installation is in process and the third party monitoring scope of work and contract was initiated during the 2022 reporting year. The following graphs are data reports that were included in the 2022 Annual Reports or the data was downloaded from the real-time stations on CDEC or from the Eyasco Grabdata site that is established for SHA monitoring (Figure 1 to Figure 49). All raw data was also submitted as part of the annual reports and will be used for the 5-year analysis that is part of the SHA.

### MWCD Data: Upper Shasta

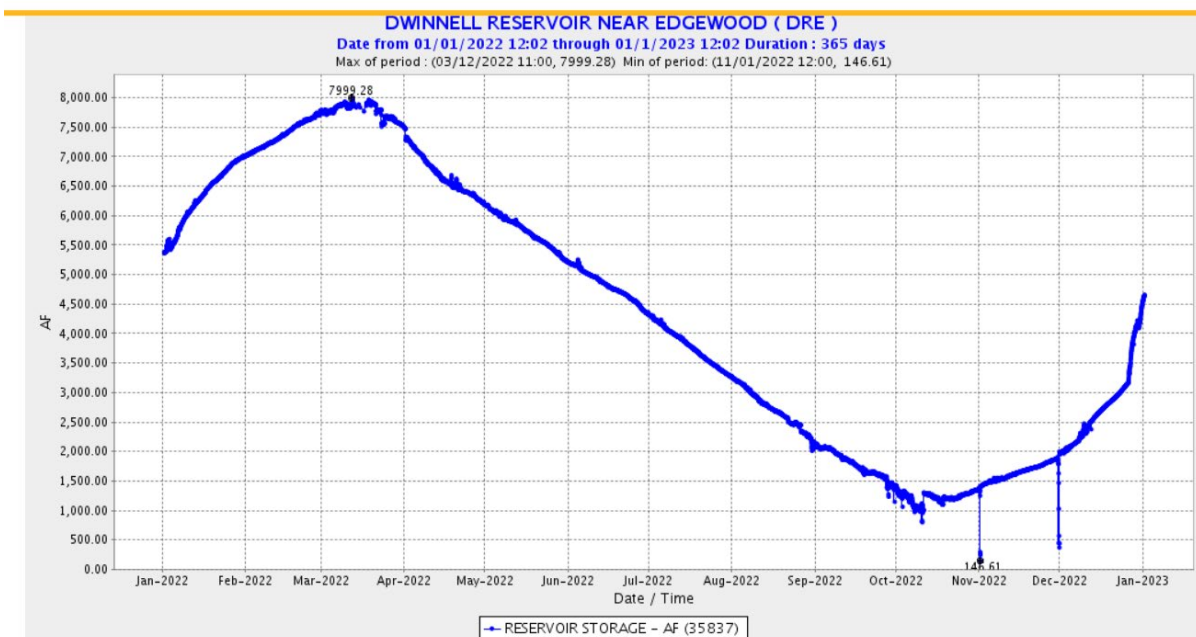


Figure 1. Dwinnell Storage for 2022

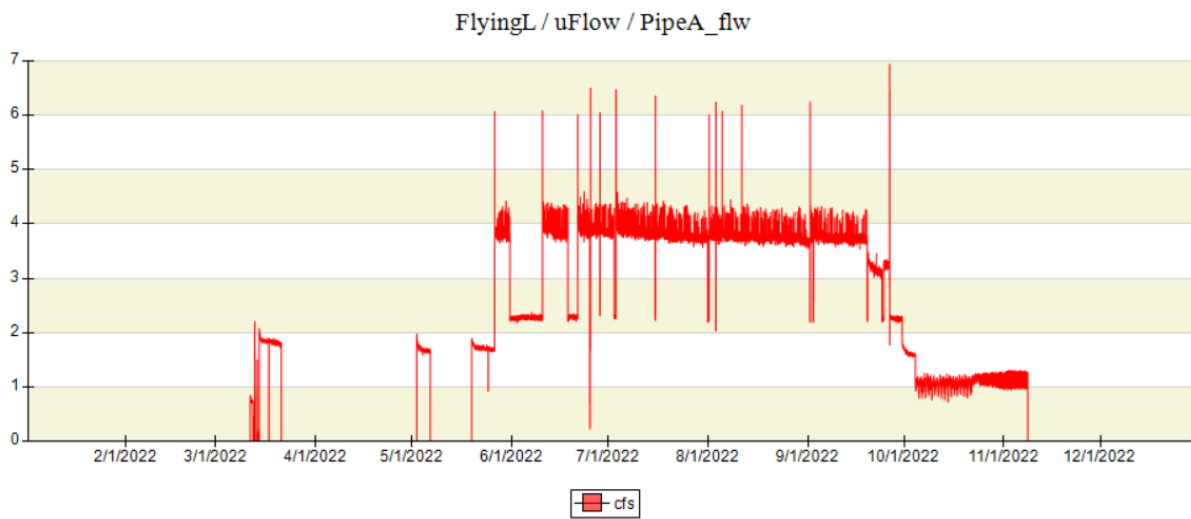


Figure 2. Flying L Groundwater Contribution for 2022 in cfs

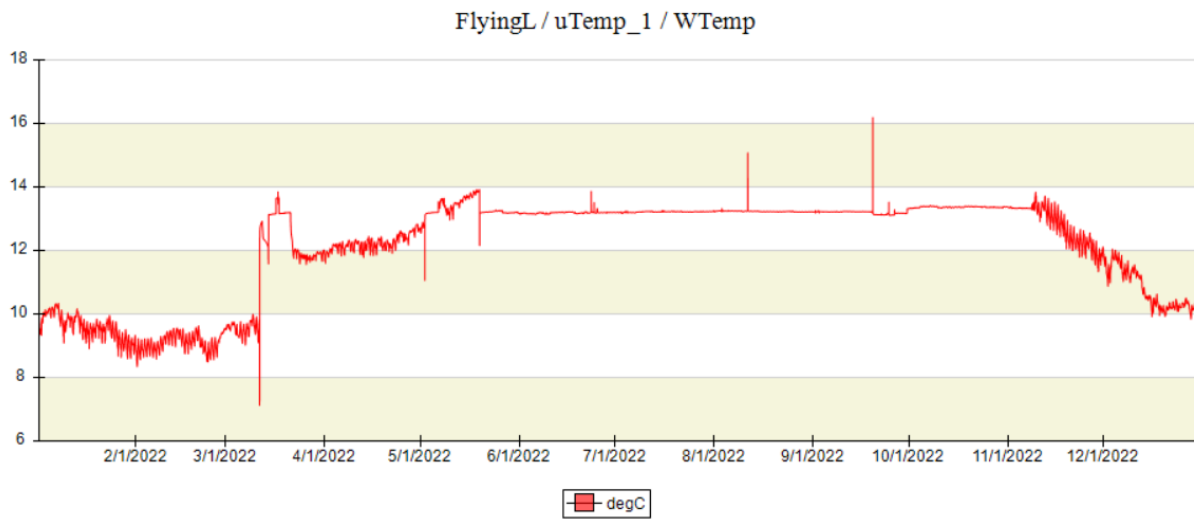


Figure 3. Flying L Temperatures in degrees C- GW is constant 12.7 degrees C

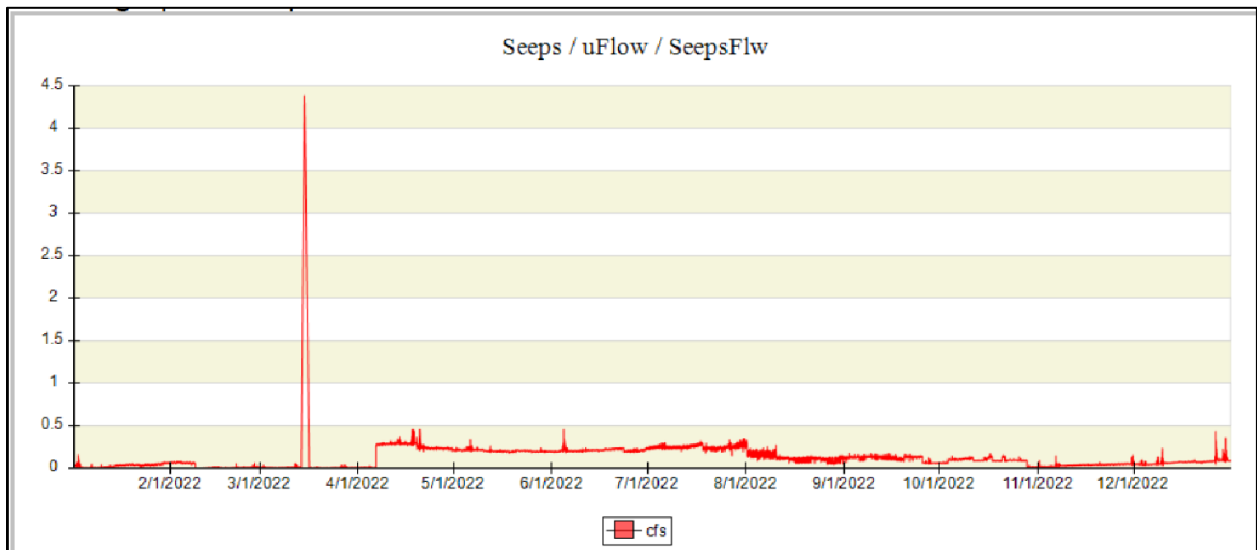


Figure 4. Seep Flow below dam into coldwater habitat.

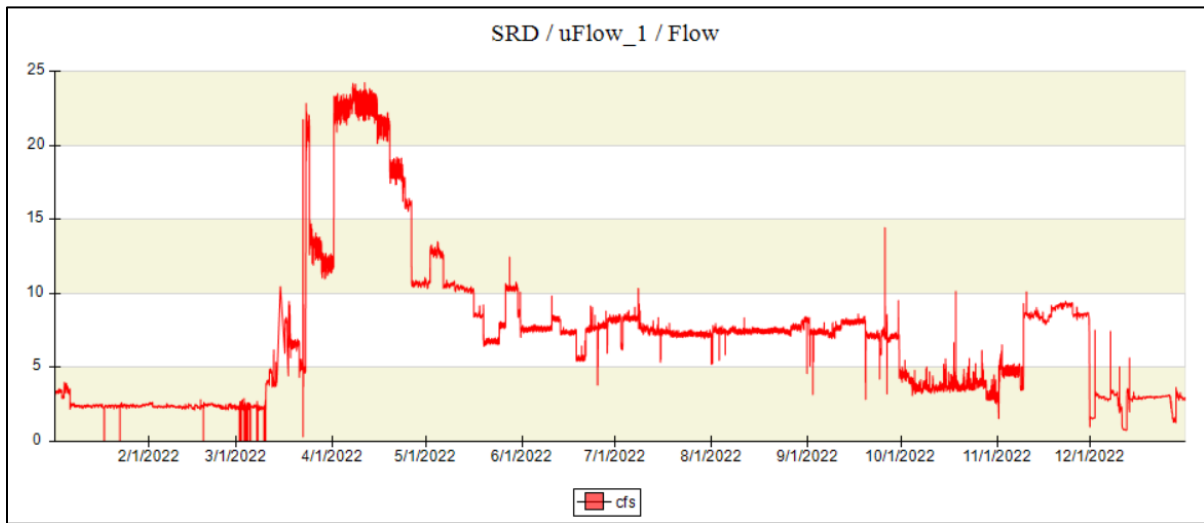


Figure 5. Flow leaving MWCD property at SRD Station (cfs)

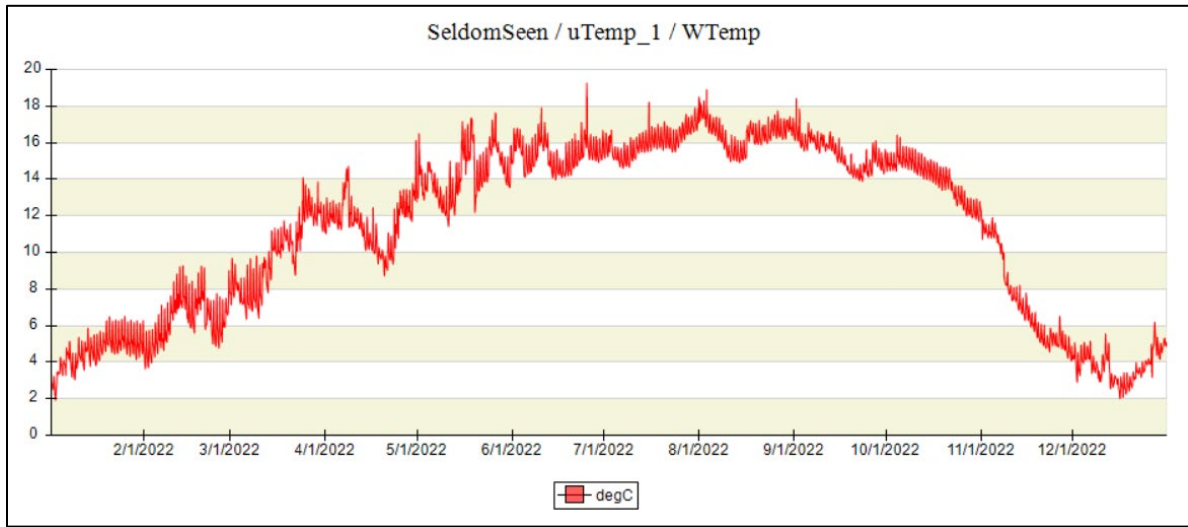


Figure 6. Temperature of water leaving MWCD at SRD in degrees C.

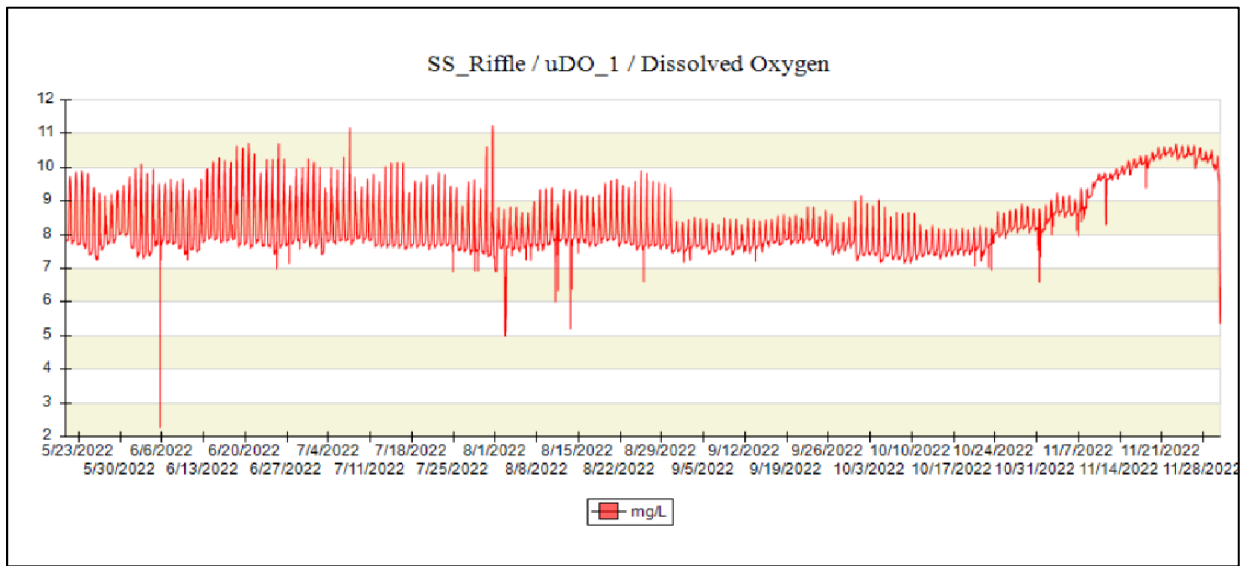


Figure 7. Dissolved Oxygen below MWCD at SRD in mg/l

## Hidden Valley Data

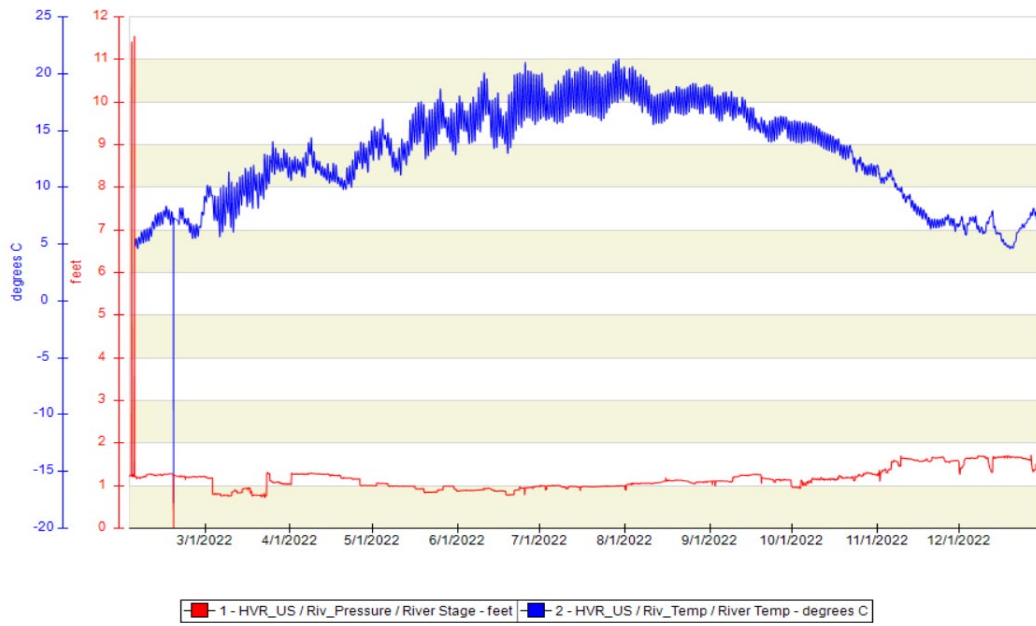


Figure 8. Temperature in degrees C and Stage in feet at HVR-US

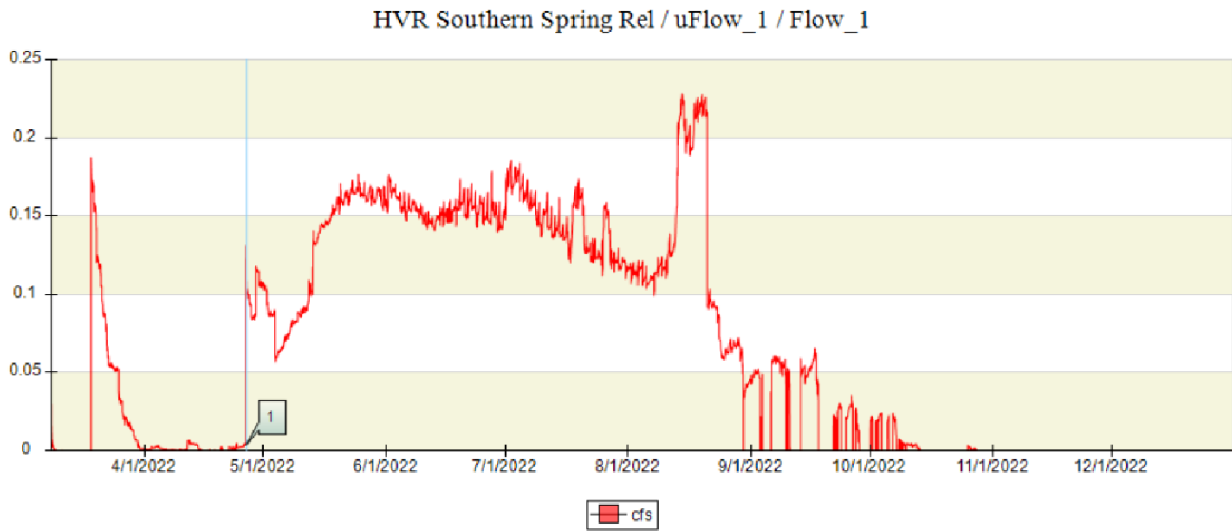


Figure 9. HVR spring Water Release at Southern Spring in cfs



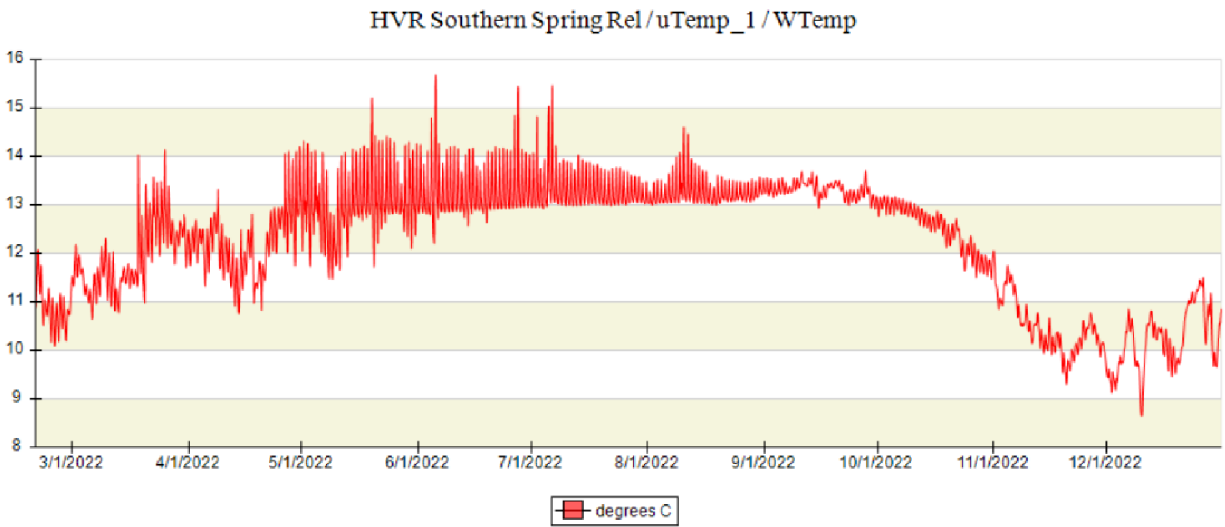


Figure 10. HVR Spring Water Released at Southern Spring in degrees C.

### Hole in the Ground Data

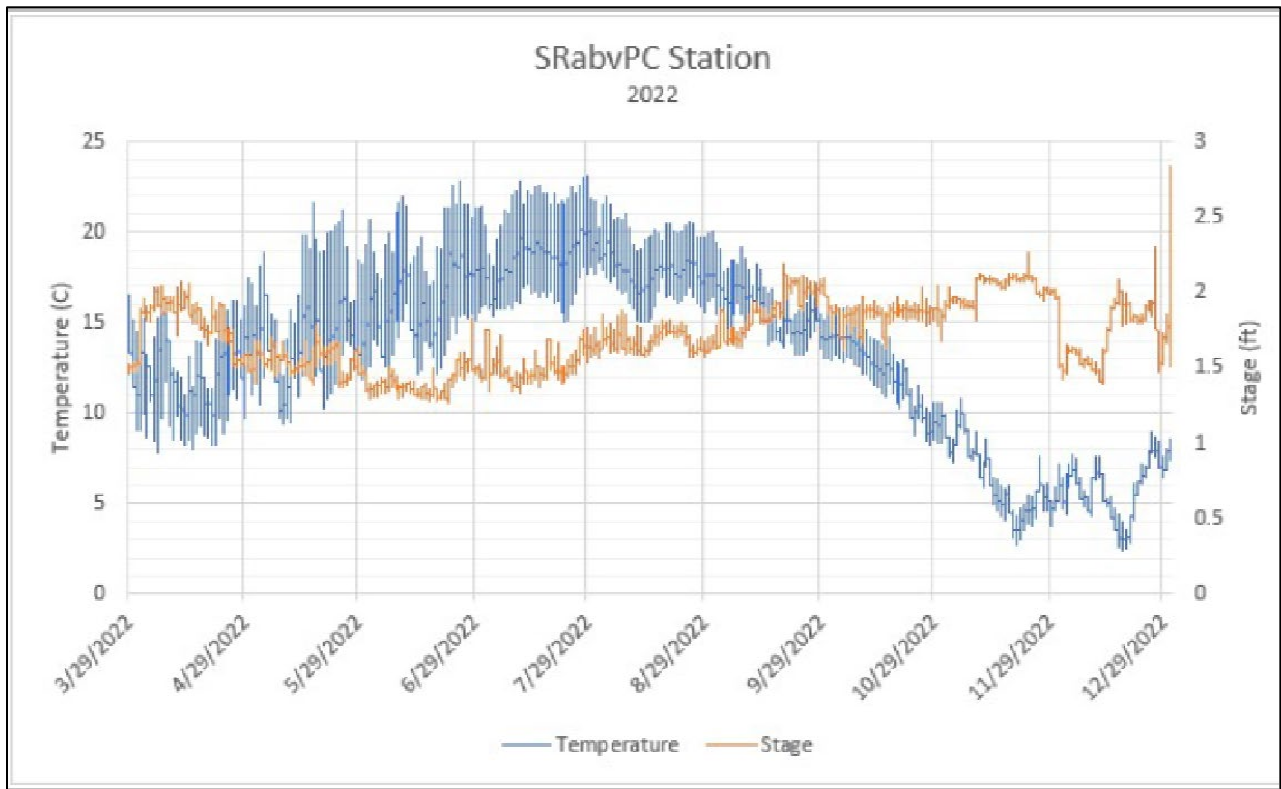


Figure 11. Shasta River above Parks Creek (SRabvPC)- Temperature and stage.

## Big Spring Wildlife Area

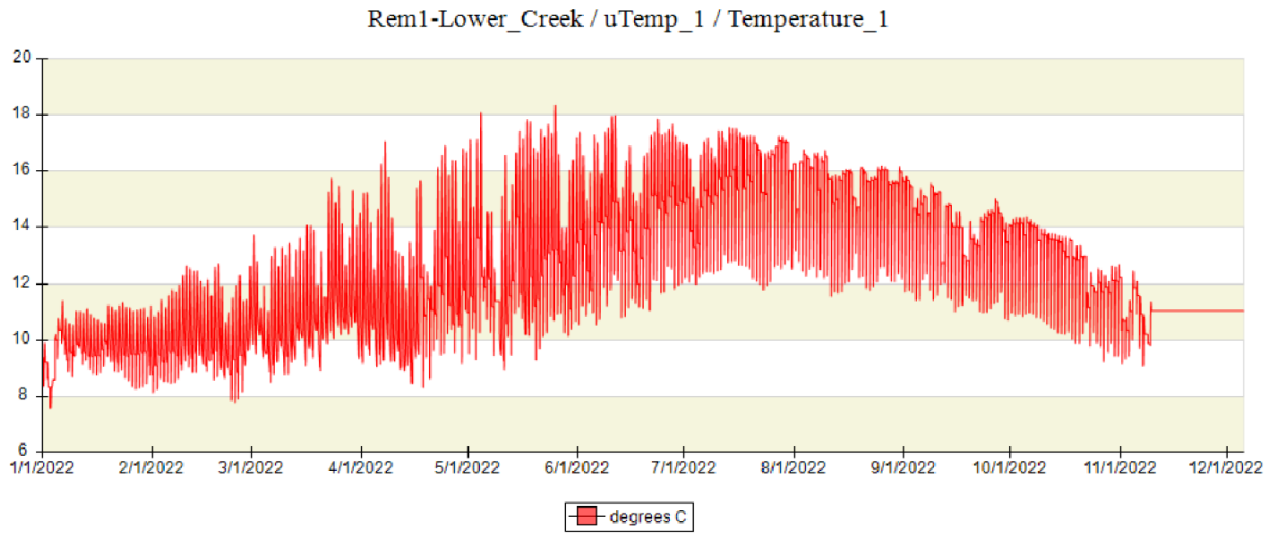


Figure 12. Big Springs Creek at Bridge Temperature in degrees C

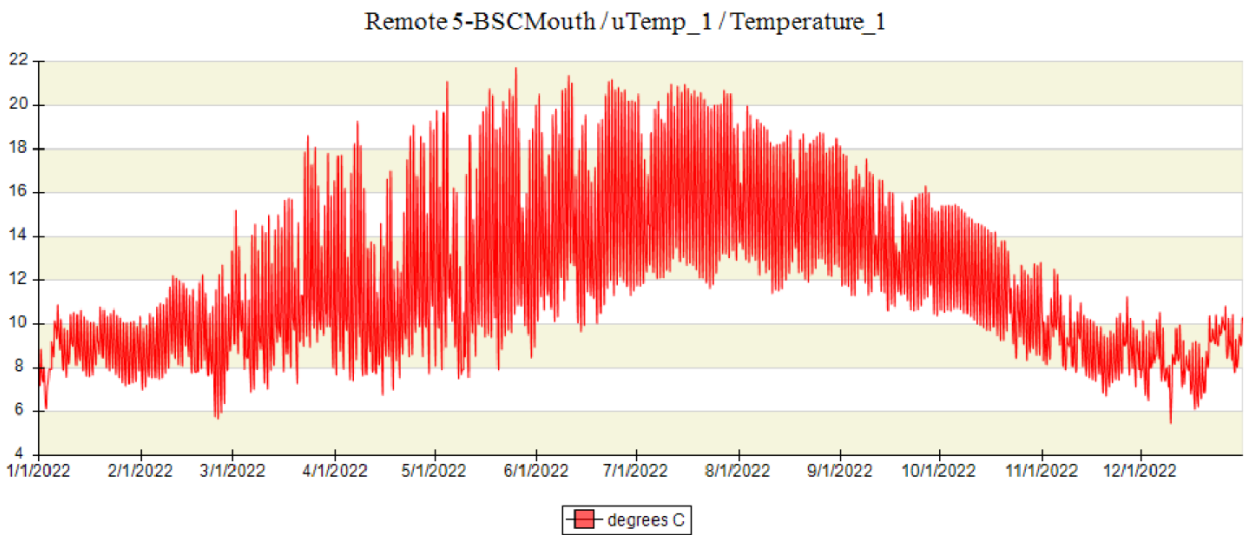


Figure 13. Big Springs Creek Mouth Temperature in degrees C

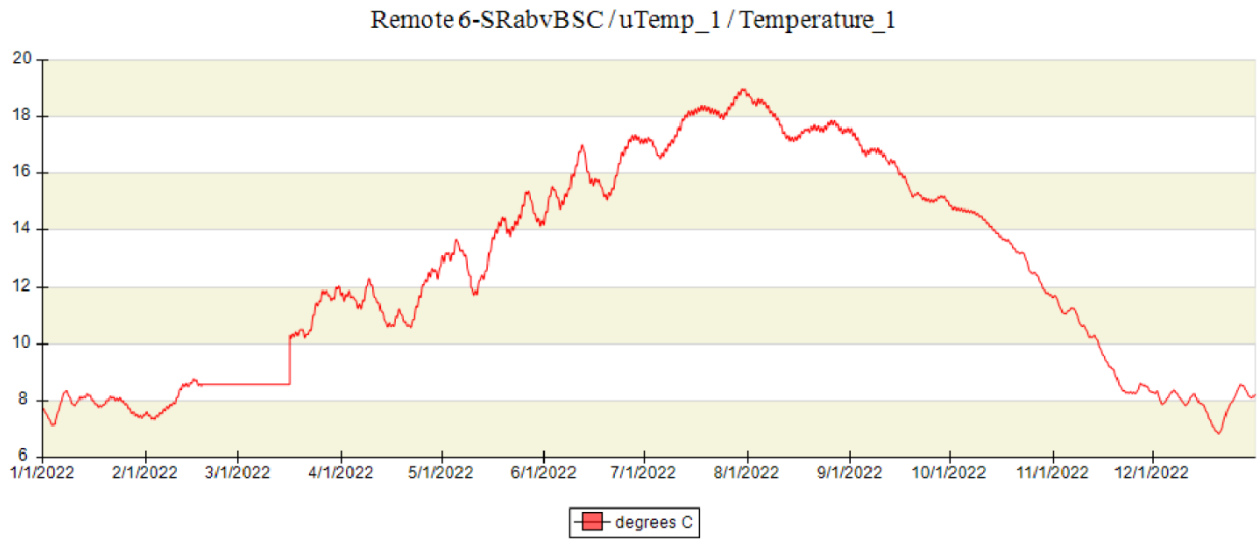


Figure 14. Shasta River above Big Spring Creek (SRabvBSC) Temperature in degrees C.

### Grenada Irrigation District

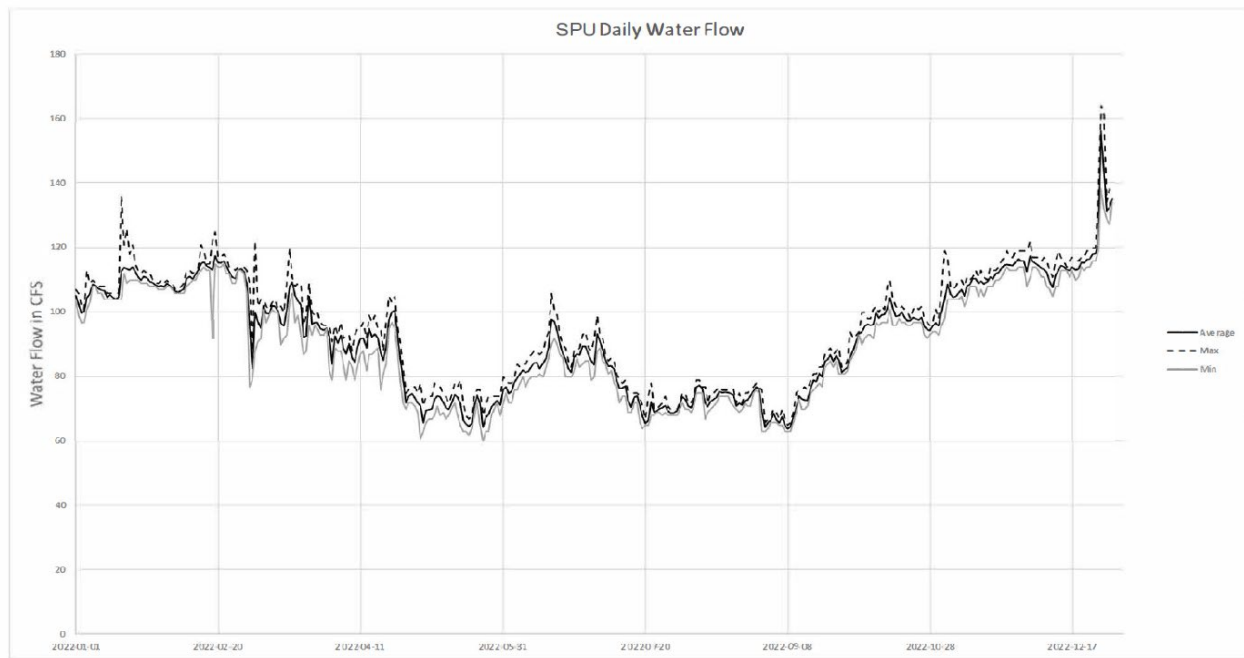


Figure 15. Daily Flow at GID Riffle (SPU) in cfs

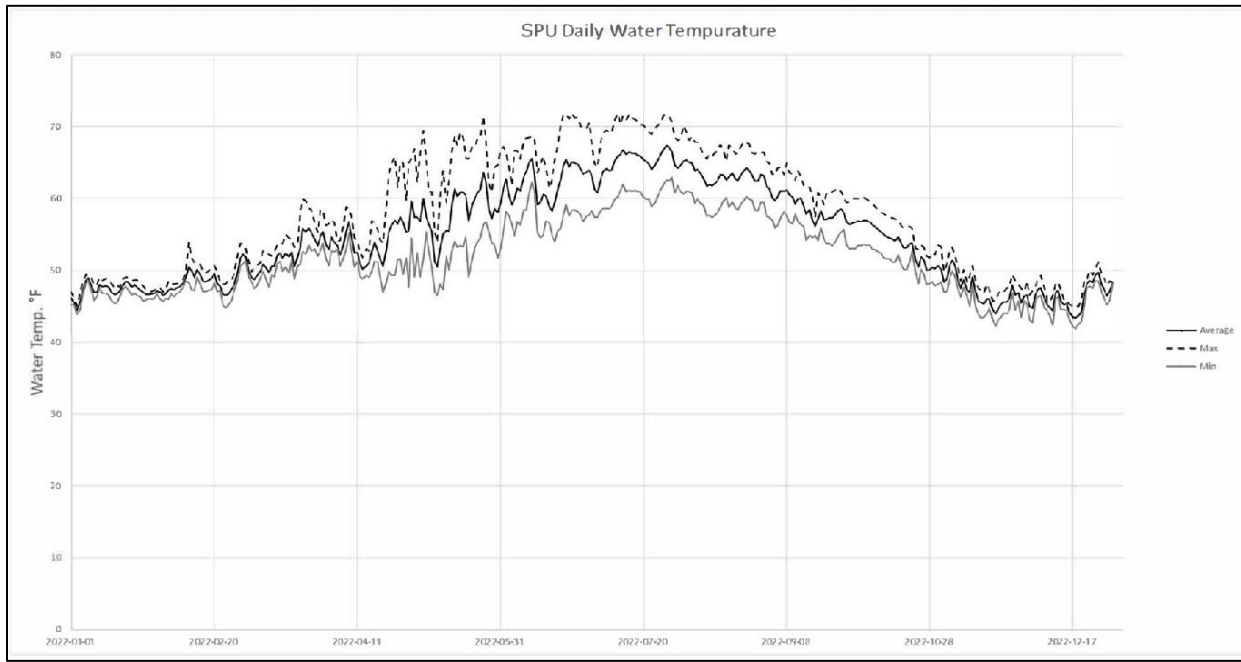


Figure 16. Daily Temperature at GID Riffle (SPU) in degrees C

### Novy Ranches

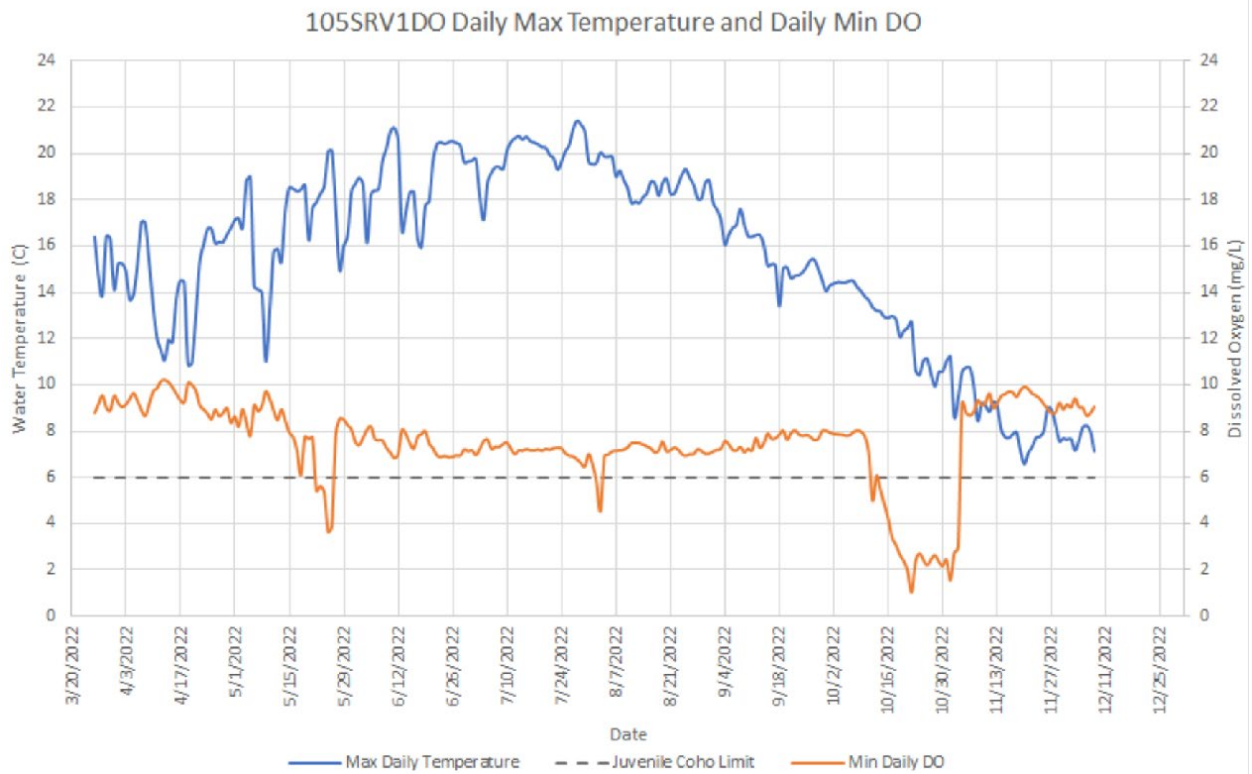


Figure 17. Daily Max Temperature in degrees C and Daily Minimum Dissolved Oxygen in mg/l.

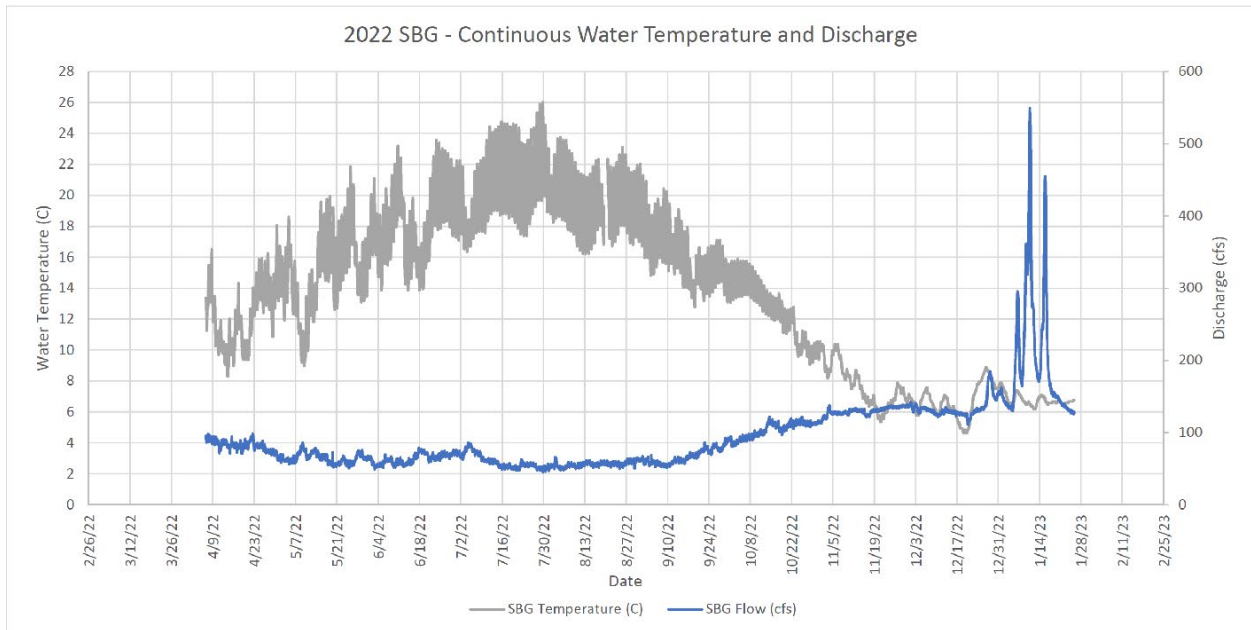


Figure 18. Temperature in degrees C and Discharge in cfs at Bottom of Agreement Area (SBG).

### Upper Parks Creek Data

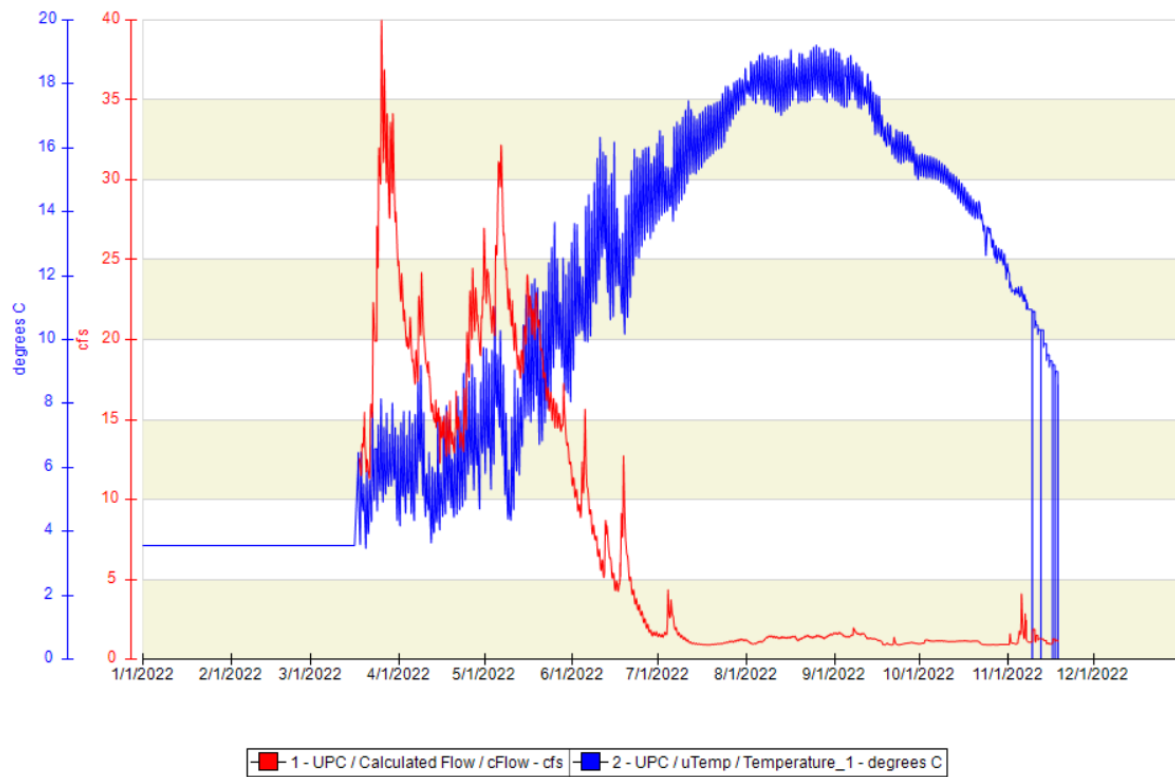


Figure 19. Temperature in degrees C and Discharge in cfs at Upper Parks Creek (UPC).

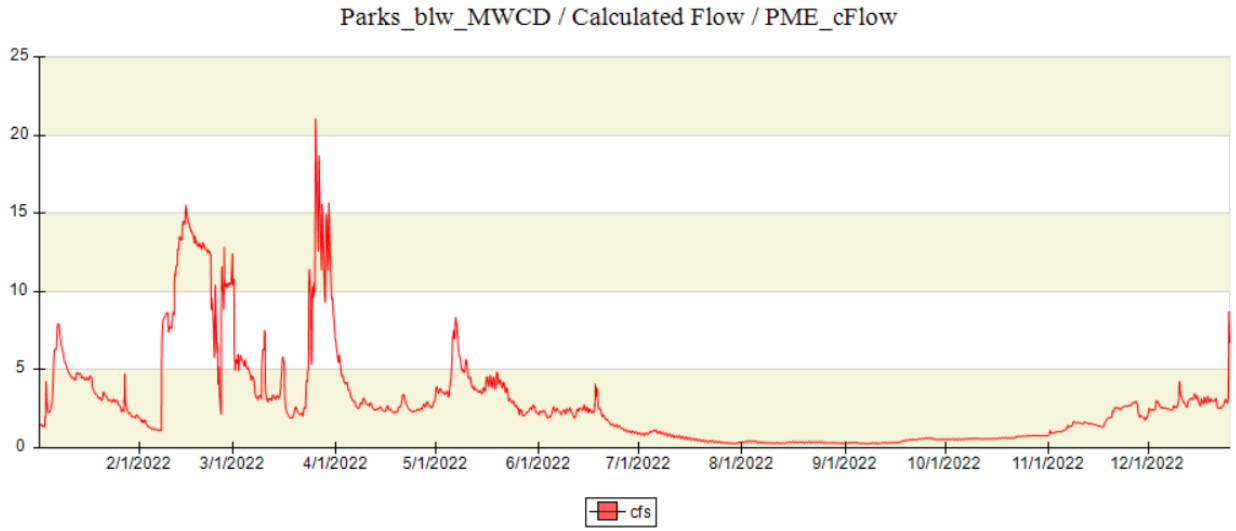


Figure 20. Flow in cfs at Parks Creek below MWCD Diversion (PME)

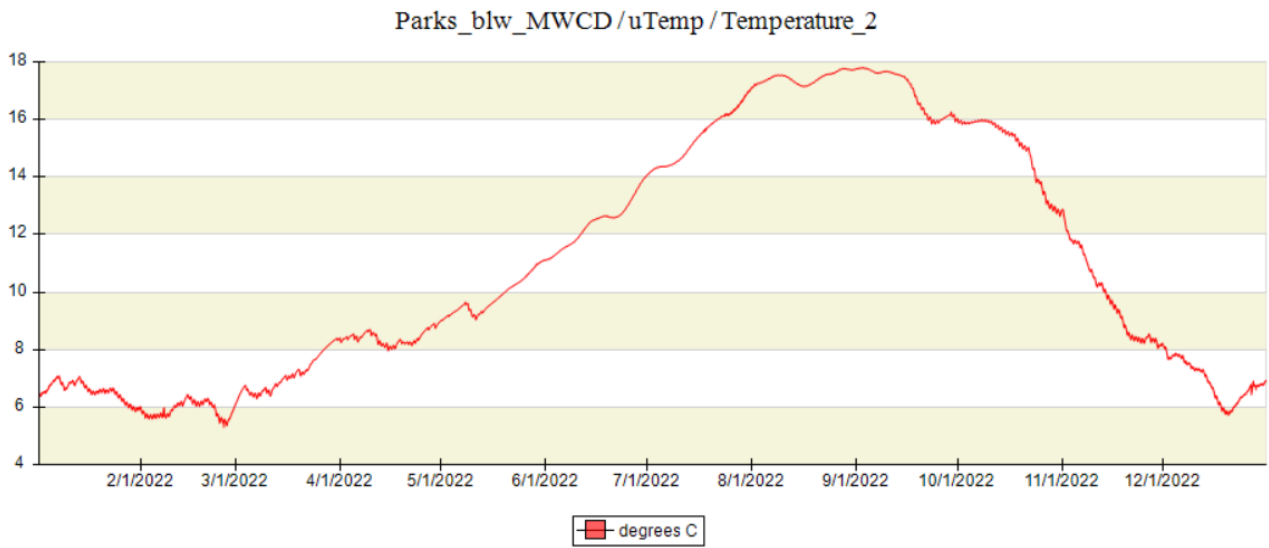


Figure 21. Temperature in degrees C at Parks Creek below MWCD POD (PME)

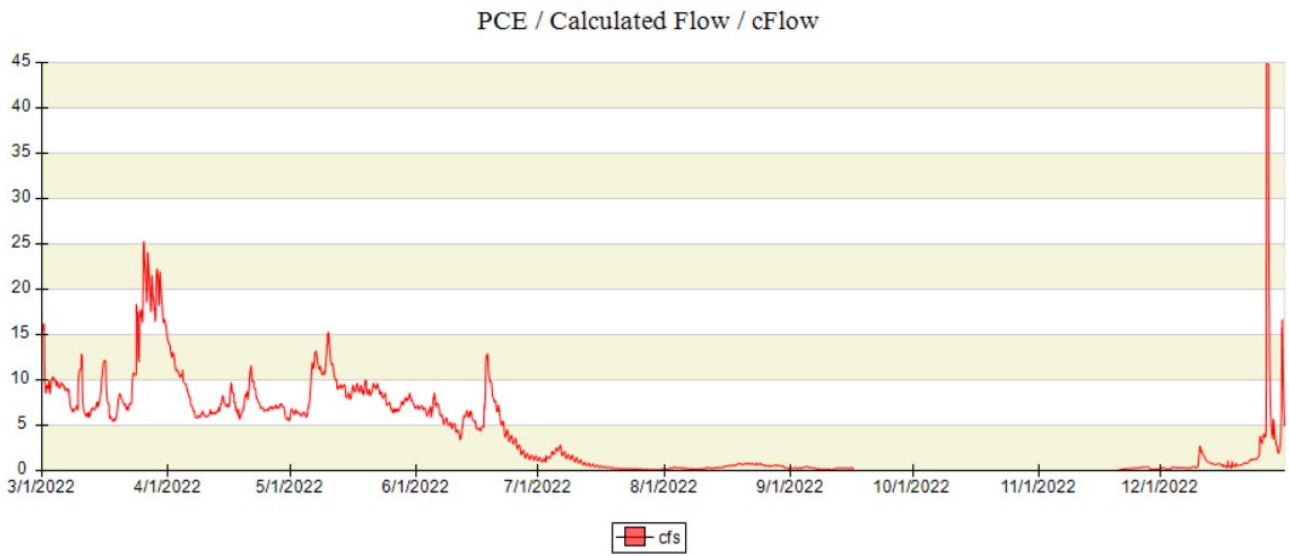


Figure 22. Flow in cfs at Parks Creek at I-5 (PCE).

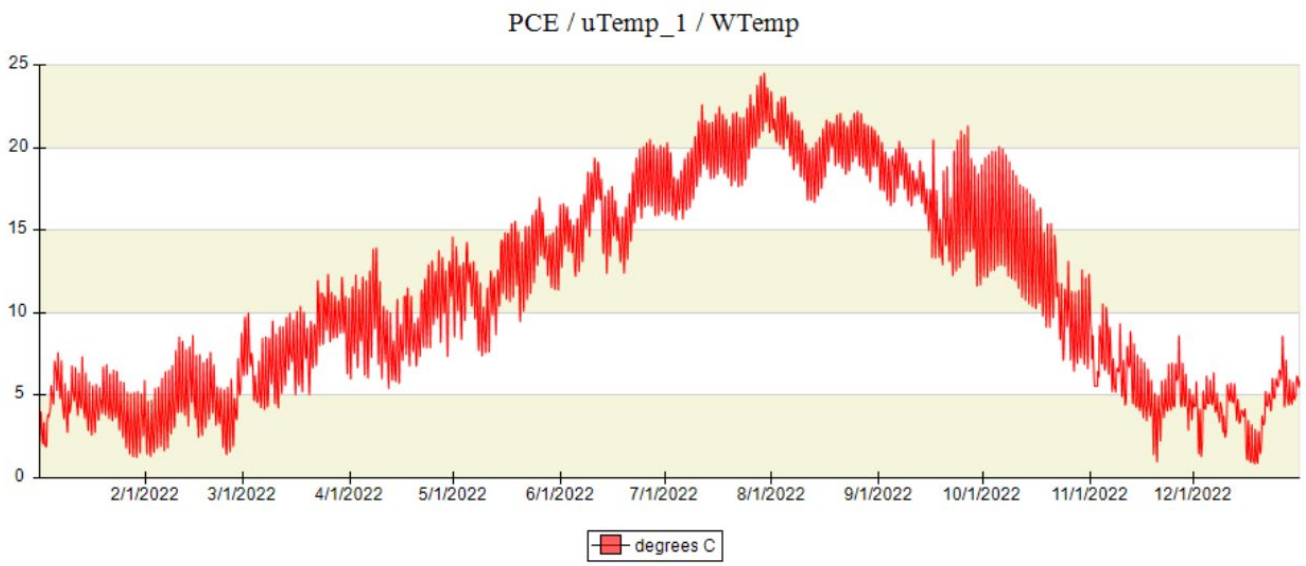


Figure 23. Temperature in degrees C at Parks Creek at I-5 (PCE).

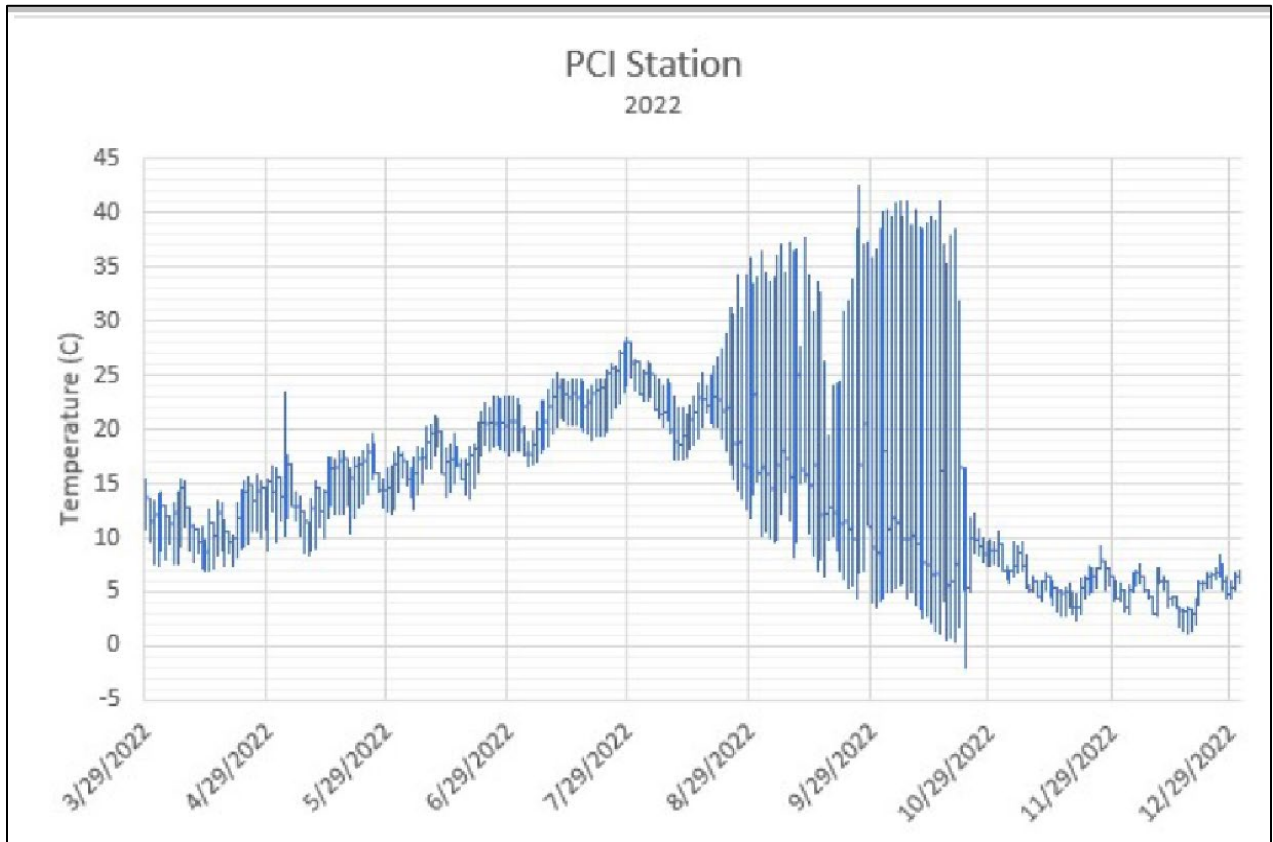


Figure 24. Temperature in degrees C- Mid Parks Creek downstream Shasta Springs Parks 4 POD (PCI). Wide ranging temperatures from late July to late September reflect air temperatures due to insufficient flow at the station.



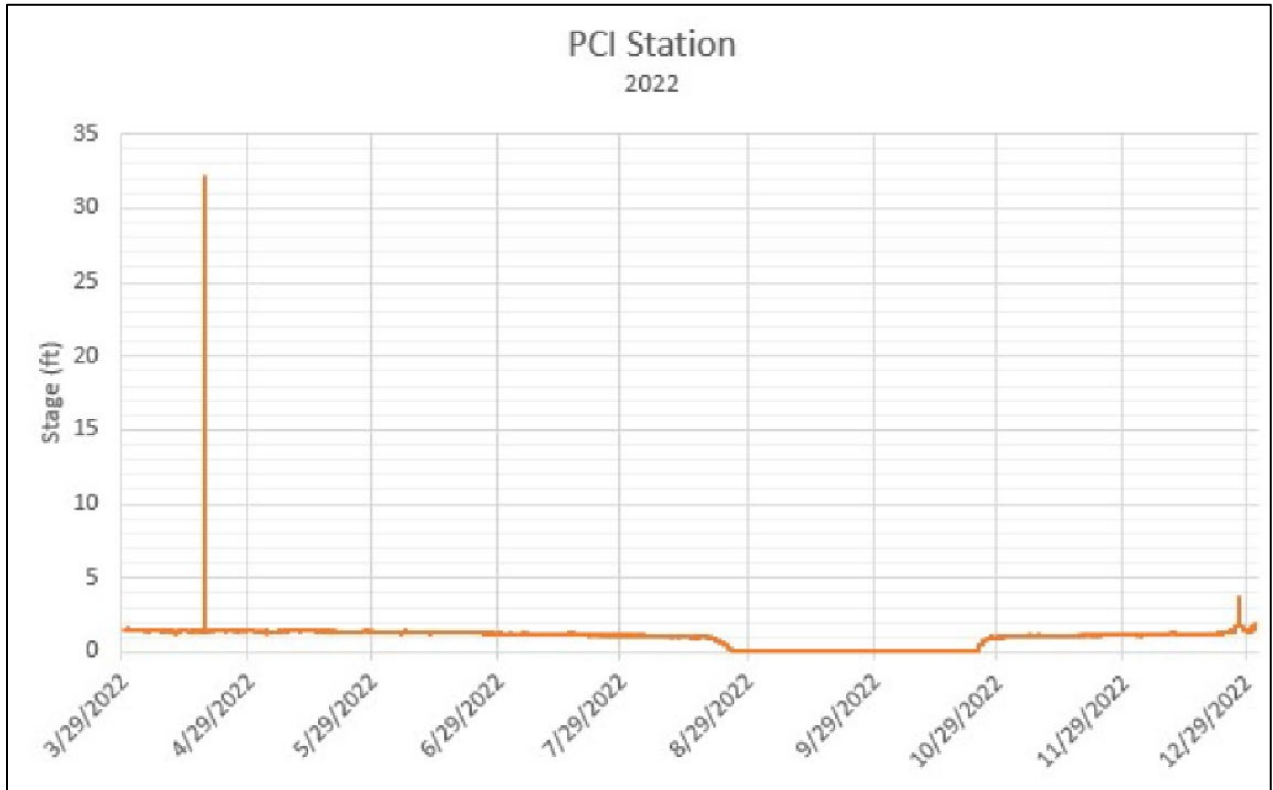


Figure 25. Stage in Feet- Mid Parks Creek downstream of Shasta Springs Parks 4 POD (PCI)

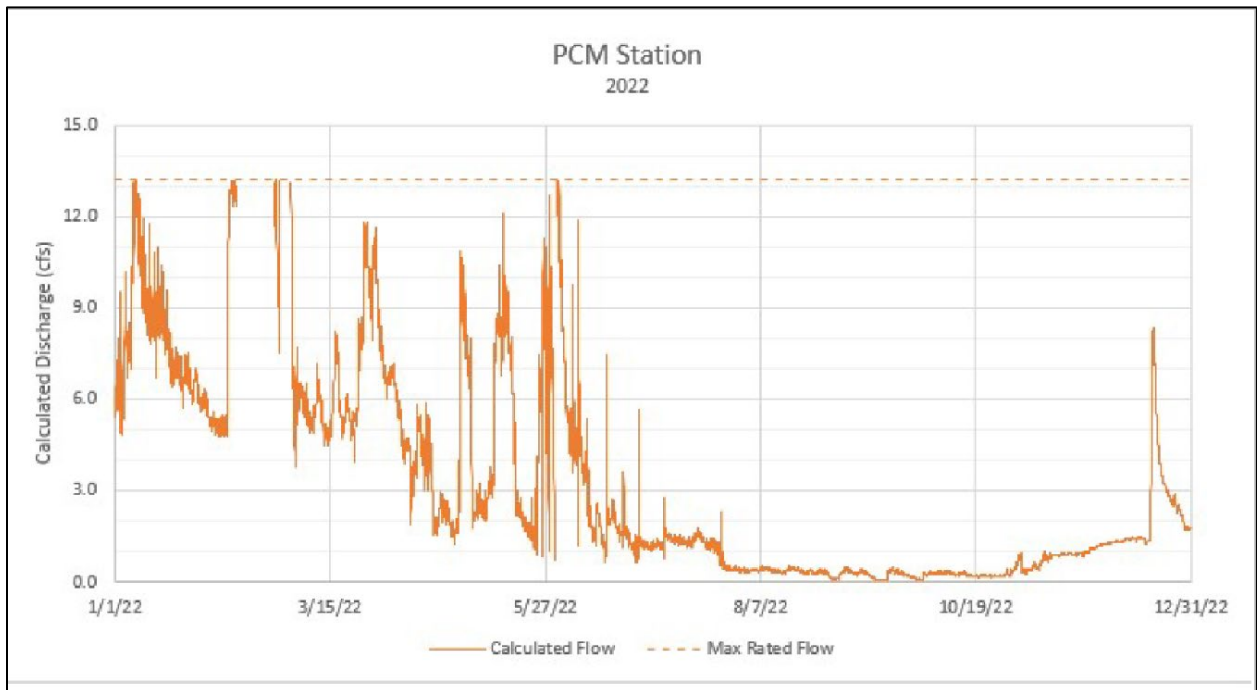


Figure 26. Flow in cfs - Mid Parks Creek downstream of Shasta Springs Parks 5 POD (PCM)

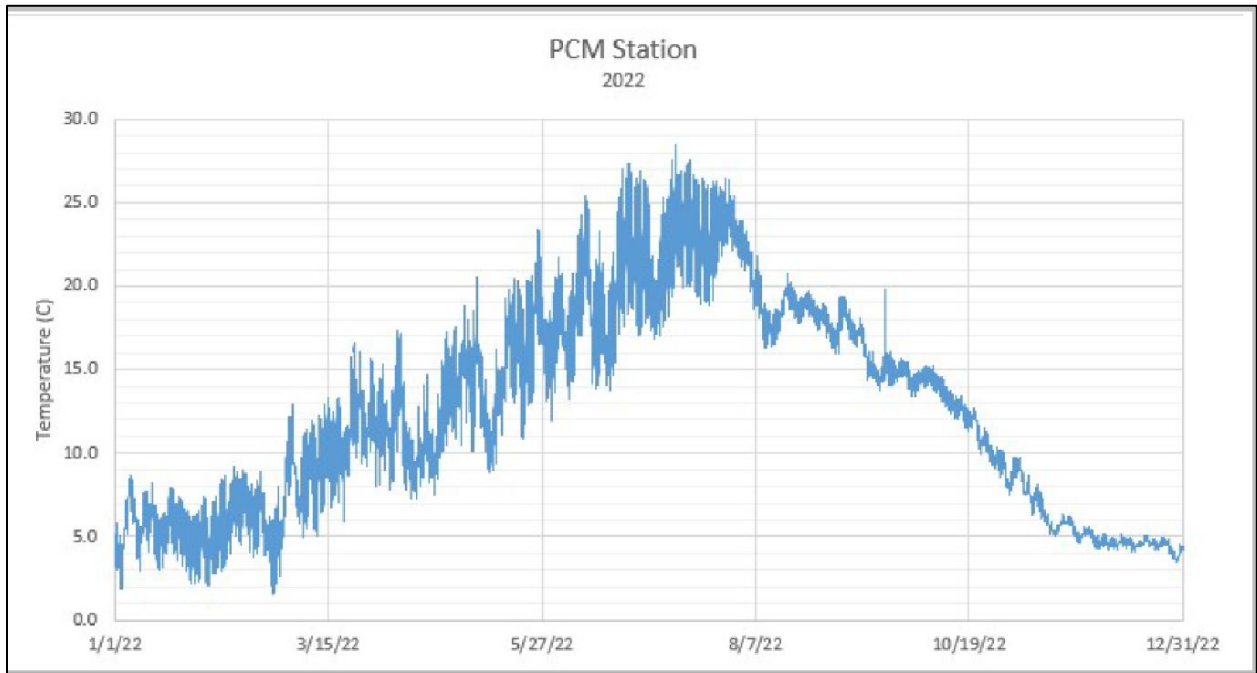


Figure 27. Temperature in degrees C- Mid Parks Creek downstream of Shasta Springs Parks 5 POD (PCM).

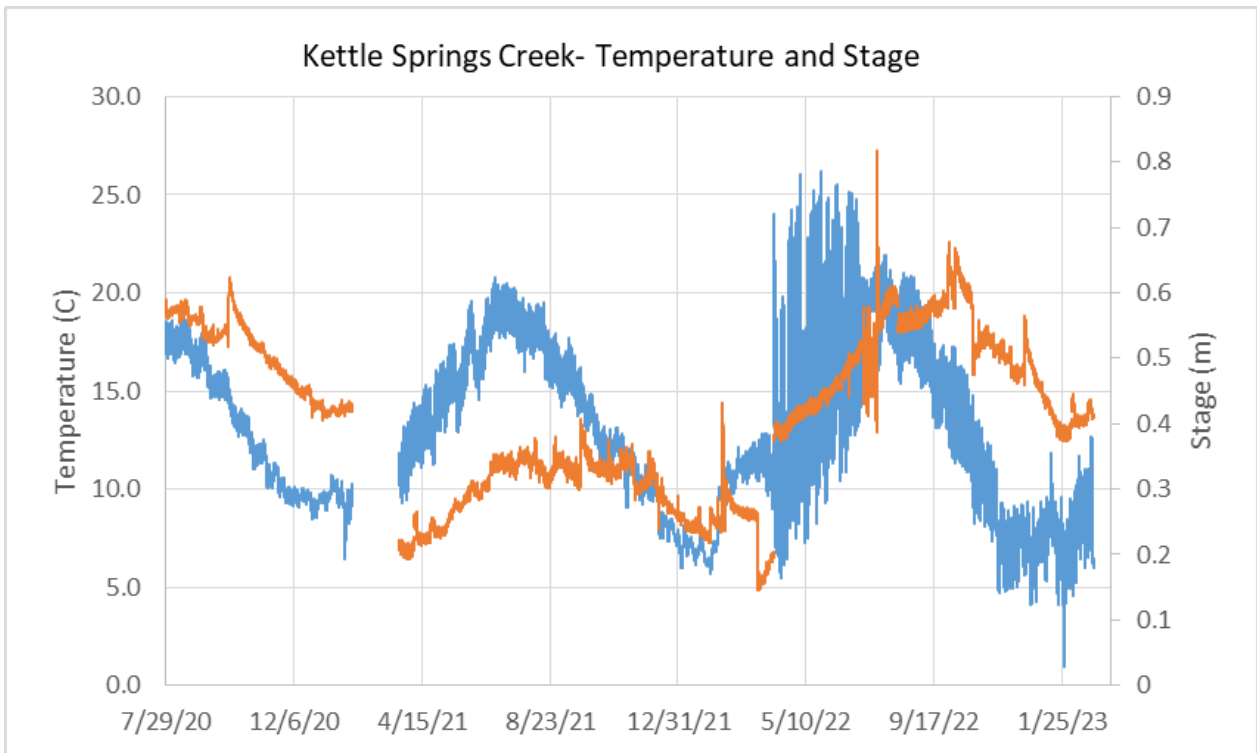


Figure 28. Temperature in degrees C and Stage in feet at Kettle Springs Creek crossing (KSC)

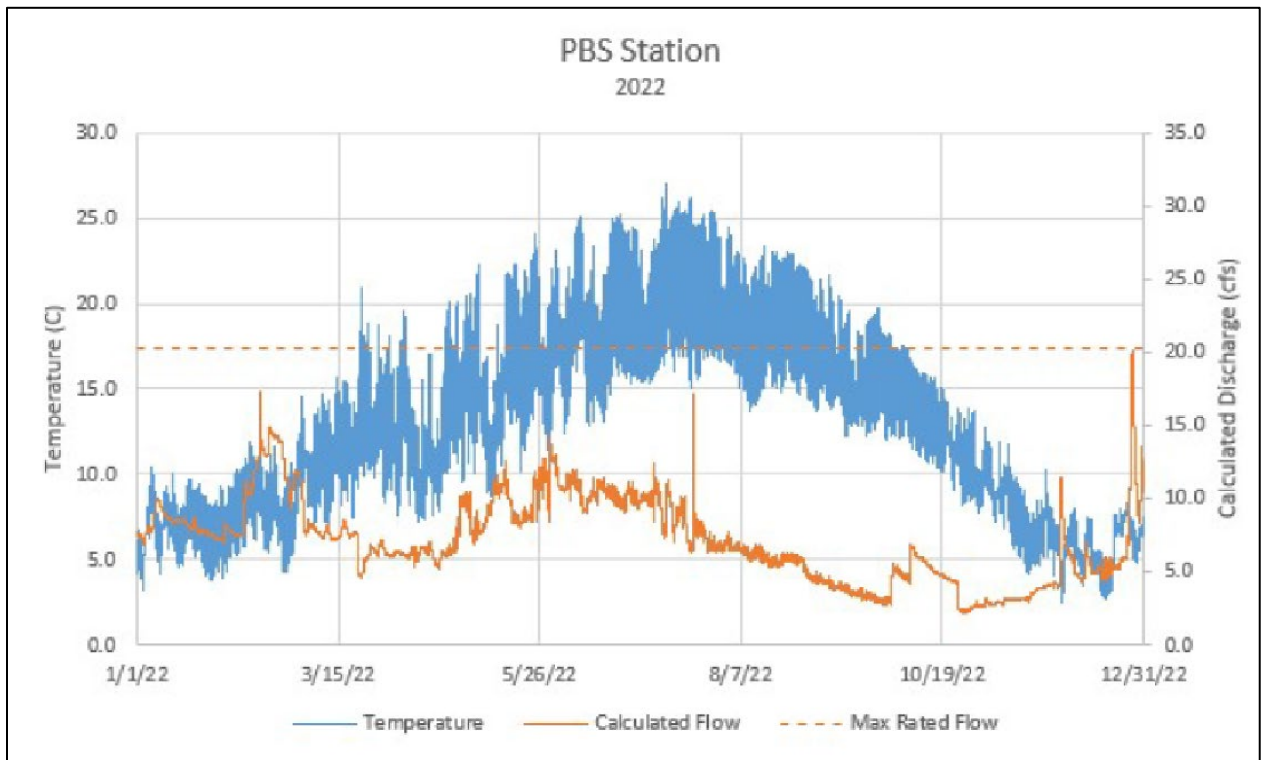


Figure 29. Temperature in degrees C and Flow in cfs at Lower Parks (PBS).

### Diversion Monitoring Data

The diversion monitoring was to be commenced within three years of the Effective Date of the Agreement per Section A1 of the Avoidance and Minimization Measures of the Template SHA. The third party monitoring scope of work and contract was initiated during the 2022 reporting year to assist permittees with reporting water use. The following graphs are data reports that were included in the 2022 Annual Reports or the data was downloaded from the real-time stations on the Eyasco Grabdata site that is established for SHA monitoring. All raw data was also submitted as part of the annual reports and will be used for the 5-year analysis that is part of the SHA.

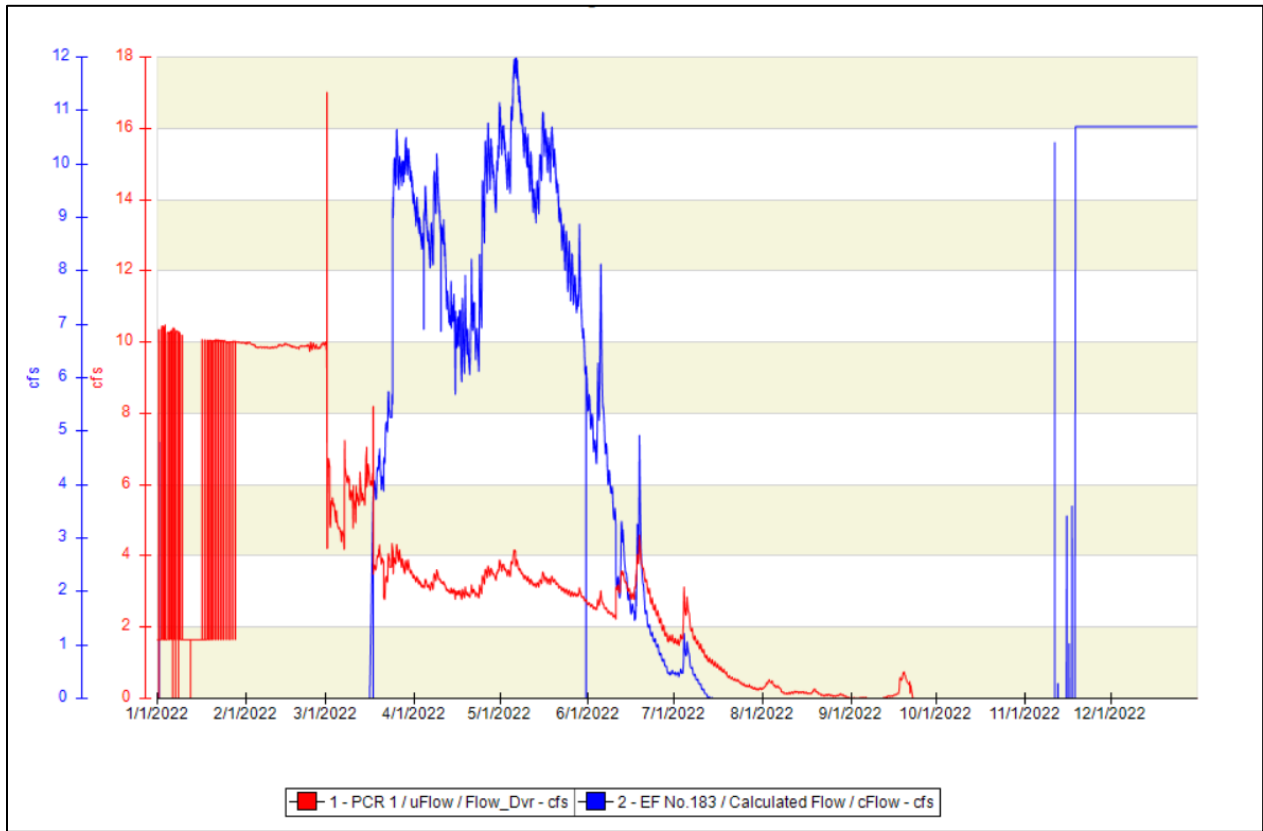


Figure 30. PCR 1 and EF POD Flow in cfs.

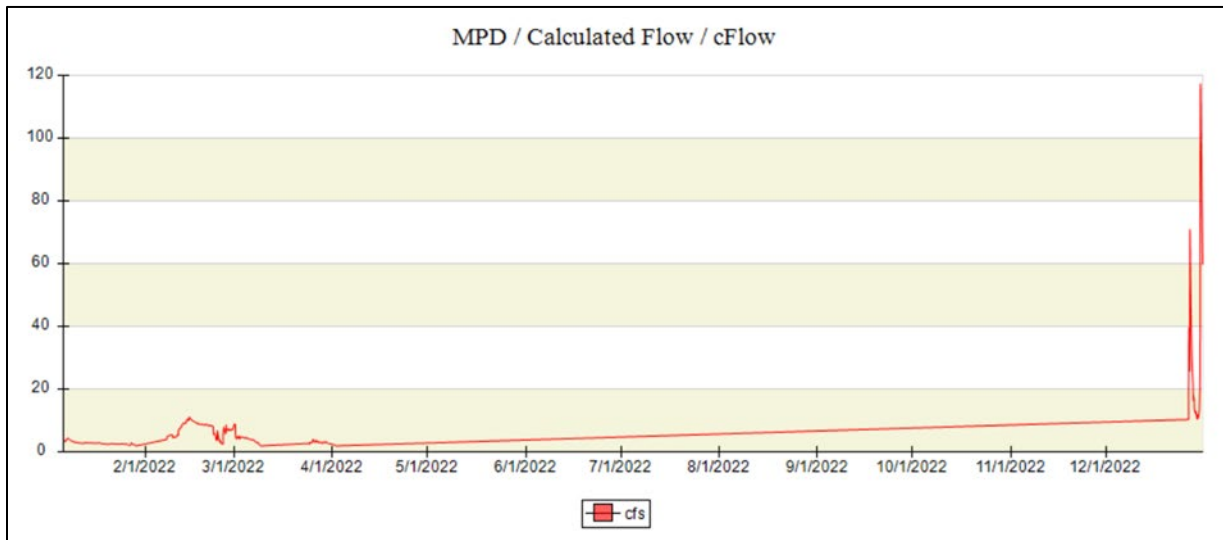


Figure 31. MWCD Diversion on Park Creek in cfs

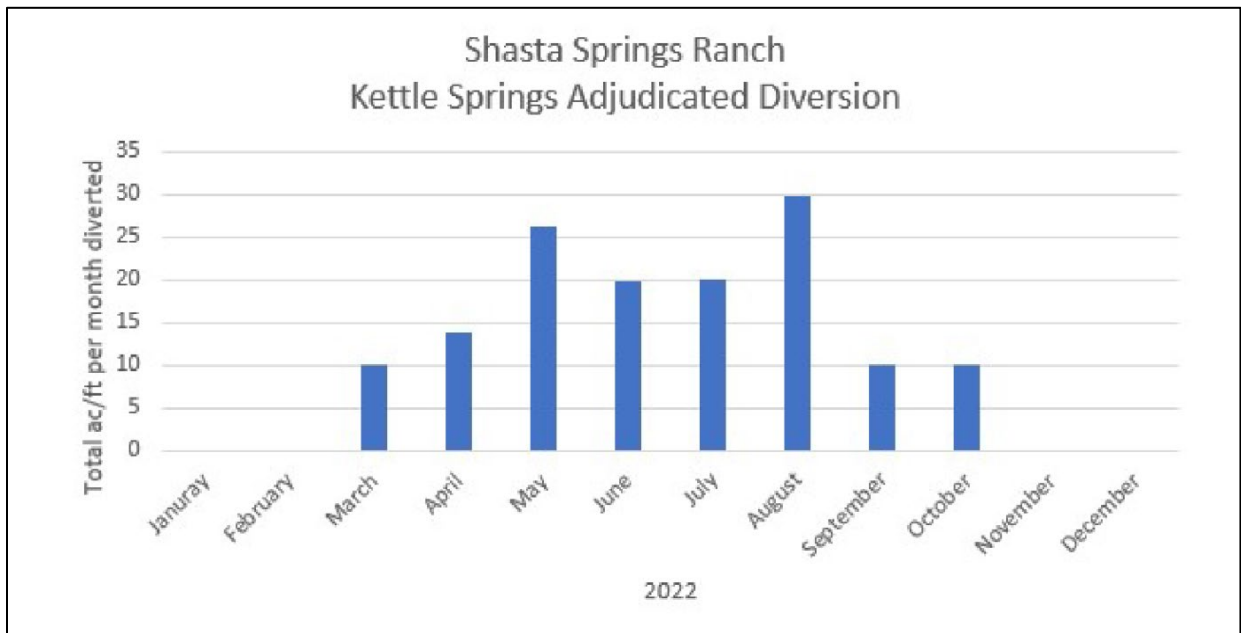


Figure 32. EII Kettle Spring Diversion (ac-ft/month).

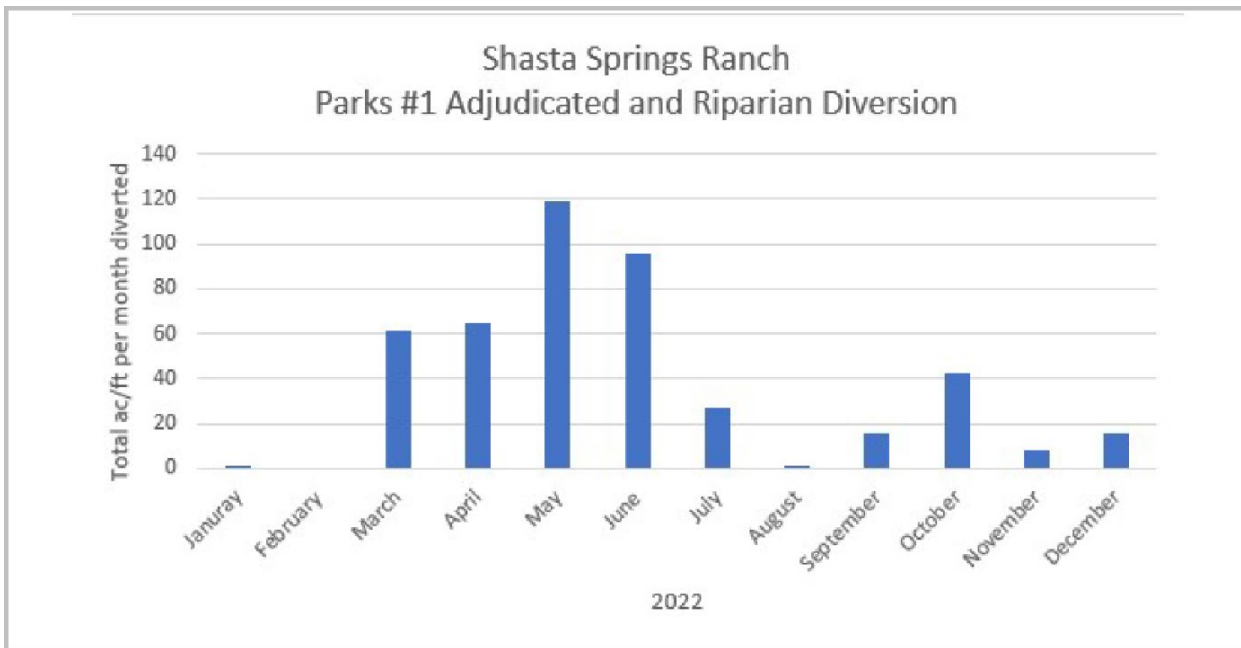


Figure 33. EII Parks #1 Diversion (ac-ft/month).



Figure 34. EII Parks #2 Diversion (ac-ft/month).

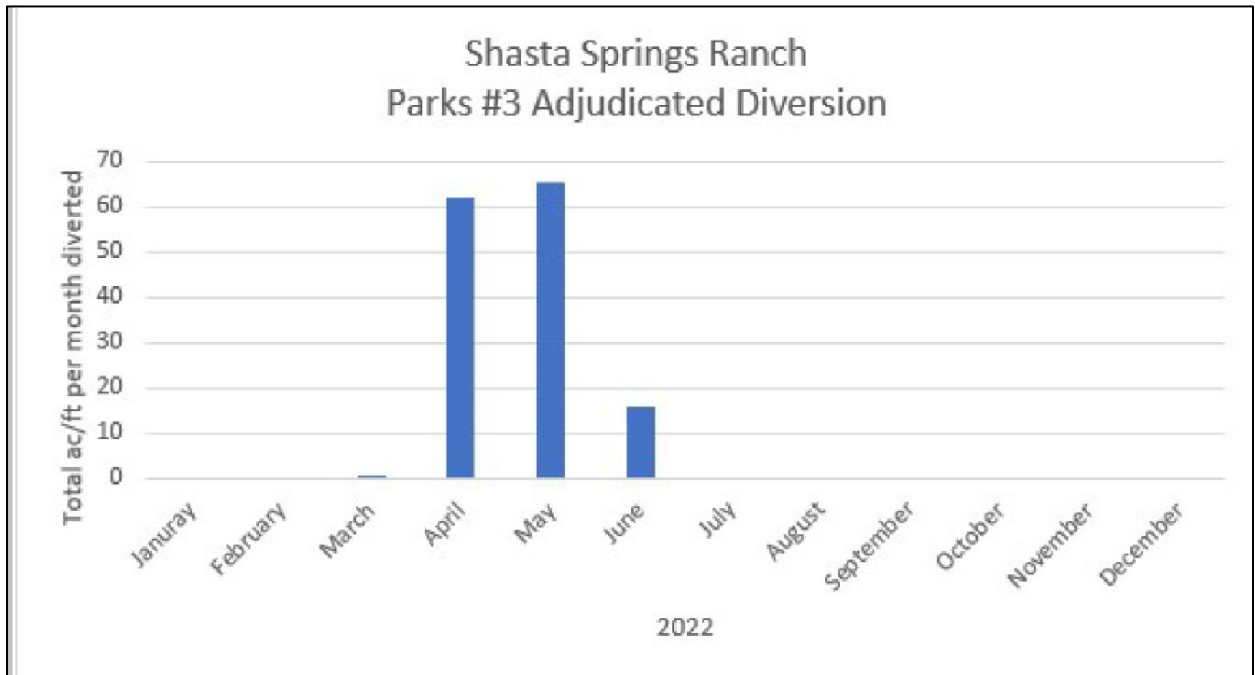


Figure 35. EII Parks #3 Diversion (ac-ft/month).

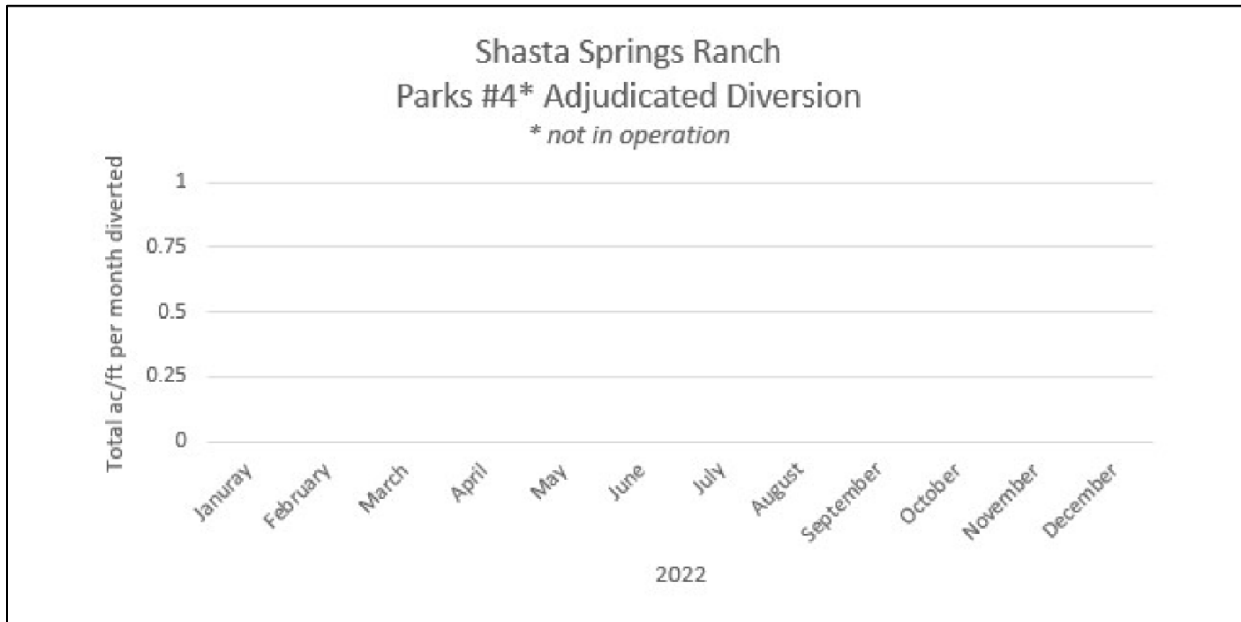


Figure 36. EII Parks #4 Diversion (ac-ft/month).

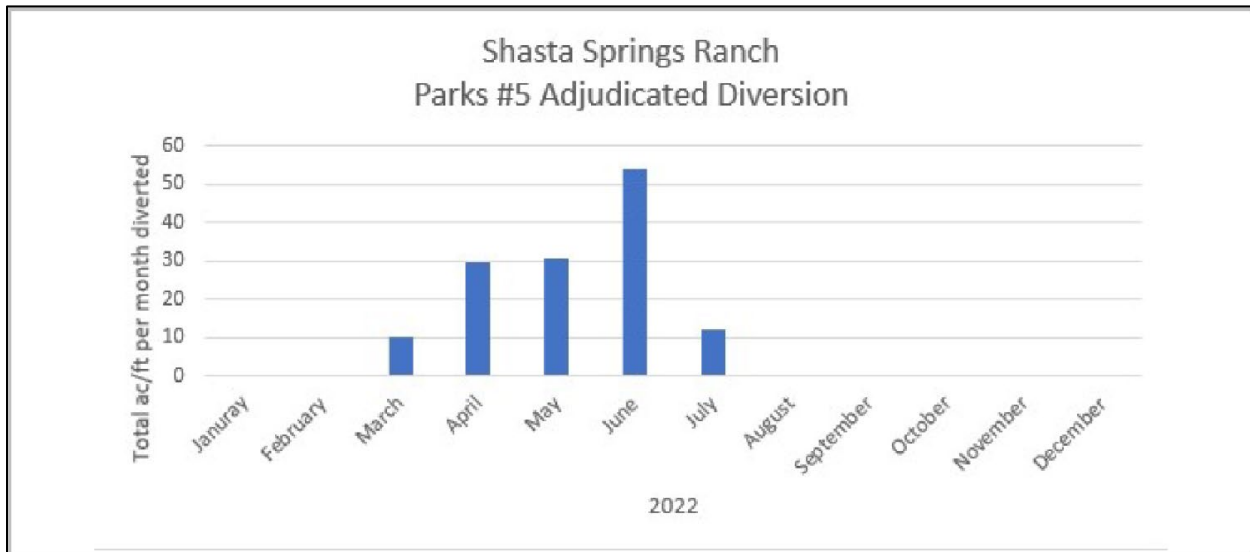


Figure 37. EII Parks #5 Diversion (ac-ft/month).

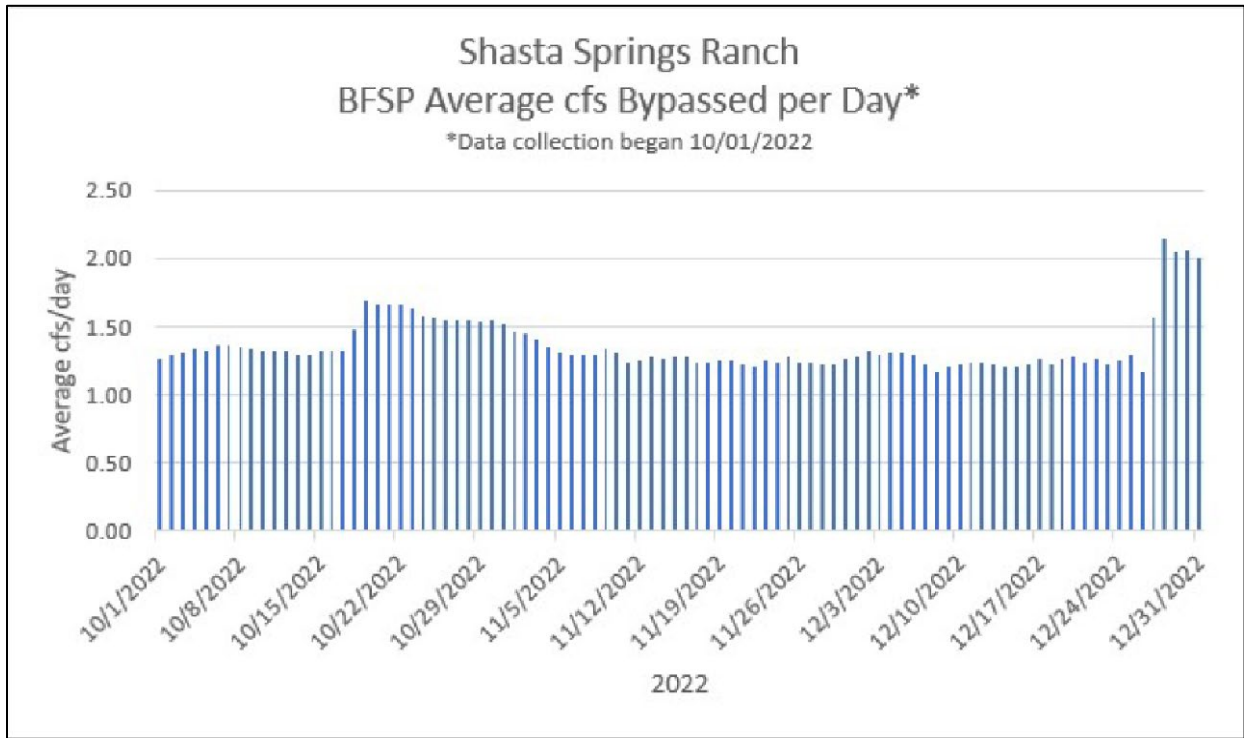


Figure 38. EII Bridgefield Spring Bypass (cfs/day).

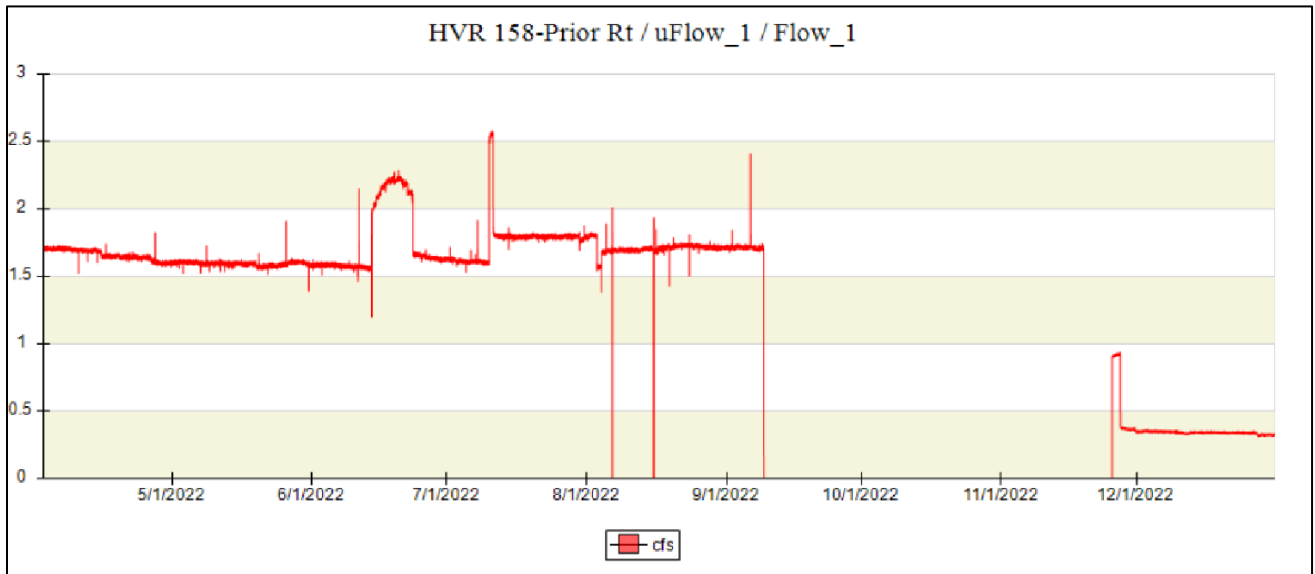


Figure 39. HVR Prior Right Diversion (cfs).



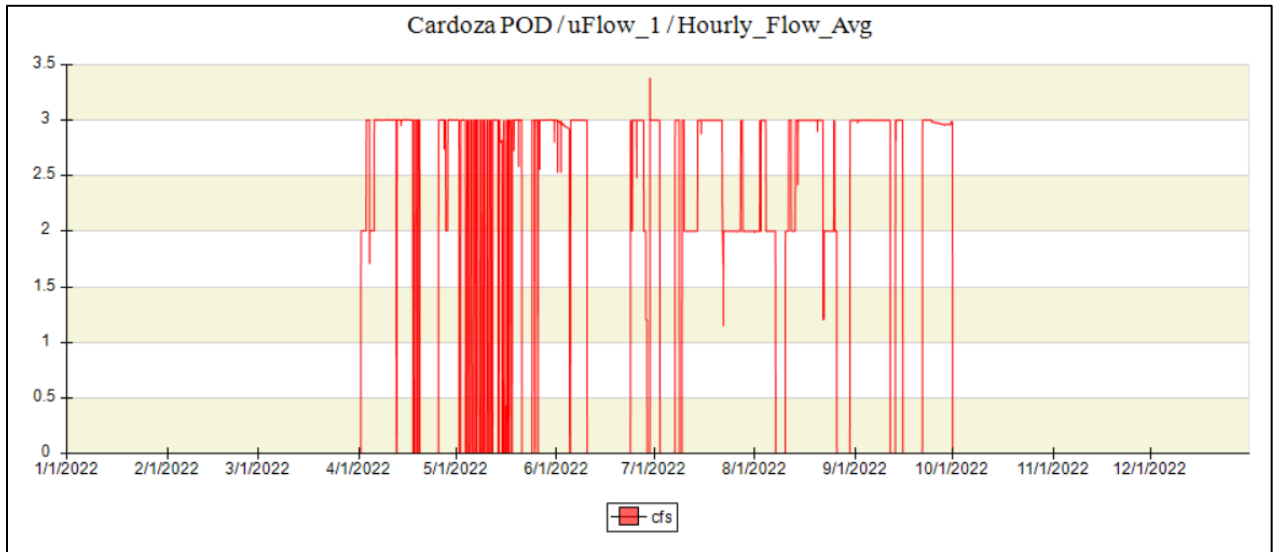


Figure 40. Cardoza Pump Diversion (cfs).

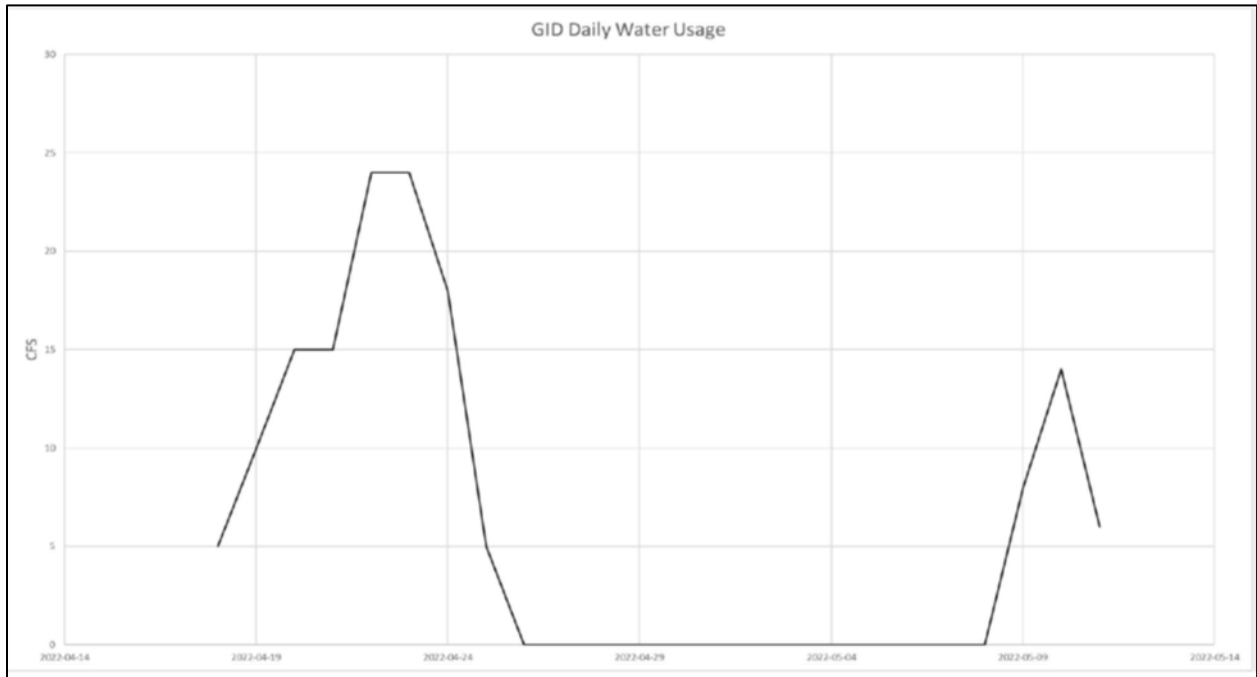


Figure 41. GID Daily Water Diversion (cfs).

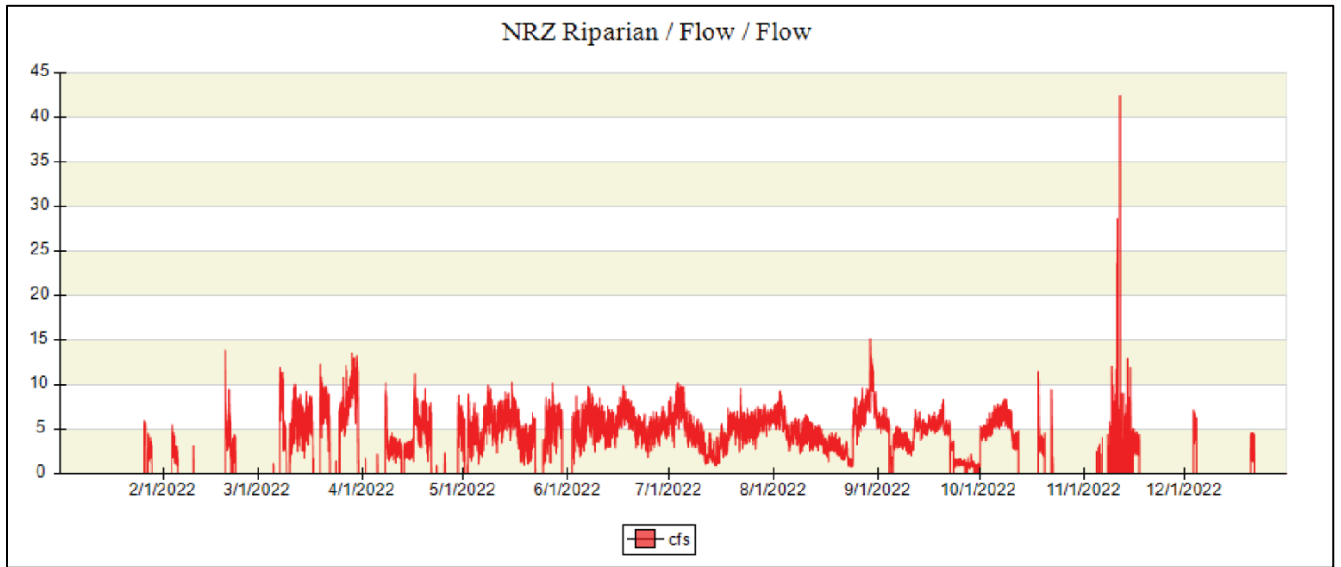


Figure 42. Novy- Rice- Zenkus Diversion (cfs)

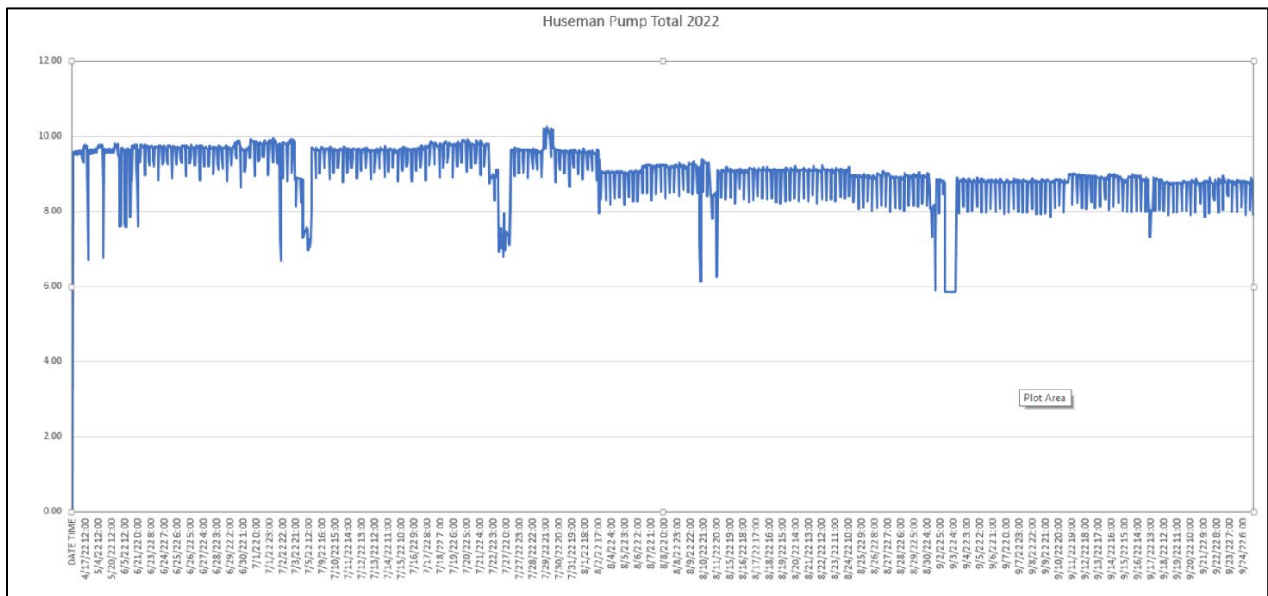


Figure 43. Huseman Diversion Pump Total (cfs).

# Cardoza Soil Moisture Sensor Data

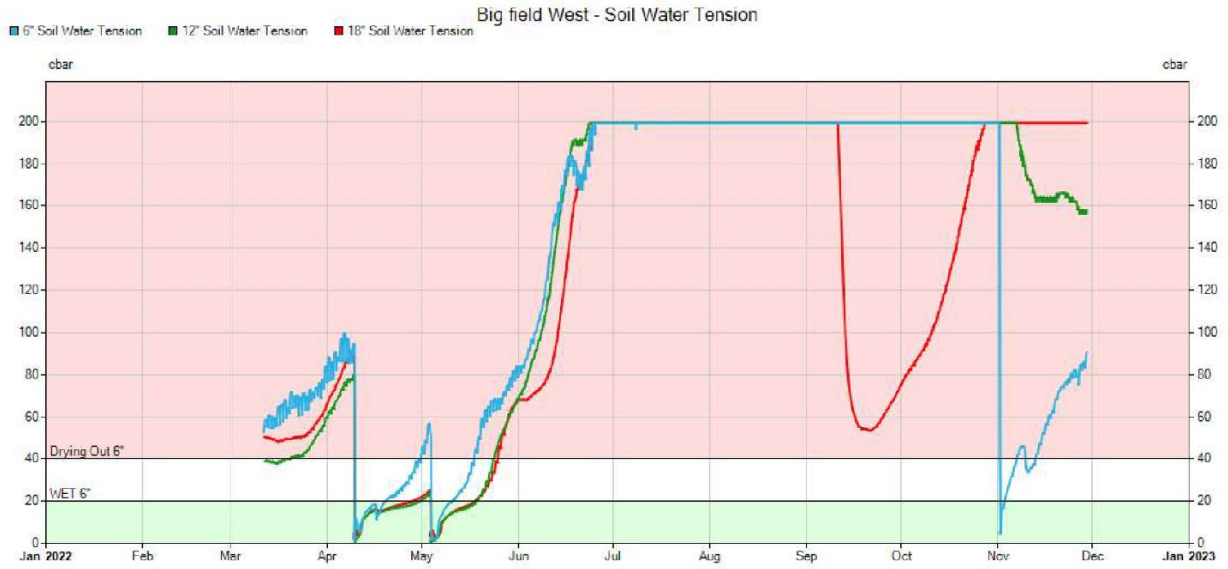


Figure 44. Cardoza Big Field West Soil Moisture Data.

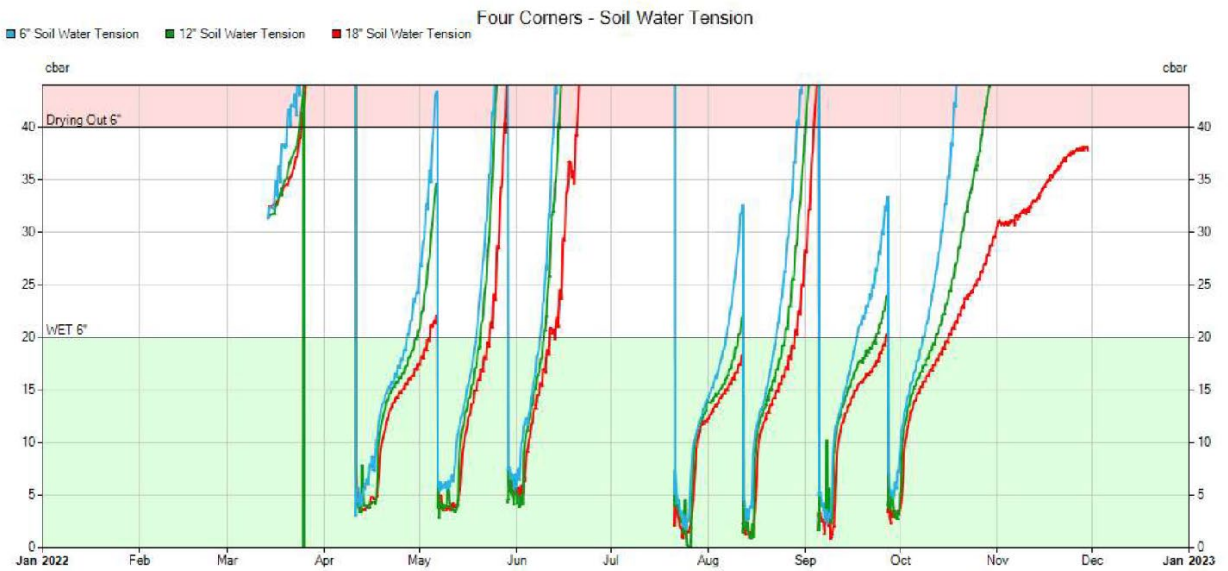


Figure 45. Cardoza Four Corners Soil Moisture Data.

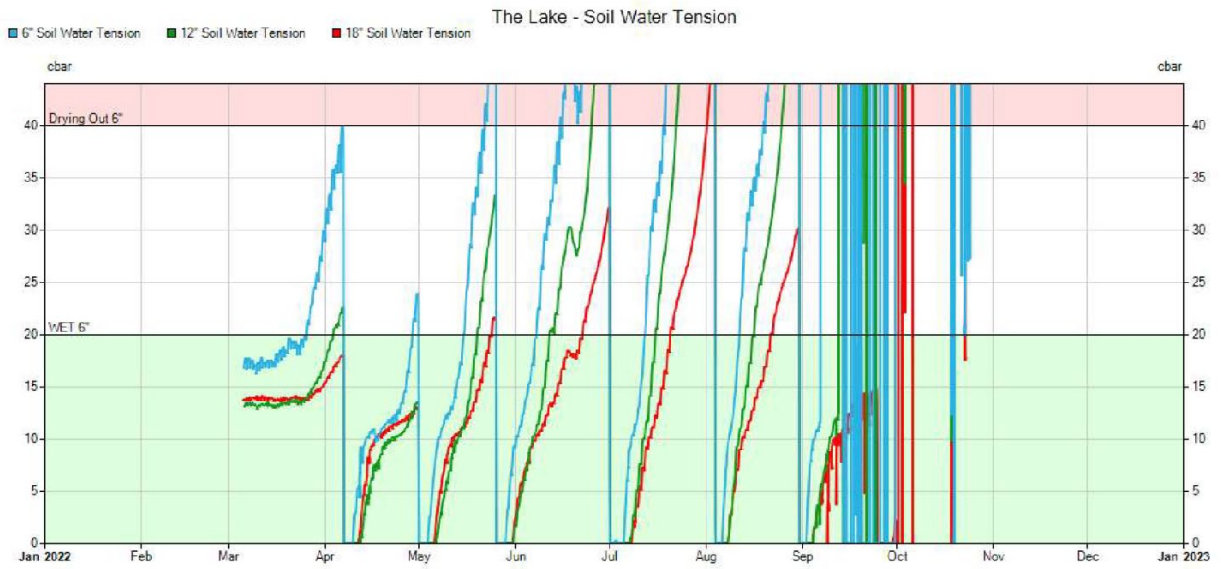


Figure 46. Cardoza Lake Pasture Soil Moisture Sensor Data.

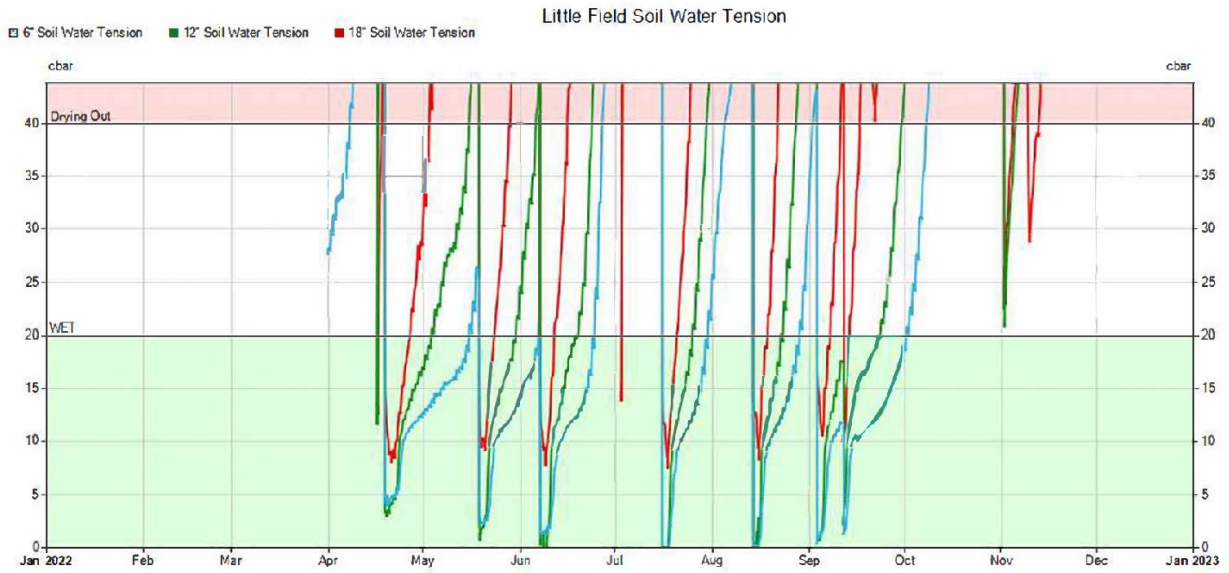


Figure 47. Cardoza Little Field Soil Moisture Data.

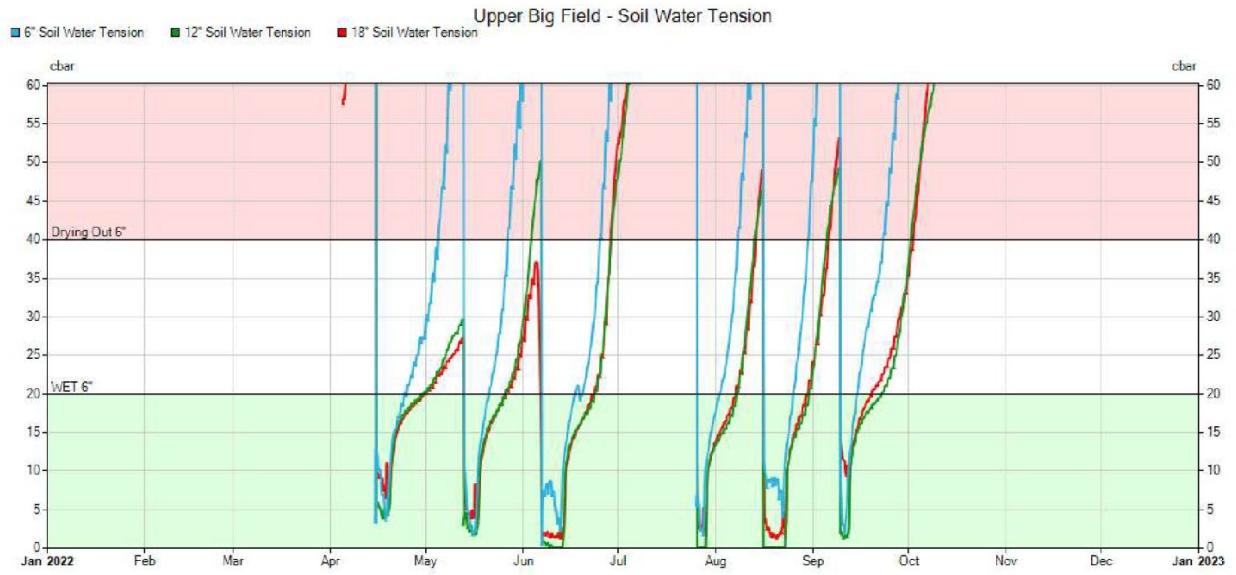


Figure 48. Cardoza Upper Big Field Soil Moisture Sensor Data.

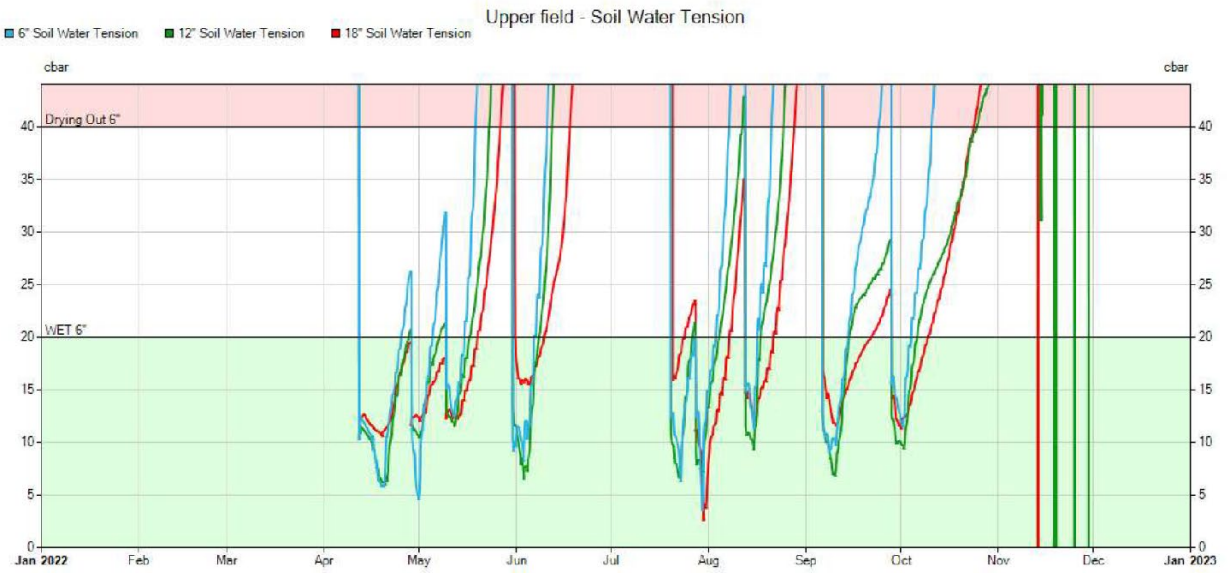


Figure 49. Cardoza Upper Field Soil Moisture Sensor Data.