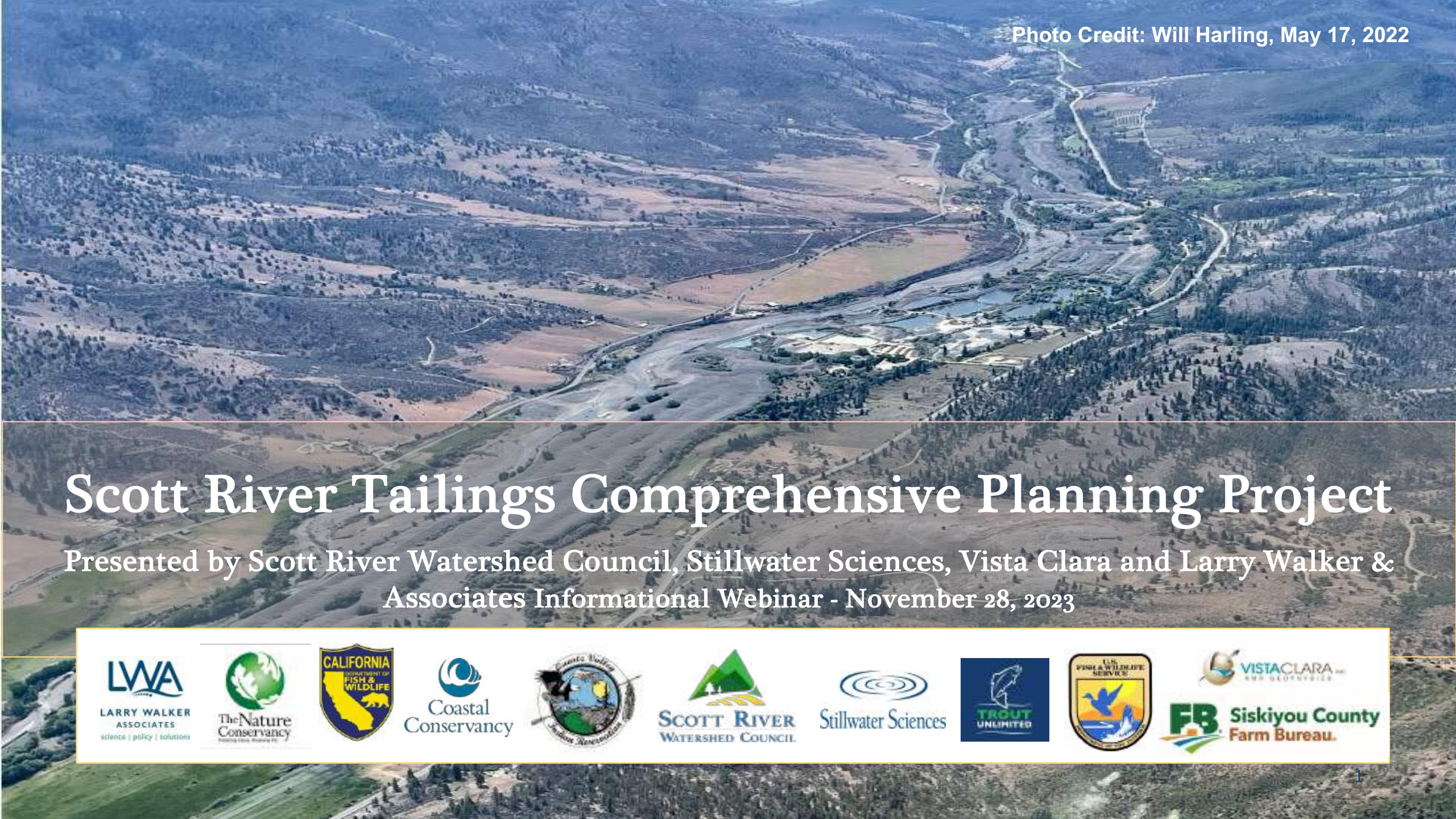


Scott River Tailings Comprehensive Planning Project

Presented by Scott River Watershed Council, Stillwater Sciences, Vista Clara and Larry Walker & Associates Informational Webinar - November 28, 2023

PROJECT TIMELINE

- Start date was June 6, 2020
- Completion date is December 31, 2025

PROJECT FUNDERS

- California Department of Fish & Wildlife: Fisheries Restoration Grant Program (FRGP) #Q1910510 & Drought Protecting Salmon Funds, #Q2296038
- State Coastal Conservancy: #20-055
- United States Fish and Wildlife Service: National Fish Passage, #F22AC02656

PROJECT PARTNERS (Current)

- Various Tailing Landowners
- Stillwater Sciences
- Larry Walker & Associates
- Quartz Valley Indian Reservation
- Vista Clara
- The Nature Conservancy
- Trout Unlimited
- Siskiyou Farm Bureau

PROJECT GOALS

Provide a path forward that will create and sustain critical habitat and related ecosystem services

- Surface and subsurface hydrology
- Geomorphology
- Water quality including temperature

Identify restoration actions that can enhance critical habitat for listed and at-risk anadromous fish

- Slow water winter rearing and refugia
- Cold water summer rearing and refugia
- Spawning
- Migratory connectivity

PROJECT CONSIDERATIONS

Ensure that all proposed actions do not have an adverse effect on critical areas downstream of Tailings such as the Wolford Slough and/or the confluence of French Creek and the Scott River

Understanding impacts on landowners and all associated water rights

Continue to work with landowners and their identified goals and objectives

PROJECT OBJECTIVES

- Run various models including surface/groundwater model and hydraulic model These models will be informed by SRWC's continued collection of empirical data including geotechnical analyses

- We are conducting a comprehensive alternative analysis that will produce two preferred restoration conceptual designs: 1.) One design scenario on current opportunities; 2.) One design on the entire reach that is not constrained by current land use

PROJECT OUTREACH

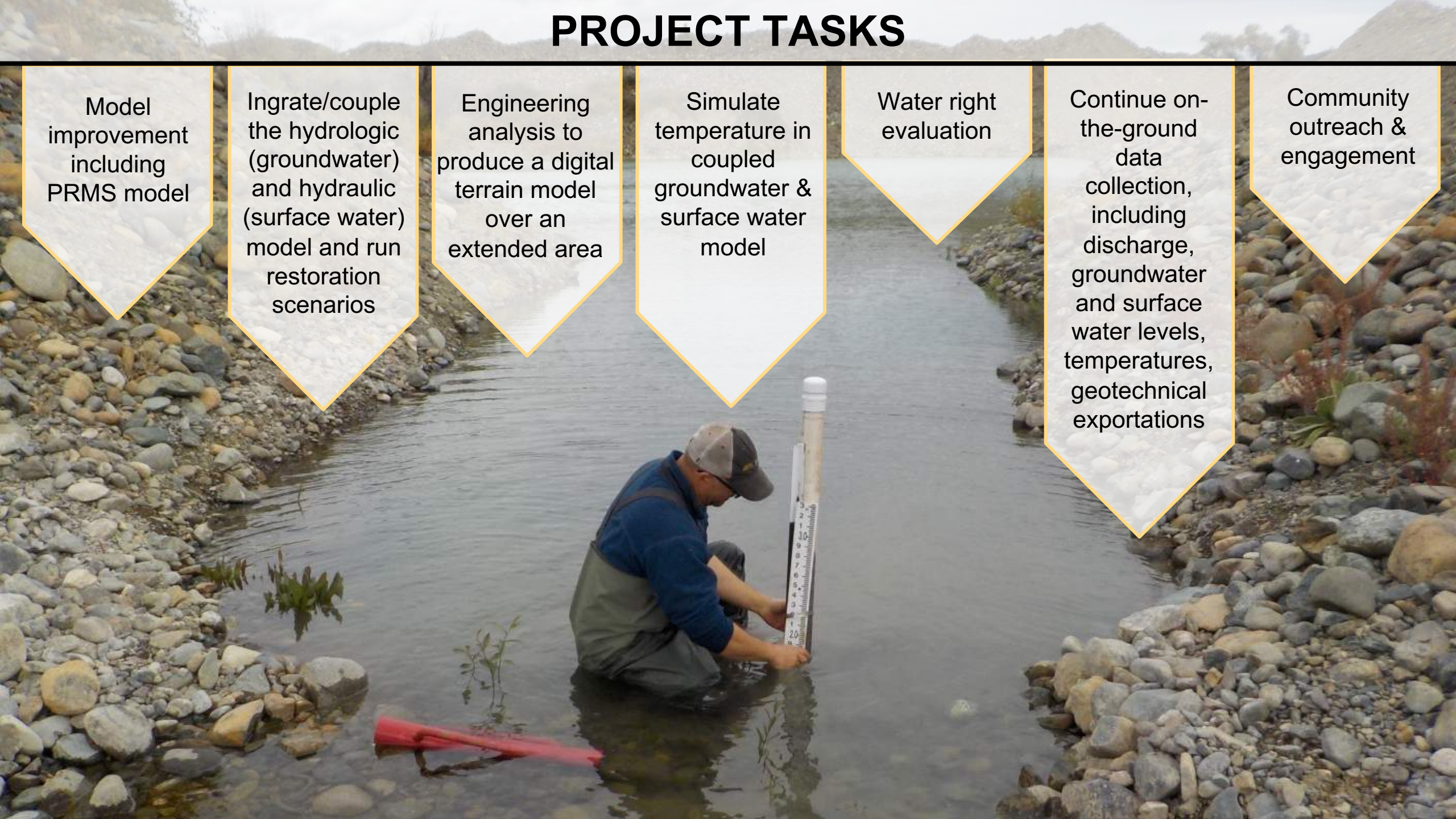
2 TAC meetings
Numerous meetings with landowners, community/educational tours and presentations

PROJECT TAC

(Technical Advisory Committee)

Army Corp: *Kelsey Sirkin*
CDFW: *Colin Hughes, Crystal Robinson, Mark Elfgen*
Coastal Conservancy: *Michael Bowen*
NCRWQCB: *Eli Scott, Jake Shannon*
NOAA: *Bob Pagliuco, Lisa Stromme, Shari Witmore*
NRCS: *Lorrie Bundy*
QVIR: *Sarah Schaefer*
USFWS: *Ryan Fogerty*

PROJECT TASKS



- Model improvement including PRMS model
- Ingrate/couple the hydrologic (groundwater) and hydraulic (surface water) model and run restoration scenarios
- Engineering analysis to produce a digital terrain model over an extended area
- Simulate temperature in coupled groundwater & surface water model
- Water right evaluation
- Continue on-the-ground data collection, including discharge, groundwater and surface water levels, temperatures, geotechnical exportations
- Community outreach & engagement

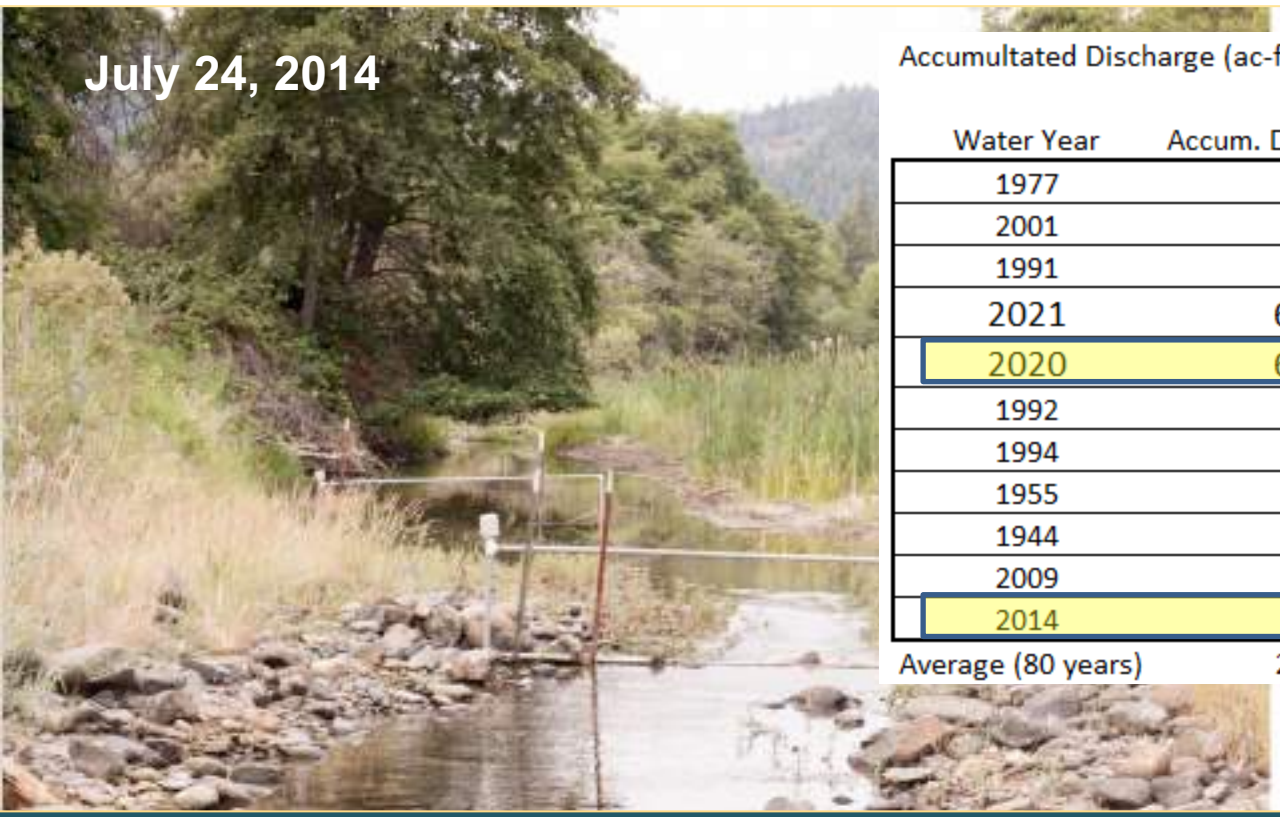
The Yuba Dredge was left abandoned near Callahan, California. Gold dredgers were introduced around the beginning of the 20th century. The Yuba Dredger Company built this one at the mouth of Sugar Creek. It plowed up to one mile of Callahan's Ranch, then turned downstream until it was stopped at the Wolford Ranch in the early 1940s, where the Wolford brothers refused to sell out. In all, it traveled little more than four miles.

SUMMARY OF SOME FUN FACTS

- Gold mining from 1930s through mid 1950s, taking a break for World War II
- It is estimated 100-300 ounces of gold per week was mined over an 11-year period
- The Yuba Dredge was powered by electricity generated from what was known as the Callahan Pelton wheel
- The total impacted area is ~600 acres and ~5 miles of the Scott River
- Much of the reach goes dry every year
- There are 20 private landowners and numerous associated water rights identified in the Scott River Decree

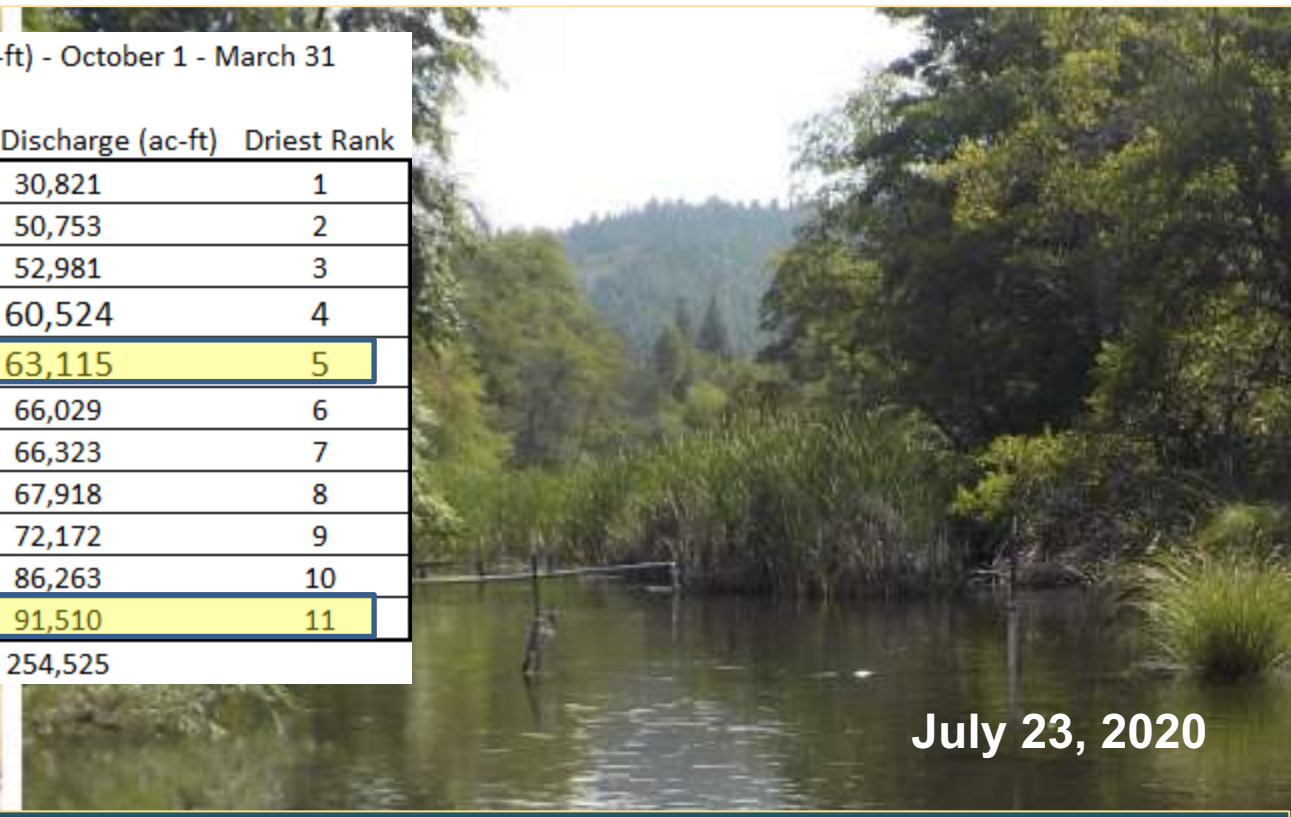

Sugar Creek Ranch
Callahan Solar


2014 05 19 16 06



Accumultated Discharge (ac-ft) - October 1 - March 31

Water Year	Accum. Discharge (ac-ft)	Driest Rank
1977	30,821	1
2001	50,753	2
1991	52,981	3
2021	60,524	4
2020	63,115	5
1992	66,029	6
1994	66,323	7
1955	67,918	8
1944	72,172	9
2009	86,263	10
2014	91,510	11
Average (80 years)	254,525	



Sugar Creek Beaver Dam Analog Project

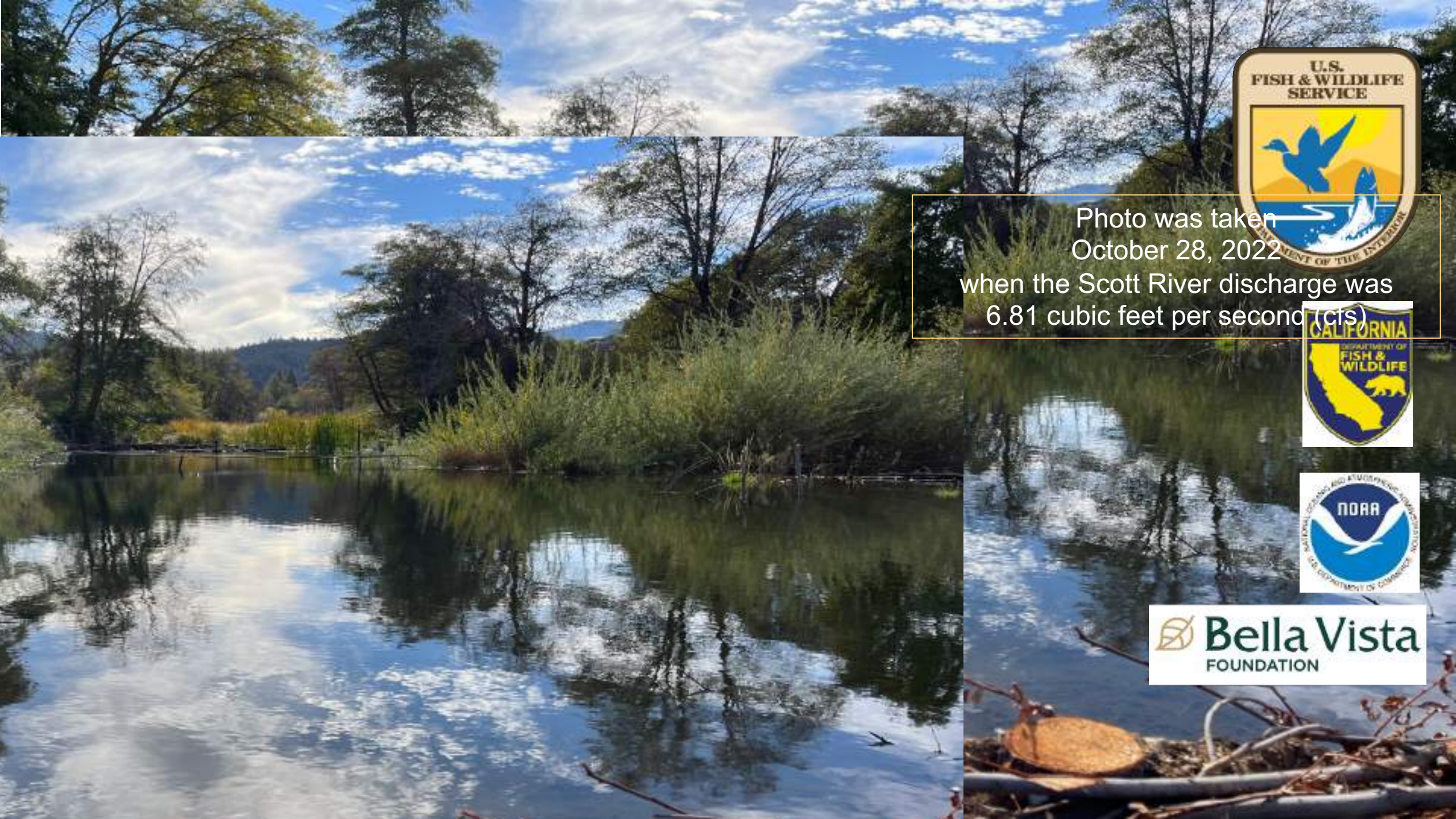
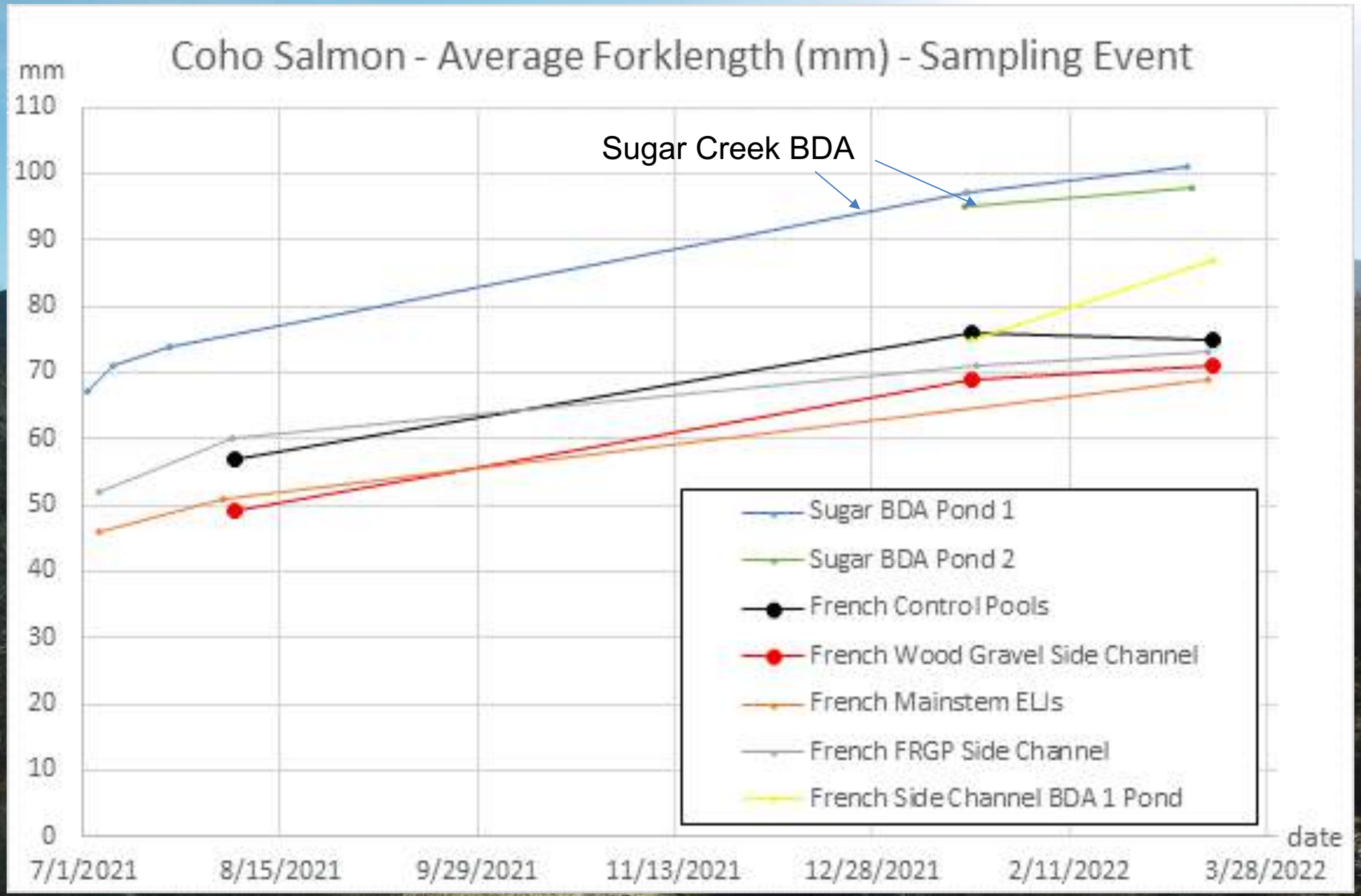


Photo was taken
October 28, 2022
when the Scott River discharge was
6.81 cubic feet per second (cfs)
U.S. FISH & WILDLIFE SERVICE
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
NOAA
Bella Vista FOUNDATION

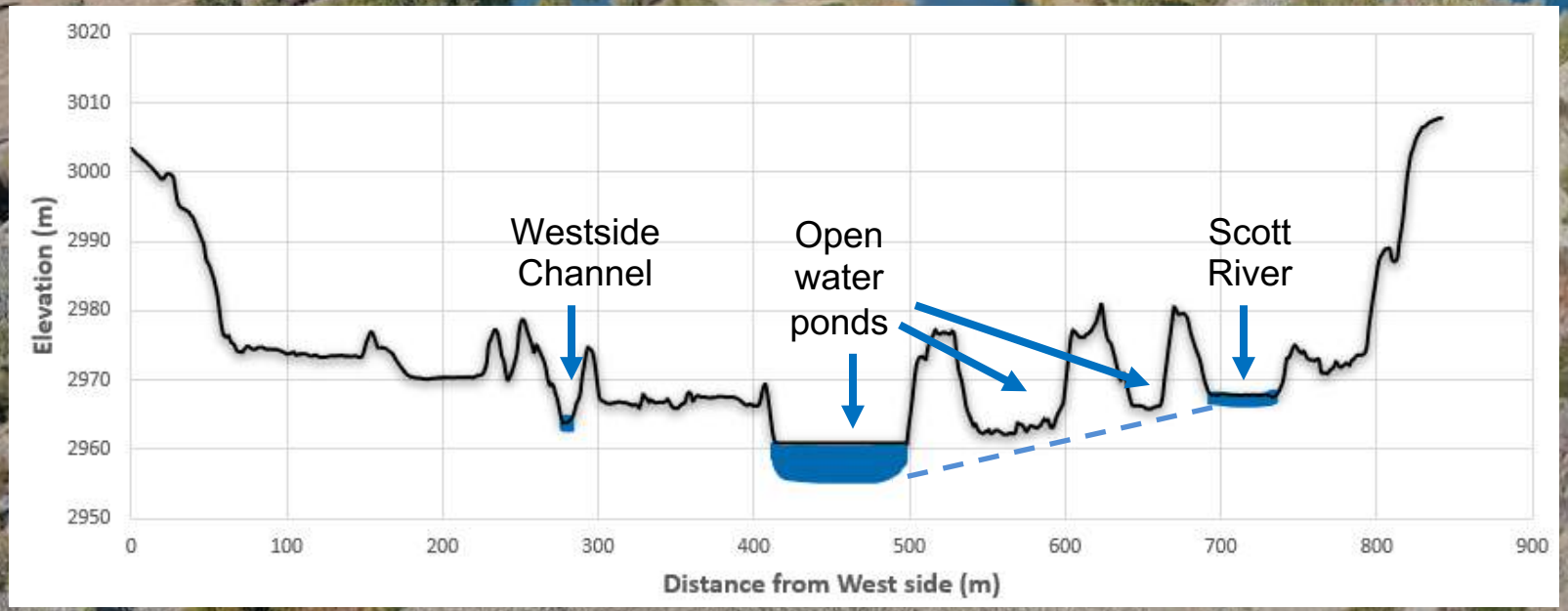

Coho Salmon - Average Forklength (mm) - Sampling Event
mm
110
100
90
80
70
60
50
40
30
20
10
0
Sugar Creek BDA
Sugar BDA Pond 1
Sugar BDA Pond 2
French Control Pools
French Wood Gravel Side Channel
French Mainstem ELIs
French FRGP Side Channel
French Side Channel BDA 1 Pond
date
7/1/2021
8/15/2021
9/29/2021
11/13/2021
12/28/2021
2/11/2022
3/28/2022

Scott River Tailings Restoration

Phase I constructed 2020
Adaptive management 2021
Phase II & III 2022
Phase IV 2024

Drone photo was taken by Joey Howard, Cascade Stream Solutions on December 27, 2022

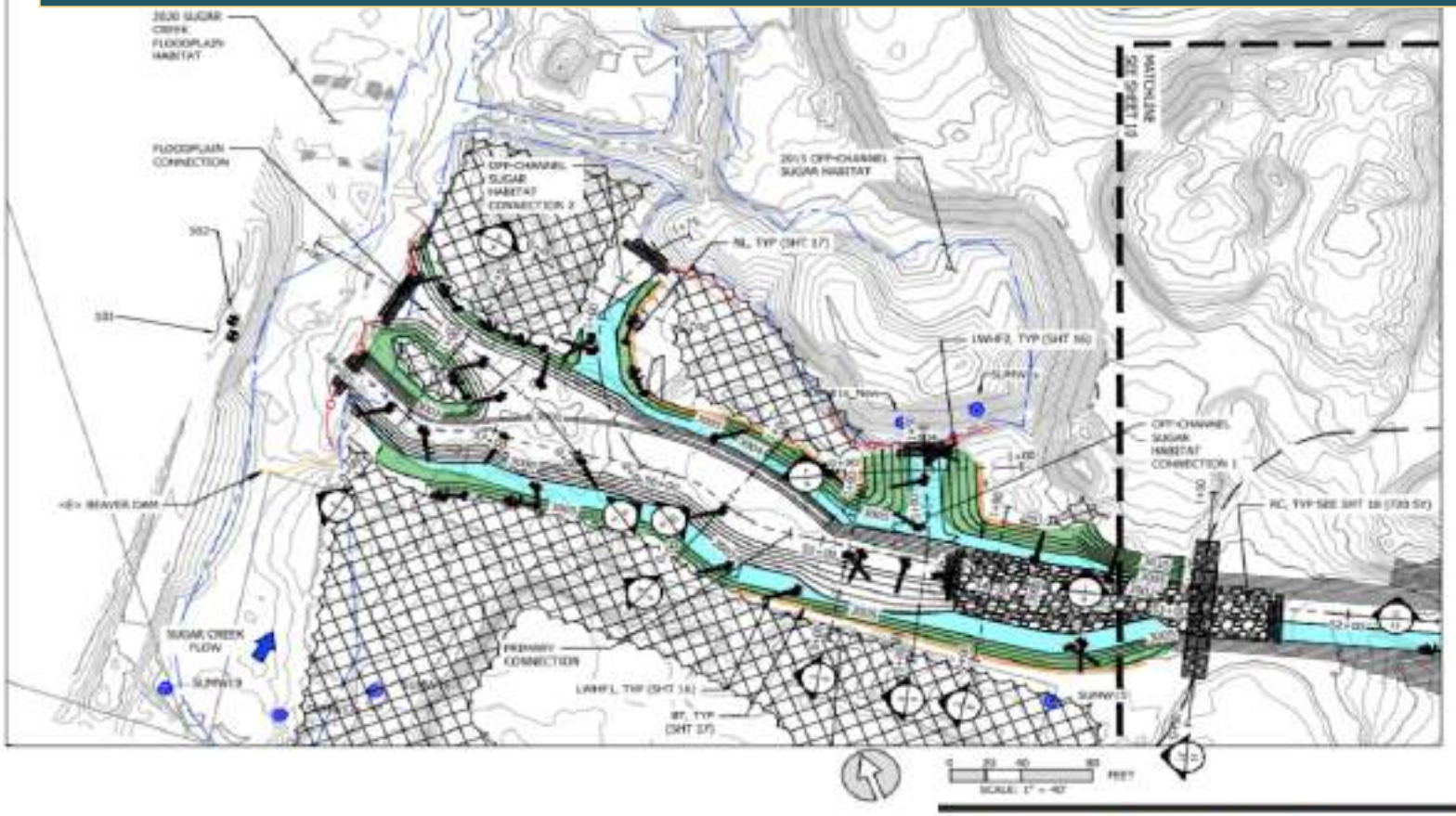
Scott River Tailings Restoration Design
River Mile 52.8-53-7



Drone photo was taken by Joey Howard, Cascade Stream Solutions on November 3, 2022


Sugar Creek Floodplain
Constructed in 2020
Adaptive management 2021
Extensive riparian planting 2023
U.S. FISH & WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Cascade
STREAM SOLUTIONS
NORTH RIVERS
CONSTRUCTION

Sugar Creek Coho Salmon Refugia Project 2024



CUT AND FILL SUMMARY			
SITE	CUT (CU YD)	FILL (CU YD)	BALANCE (CU YD)
LONG POND PRIMARY CONNECTION WITH OFF-CHANNEL SUGAR HABITAT CONNECTIONS 1 & 2, AND FLOODPLAIN CONNECTION	7,950	50	7,900
FILL AREA 1*	0	39,500	-39,500
TOTAL	7,950	39,450	-31,500
* SITE LOCATED ON SHEET 12, INCLUDES APPROXIMATELY 2,150 CU YD FILL FROM HABITAT FEATURE AND PLANTING ZONE SOIL AMENDMENT OVER EXCAVATION.			

Stillwater Sciences

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NORTH COAST RESOURCE PARTNERSHIP

LONG POND HABITAT ENHANCEMENT PROJECT - 100% DESIGN

SISKIYOU COUNTY, CA

Stillwater Sciences

SCOTT RIVER WATERSHED COUNCIL
SCOTT RIVER WATERSHED COUNCIL
514 N STATE HIGHWAY 3
P.O. BOX 355
ETNA, CA 96027
530-598-2733

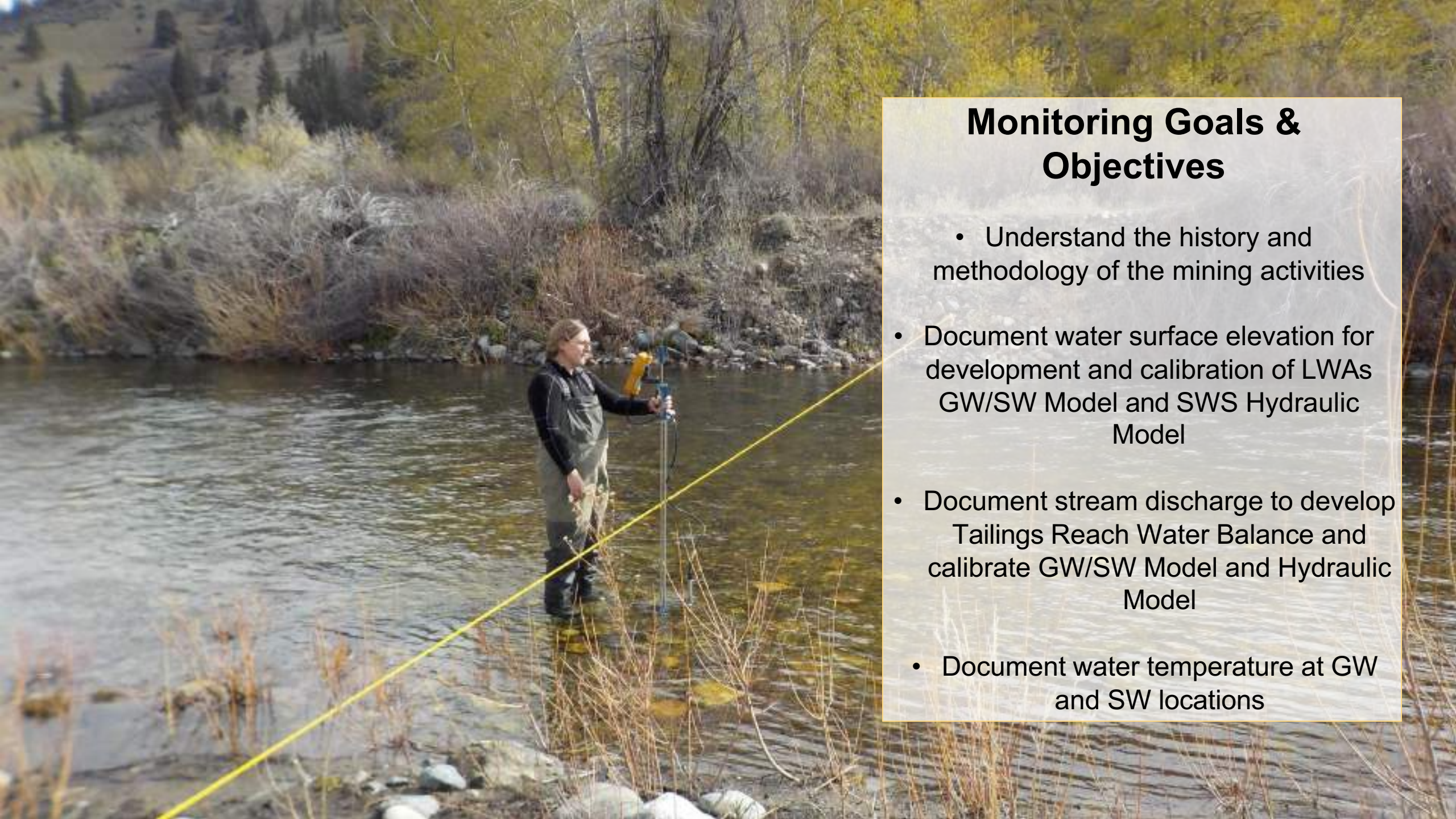
PROJECT NUMBER: 904.00
SCALE: AS NOTED
DATE: 12/3/21

DESIGN: JS/RWK
DRAWN: HLG/RWK
CHECKED: JS/JM
APPROVED: JS/JM

LONG POND REST. STA 51+00 TO 58+00 PLAN

SHEET 7 OF 20

Scott River Tailings Existing Conditions – *A Decade of Understanding*



Monitoring Goals & Objectives

- Understand the history and methodology of the mining activities
- Document water surface elevation for development and calibration of LWAs GW/SW Model and SWS Hydraulic Model
- Document stream discharge to develop Tailings Reach Water Balance and calibrate GW/SW Model and Hydraulic Model
- Document water temperature at GW and SW locations

Dredging Moved Channel from West to East side of Valley

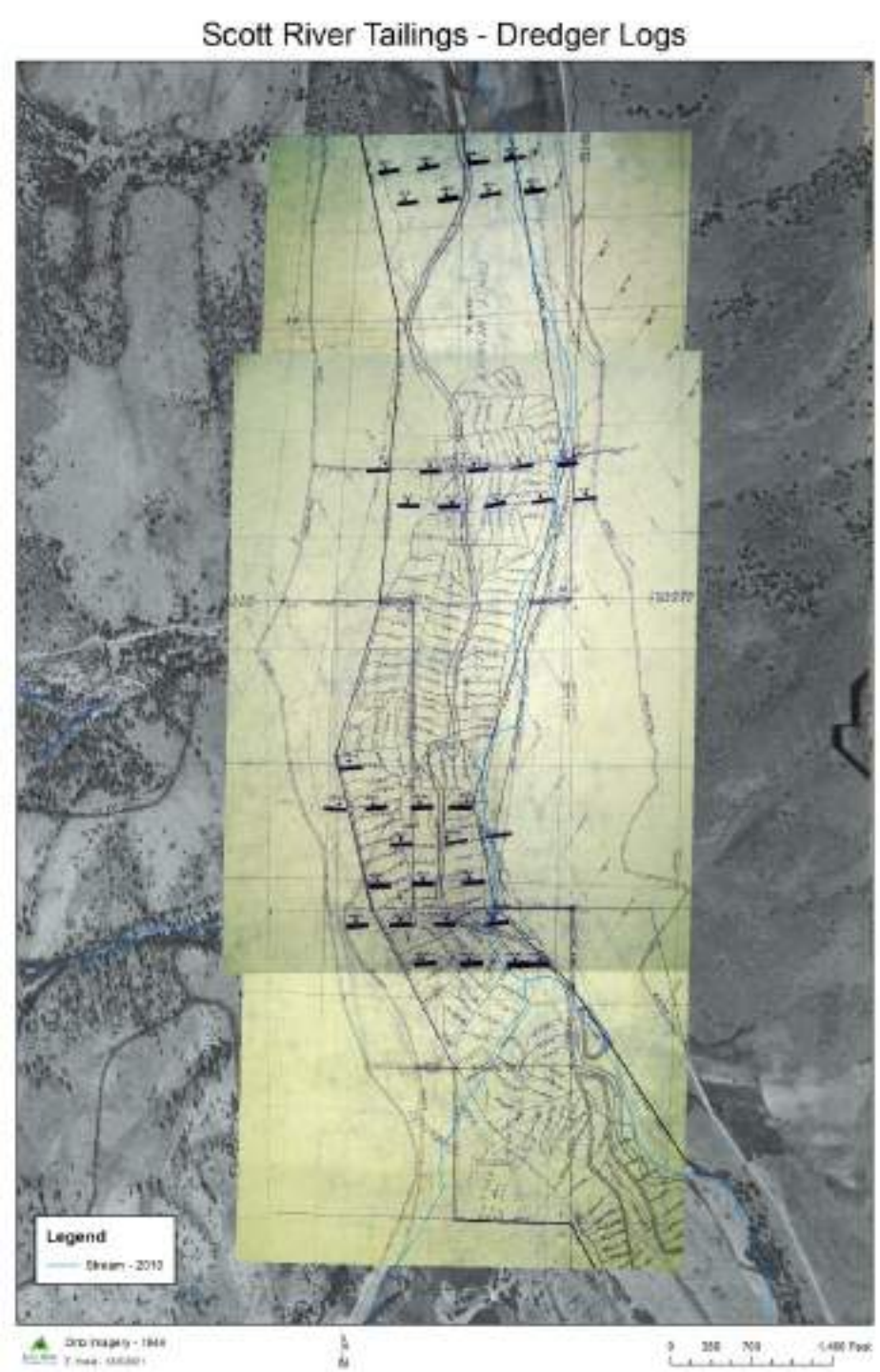
Hypothesize that it is more complicated

Pre dredging – Scott River meandered through Valley
350 – 420 m wide

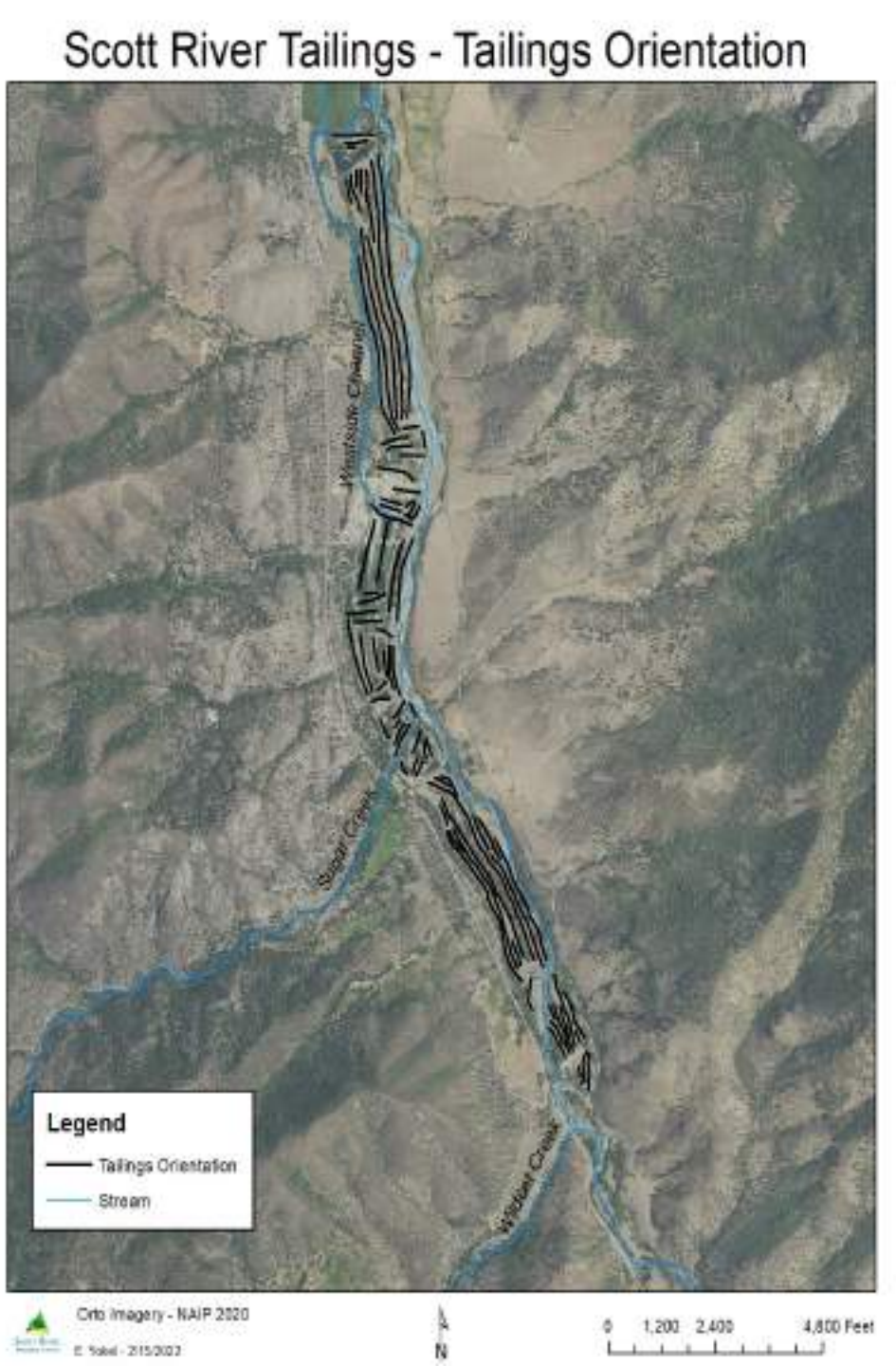
Post dredging – Scott River constrained by Tailing Piles on West and Bedrock on East (50 – 190 m wide)

Westside Channel transports water on west side of Tailings

Scott River Tailings - Historic Ortho Images

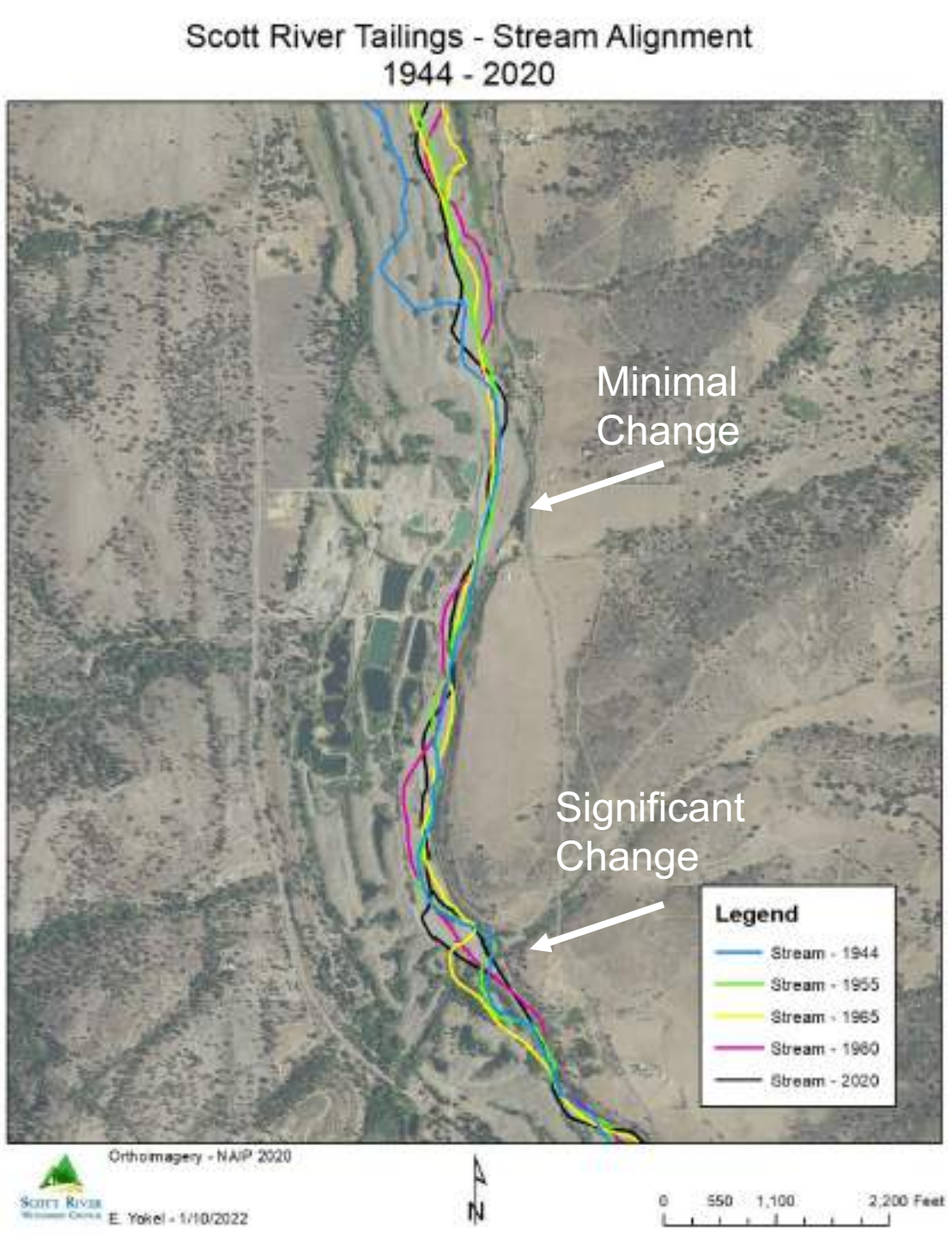


- Majority of Tailings oriented from South to North – along flow line of Scott
- Areas of Tailings oriented from West to East – Sugar Creek and Moore's Gravel
- What are the effects of the different Tailings orientation on stratigraphy and hydraulic conductivity?

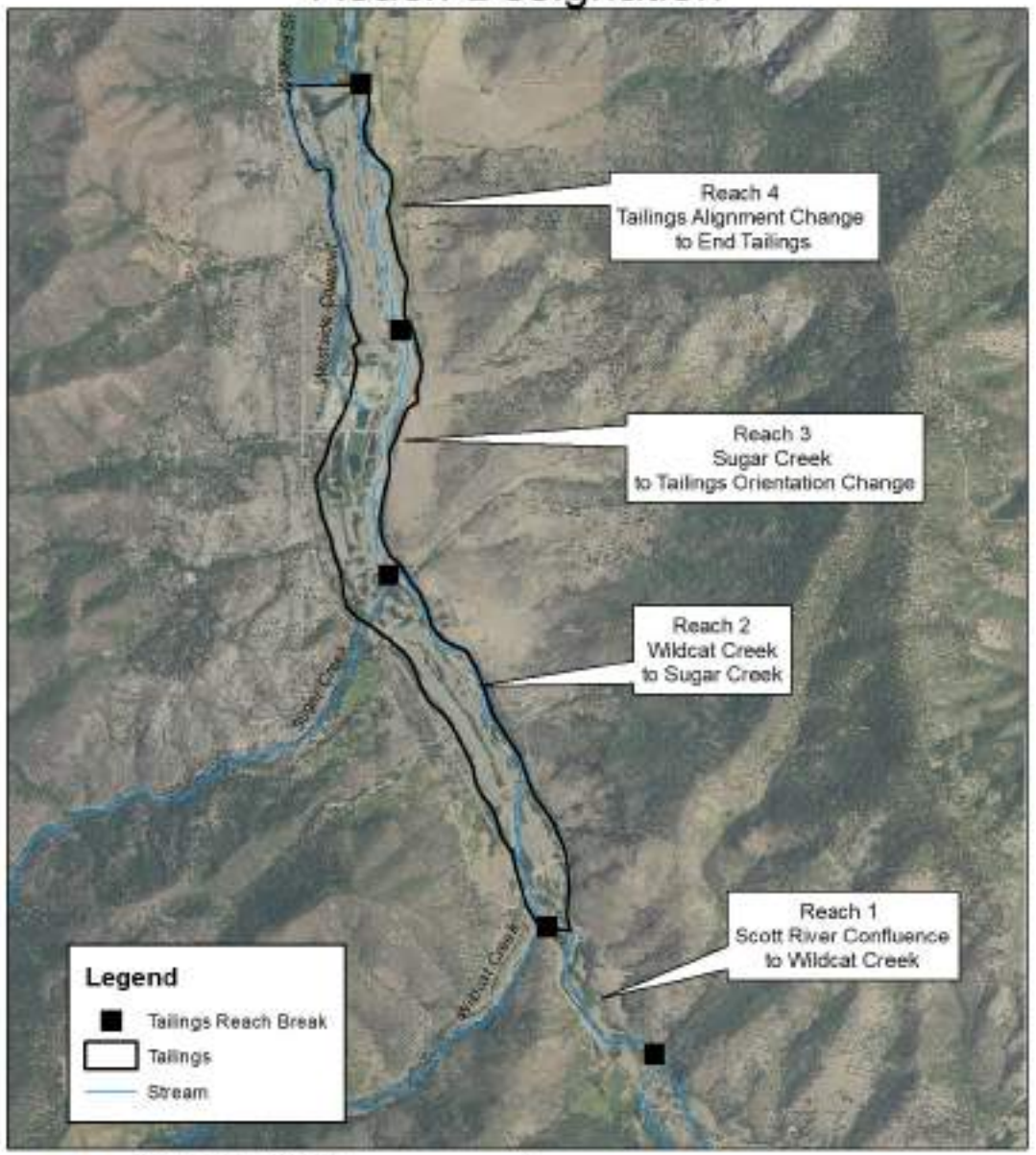


Scott River Channel Alignment Change

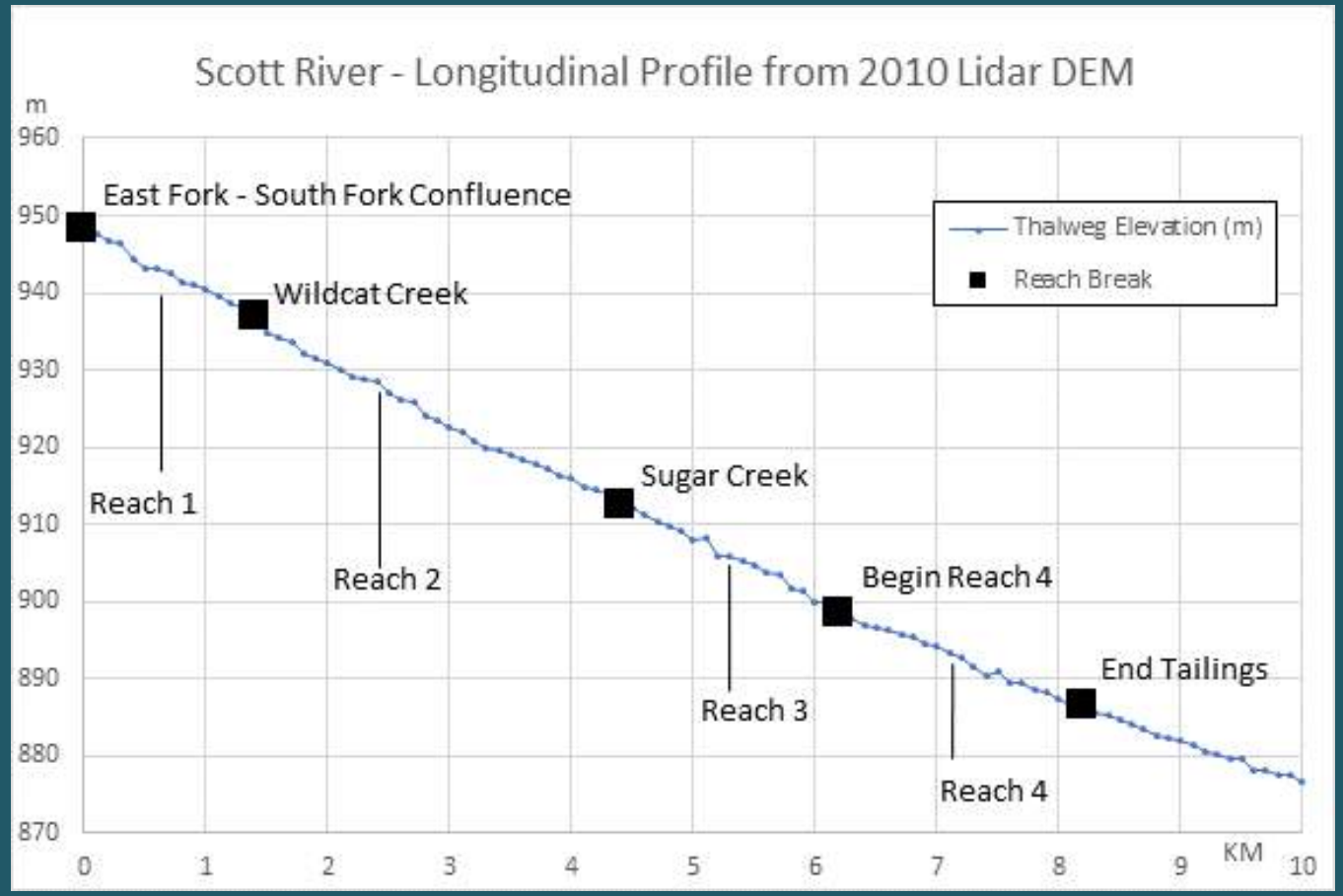
Signification alterations in the channel alignment observed at the confluence of Sugar and Scott after the 1964 Flood



Scott River Tailings Reach Designation



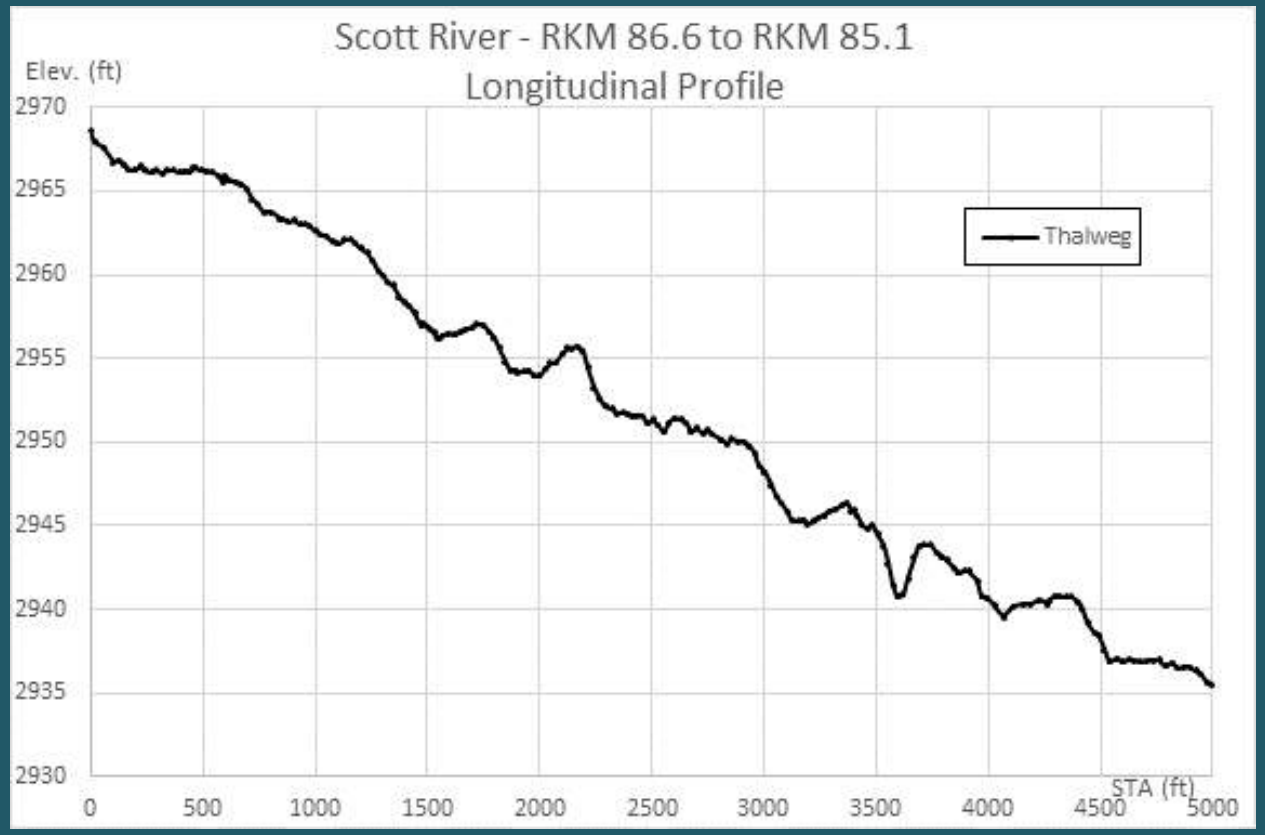
Existing Stream Condition



	RKM From	RKM To	Gradient	Sinuosity
Reach 1	92	90.6	0.8%	1.2
Reach 2	90.6	87.6	0.8%	1.1
Reach 3	87.6	85.8	0.8%	1.1
Reach 4	85.8	83.8	0.6%	1.2

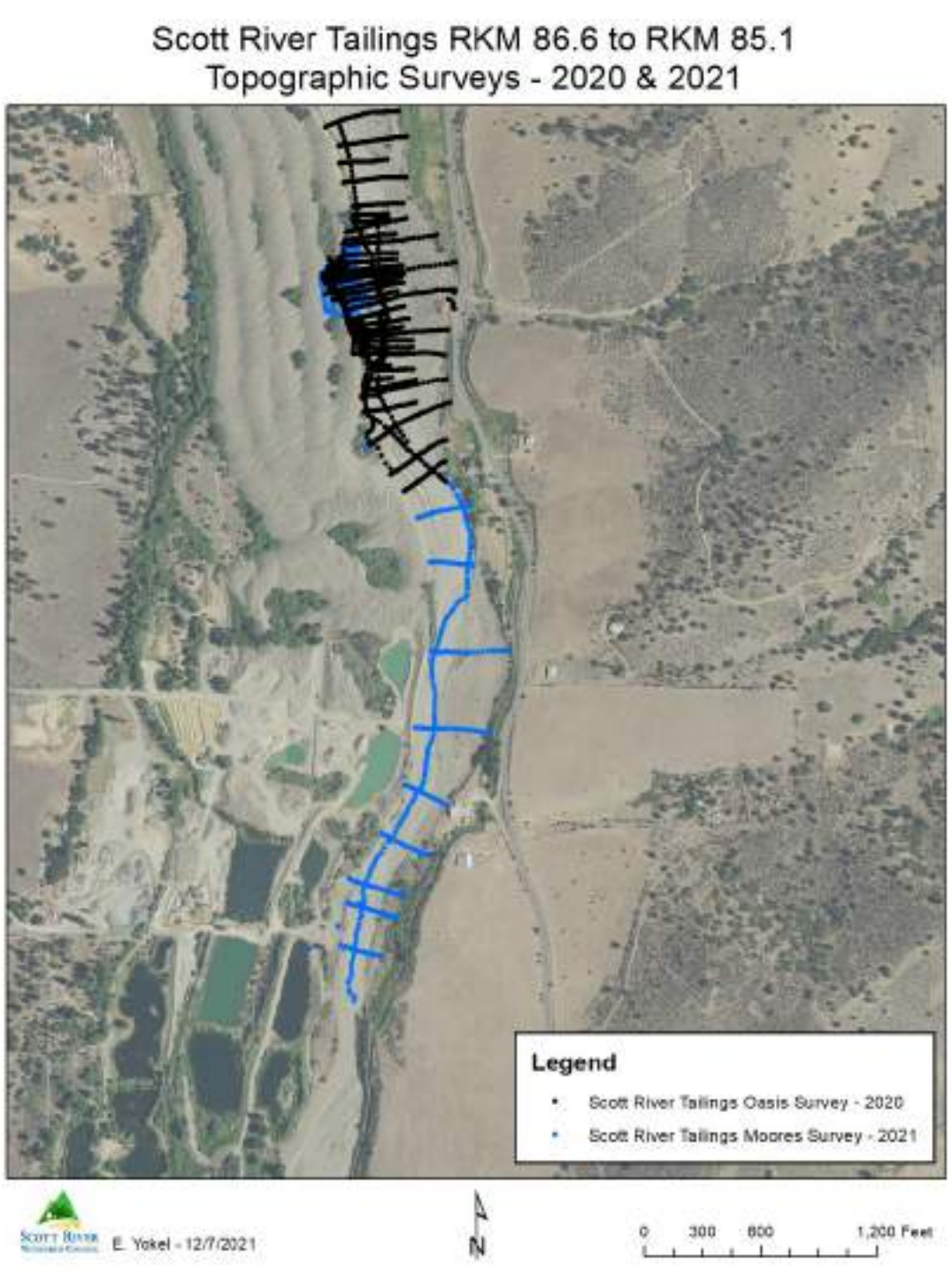
Topographic Surveys – Performed 2020 and 2021

Analysis of Longitudinal Profile and Cross Sections



Stream Gradient – 0.7%

Sinuosity – 1.11



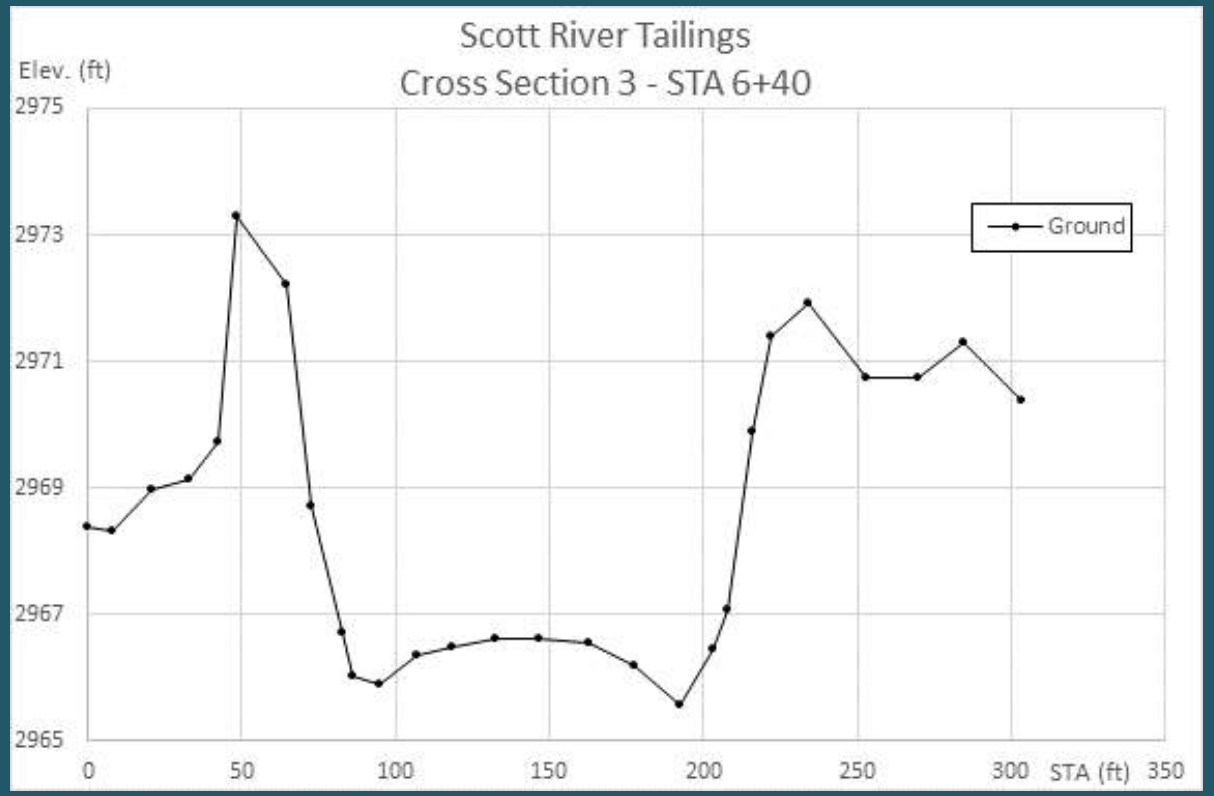
Geomorphic Change Analysis

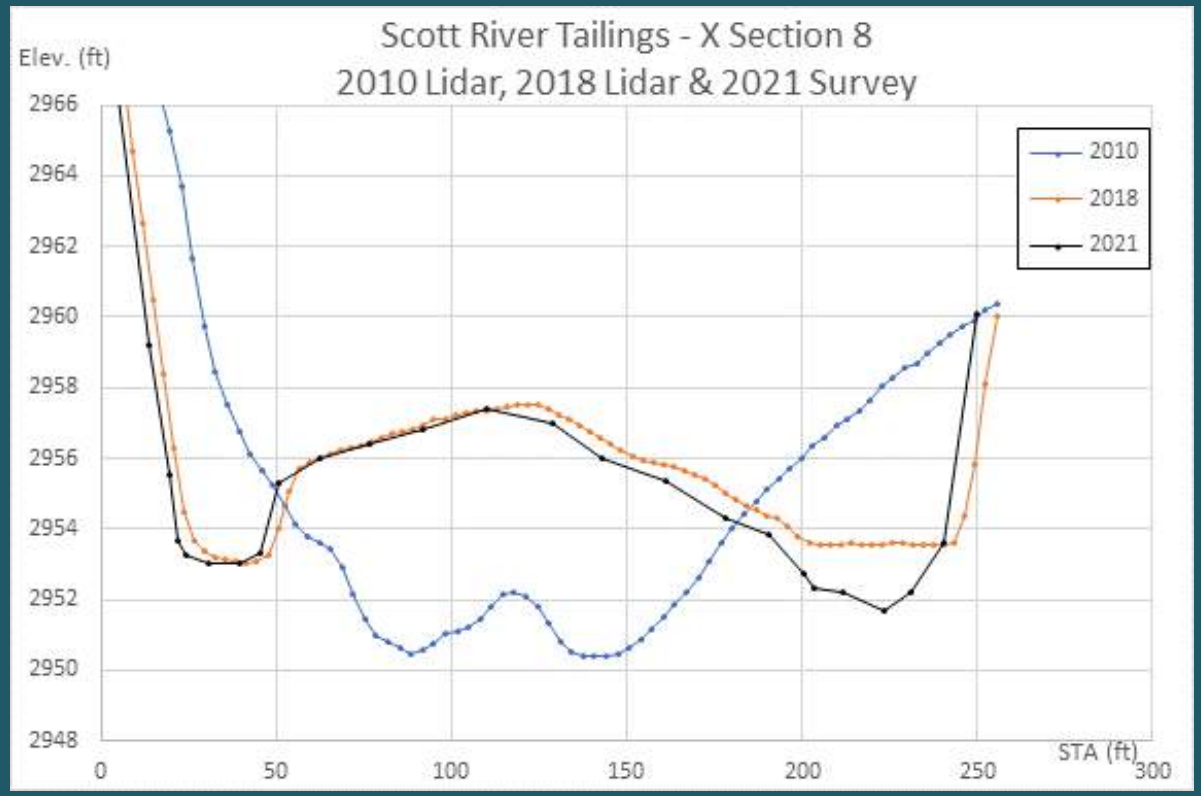
Elevation Data

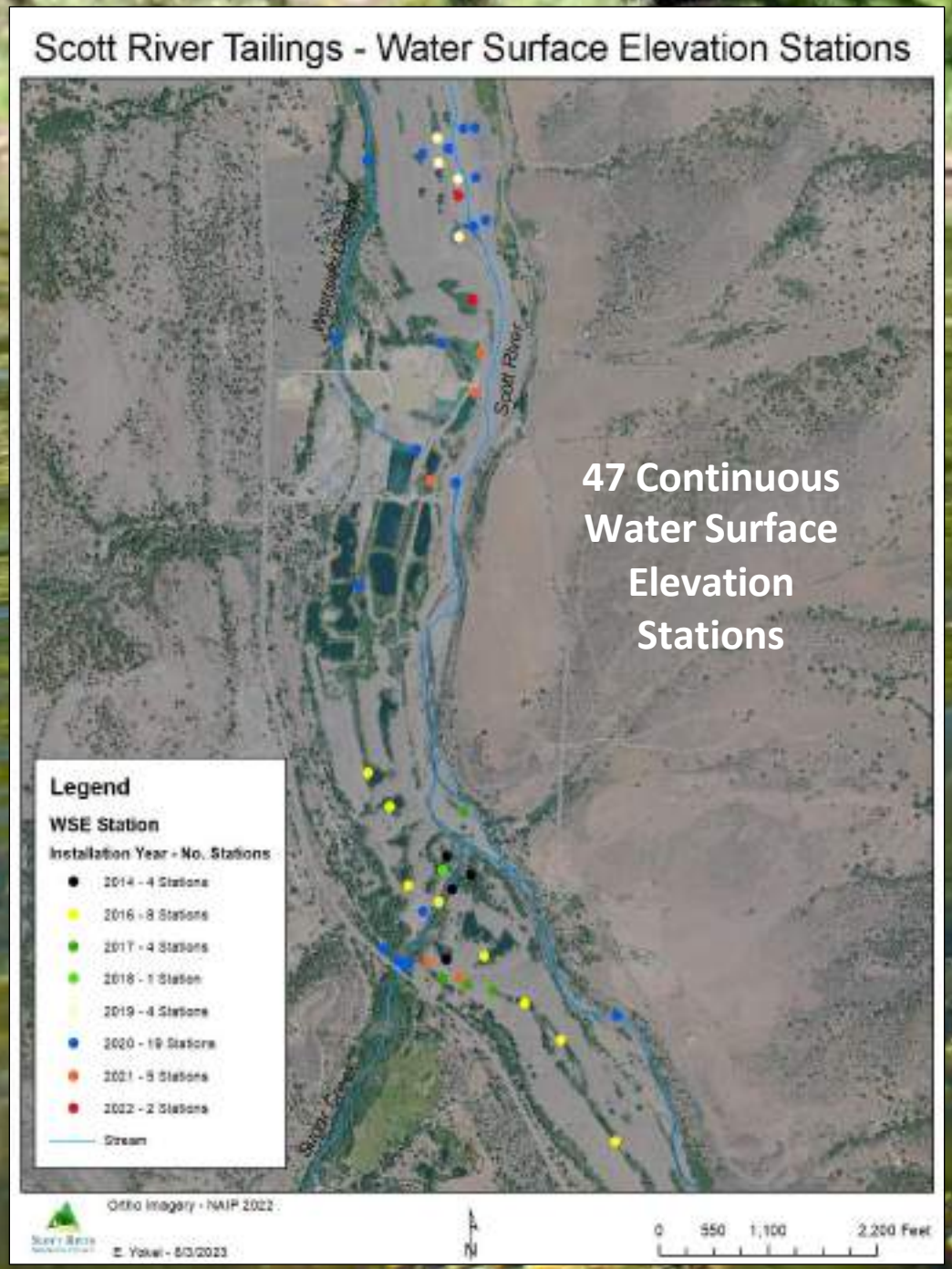
- 2010 USFWS and 2018 FEMA Lidar DEMs
- Topographic surveys 2010 – 2021
- Will compare to 2023 Yurok LiDAR

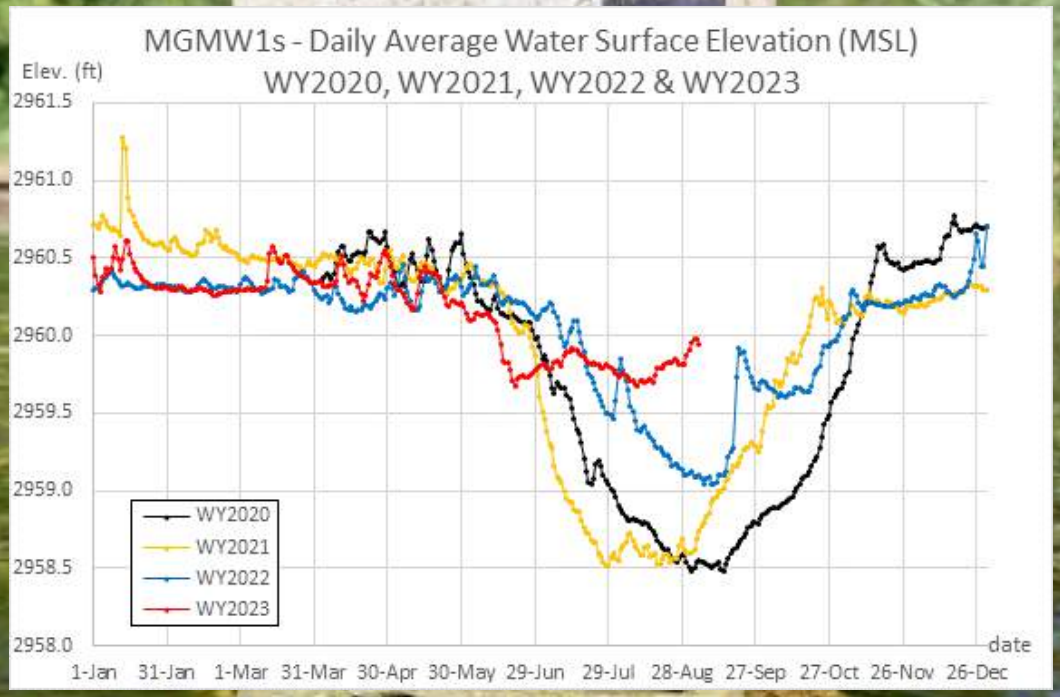
•Cross section of Constrained Channel in area of minimal channel migration

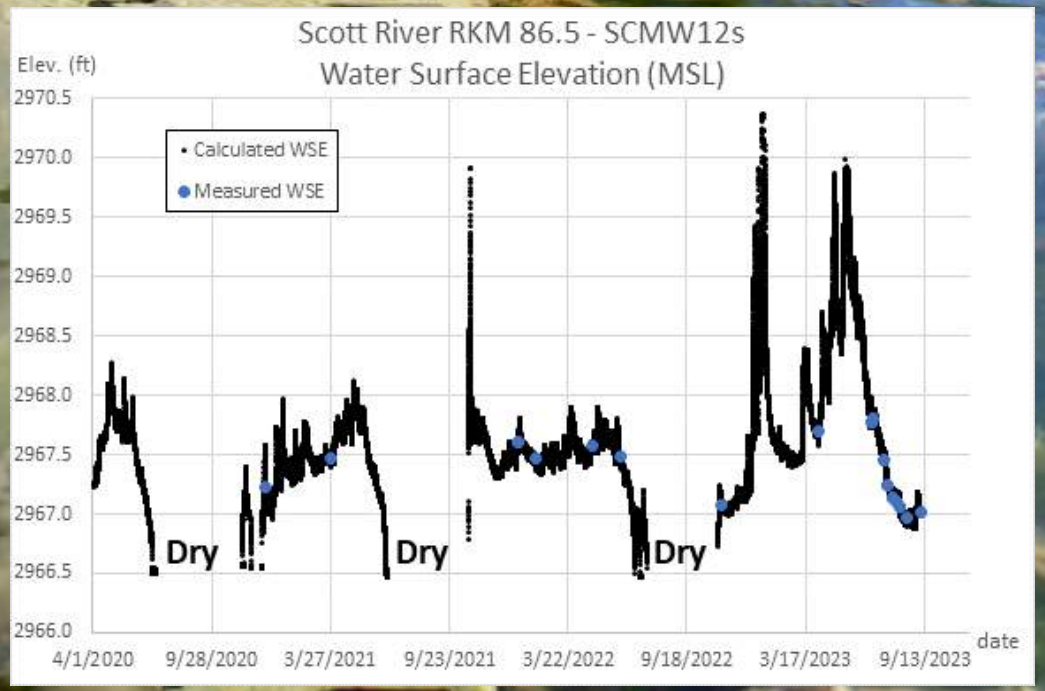
•Comparison of 2010 & 2018 DEMs and 2021 topographic survey documents channel alteration – February 2015 Flood





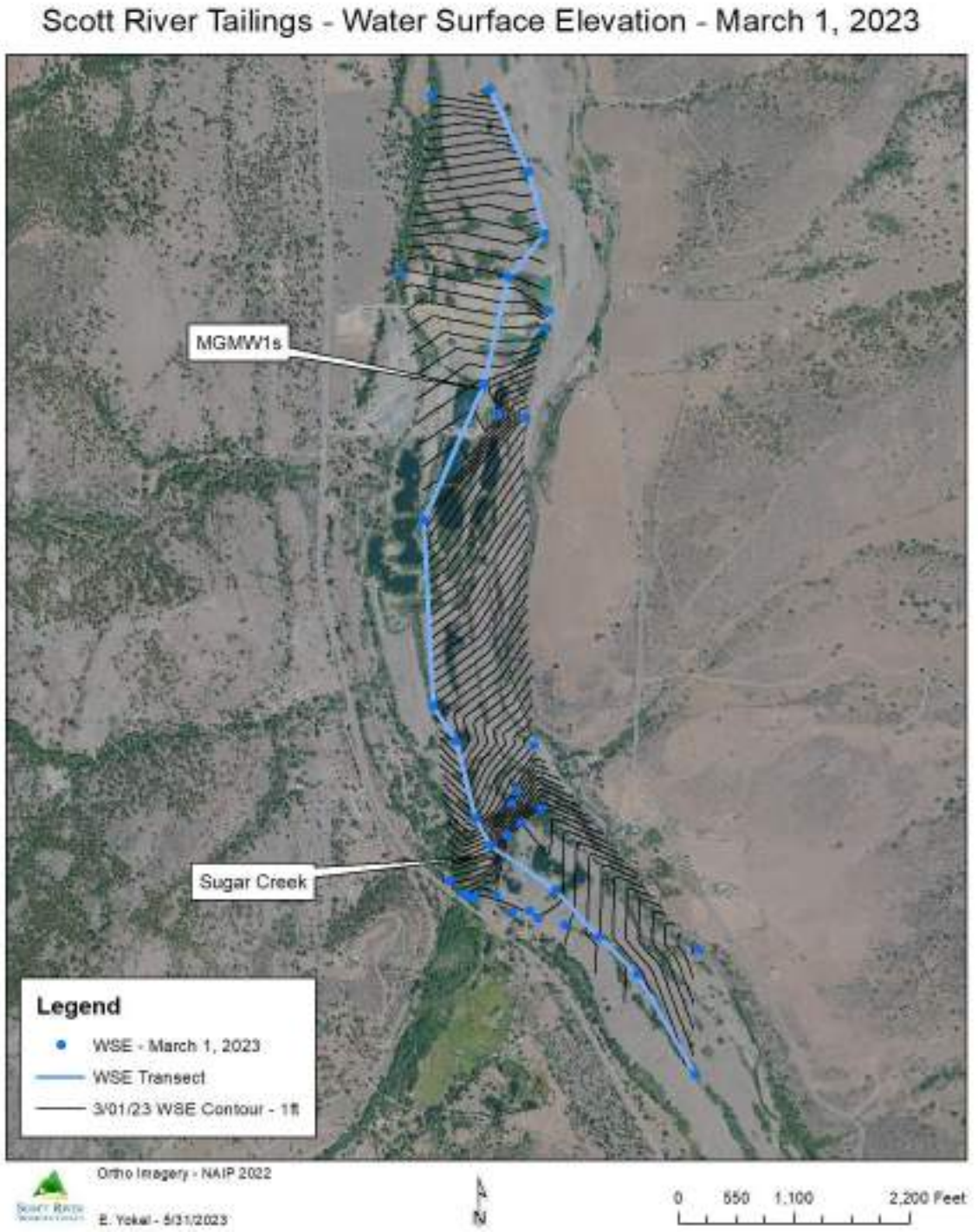

Scott River Tailings - Water Surface Elevation Stations
47 Continuous Water Surface Elevation Stations
Legend
WSE Station
Installation Year - No. Stations
2014 - 4 Stations
2016 - 8 Stations
2017 - 4 Stations
2018 - 1 Station
2019 - 4 Stations
2020 - 19 Stations
2021 - 5 Stations
2022 - 2 Stations
Stream
Scott River
Scott Creek
Ortho Imagery - NAIP 2022
E. Yokel - 6/3/2023
0 550 1,100 2,200 Feet


MGMW1s - Daily Average Water Surface Elevation (MSL)
WY2020, WY2021, WY2022 & WY2023
Elev. (ft)
2961.5
2961.0
2960.5
2960.0
2959.5
2959.0
2958.5
2958.0
WY2020
WY2021
WY2022
WY2023
1-Jan 31-Jan 1-Mar 31-Mar 30-Apr 30-May 29-Jun 29-Jul 28-Aug 27-Sep 27-Oct 26-Nov 26-Dec
date

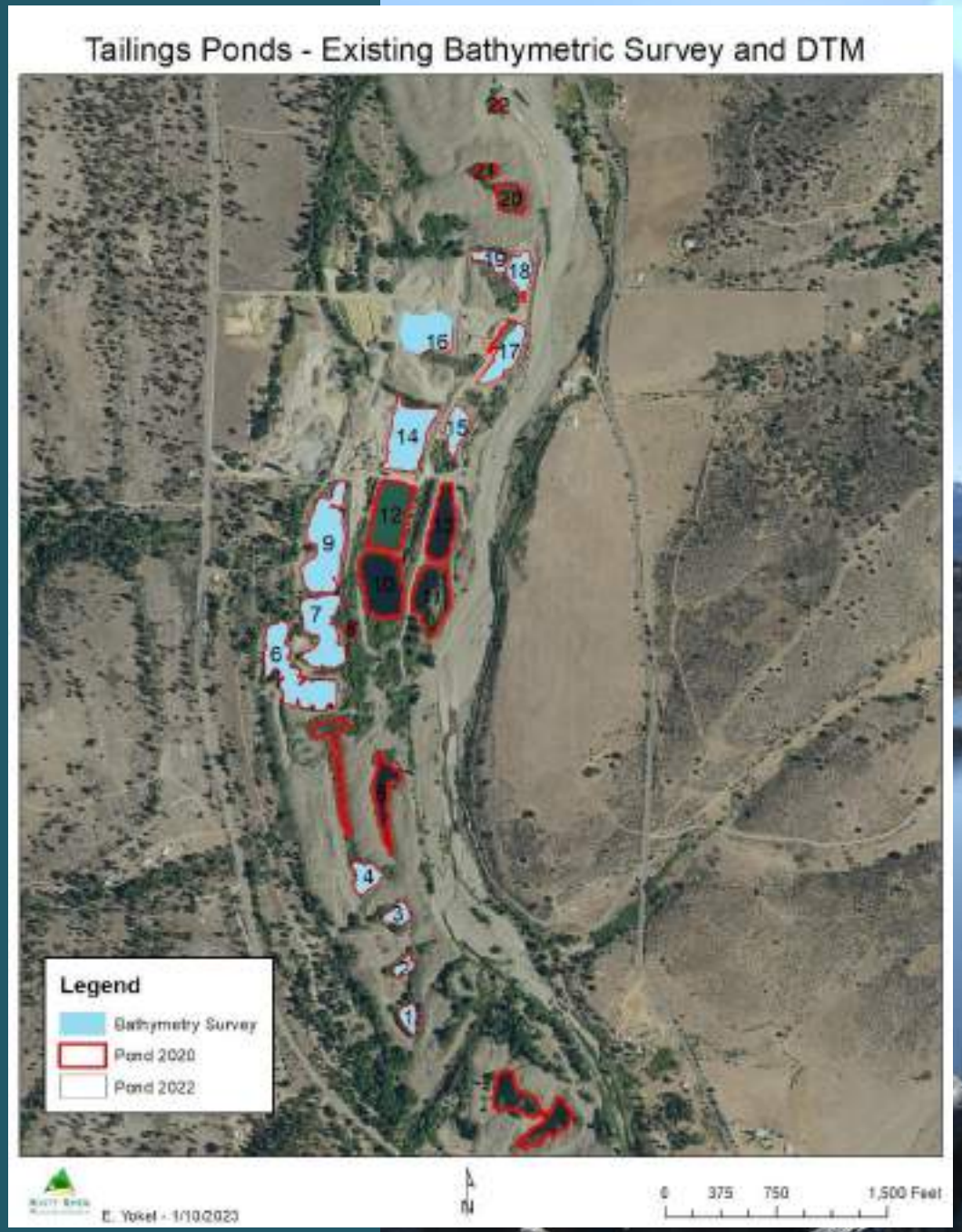

Scott River RKM 86.5 - SCMW12s
Water Surface Elevation (MSL)
Elev. (ft)
2970.5
2970.0
2969.5
2969.0
2968.5
2968.0
2967.5
2967.0
2966.5
2966.0
Calculated WSE
Measured WSE
Dry
Dry
Dry
4/1/2020 9/28/2020 3/27/2021 9/23/2021 3/22/2022 9/18/2022 3/17/2023 9/13/2023
date

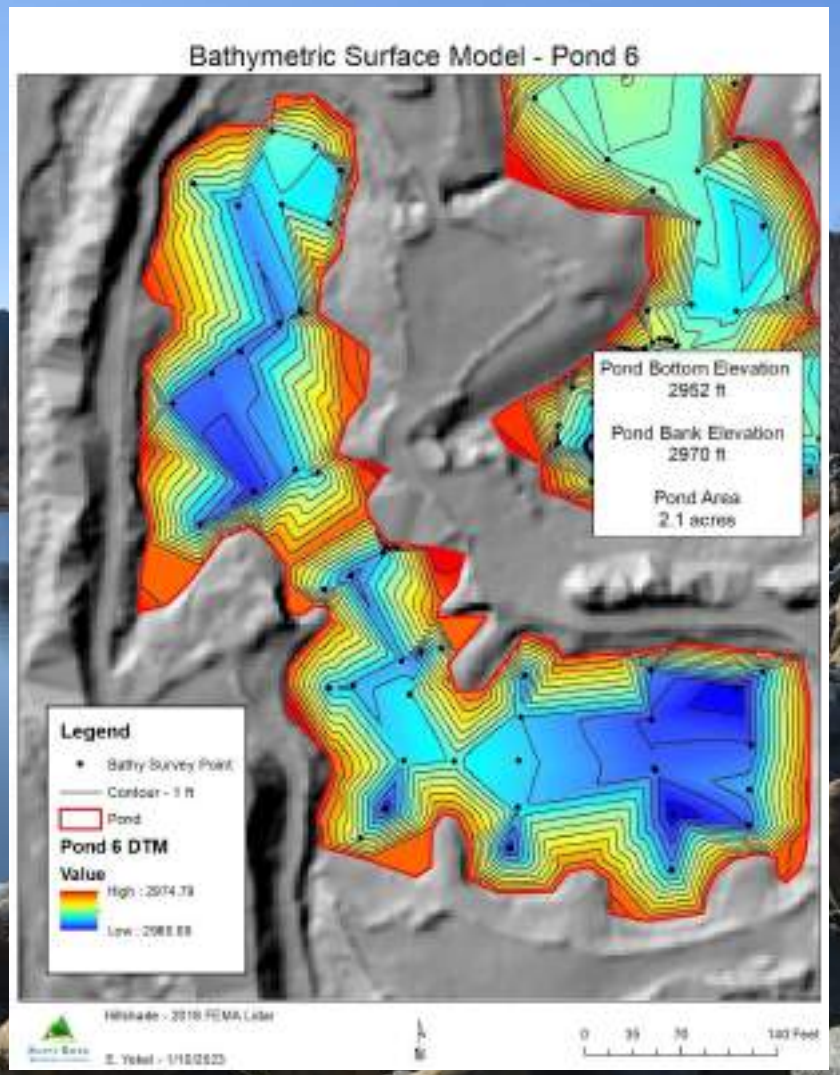
Developed WSE Gradients and
WSE Transects For three different flow regimes

March 1, 2023 Winter
(Wet Season) Base Flow



Tailings Ponds Bathymetry Survey and Digital Terrain Model

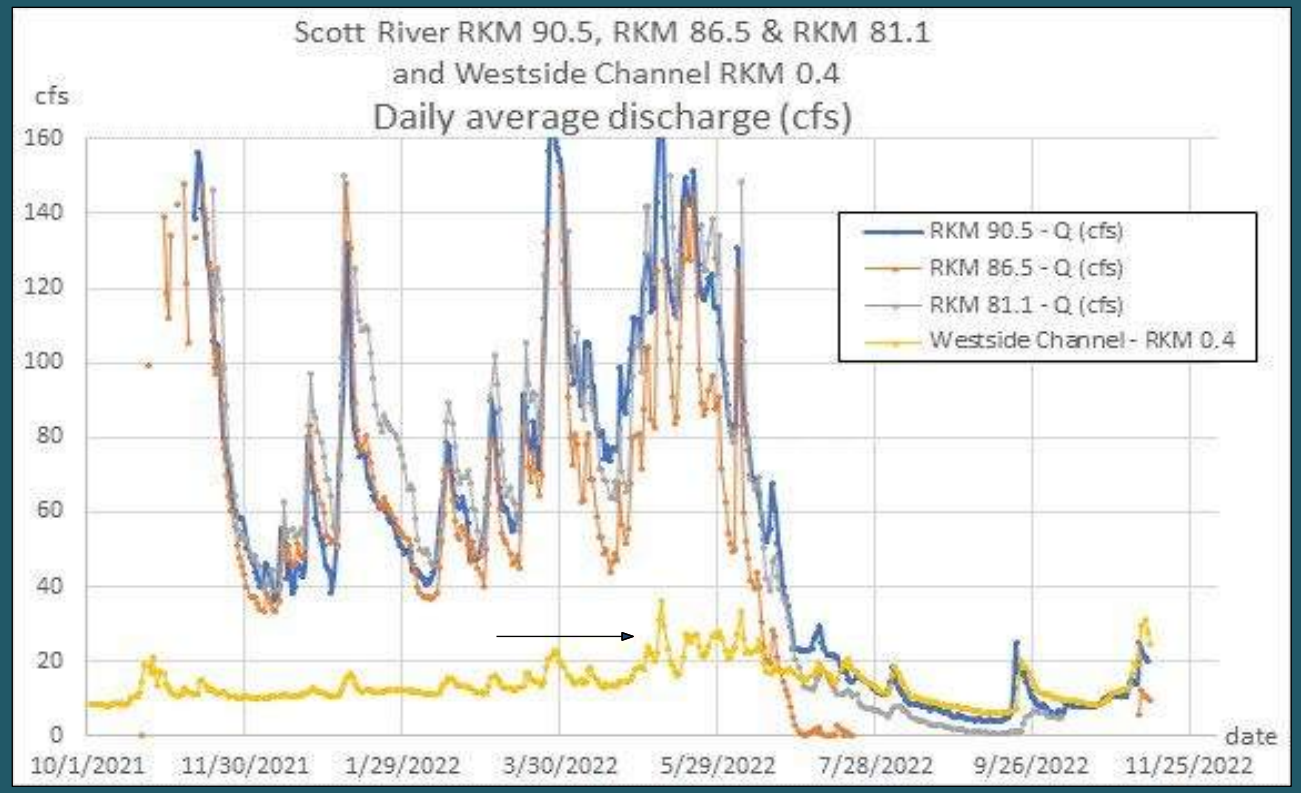


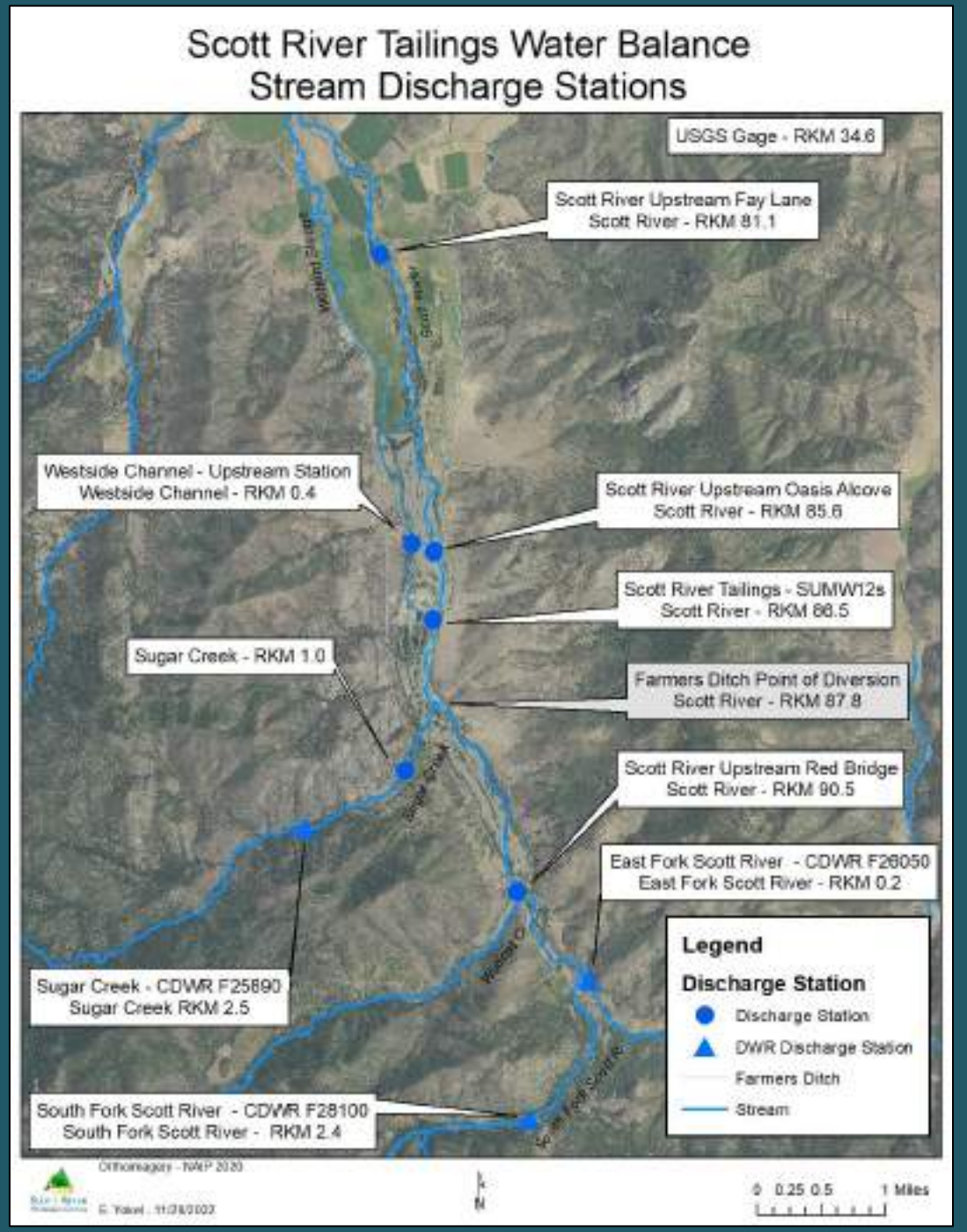


Scott River Tailings Reach Water Balance

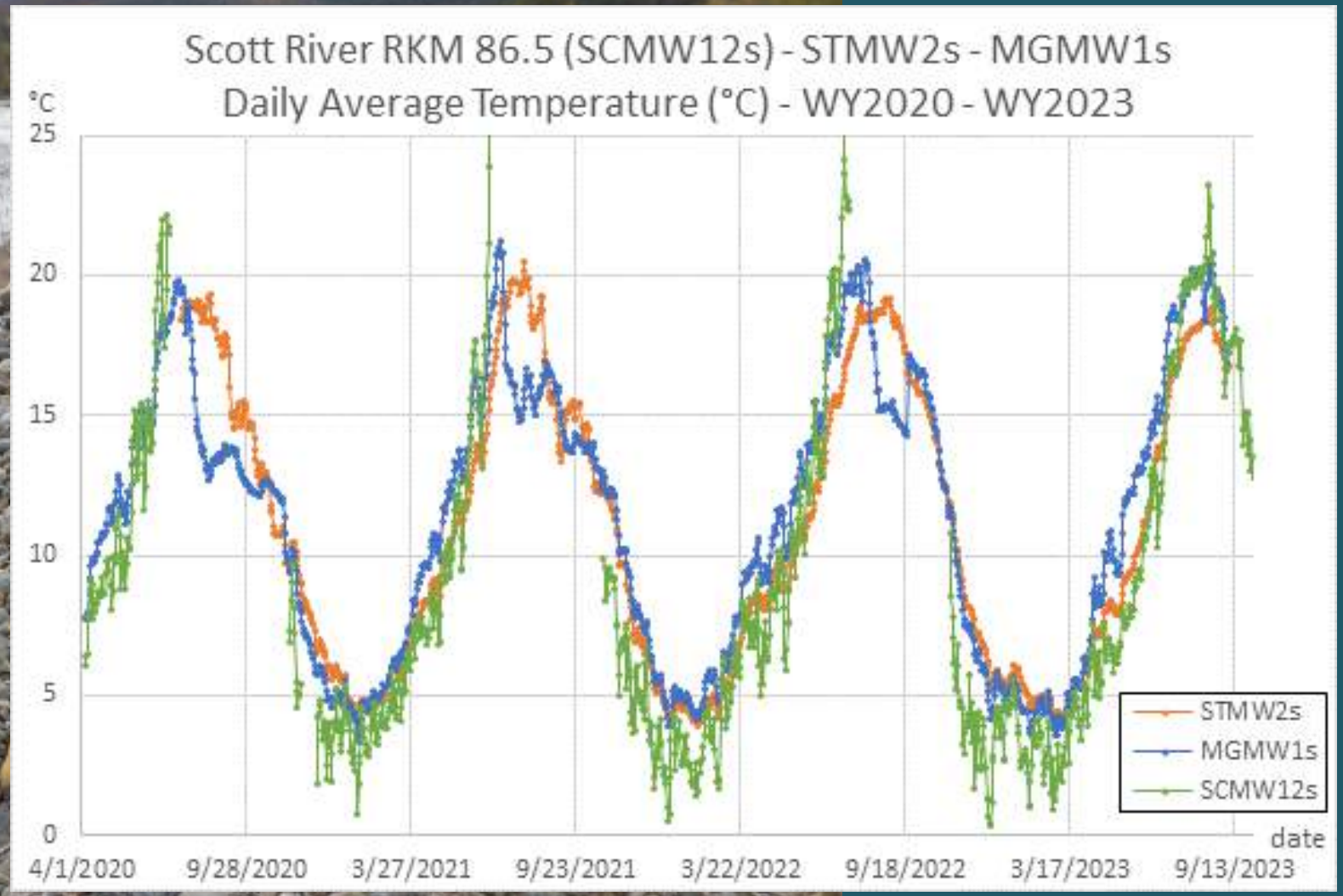
6 Discharge/Streamflow Continuous Stations

Four Mainstem Scott River Stations; Input - Sugar Creek; Output – West Side Channel, Farmers Ditch (Use Publicly Available Data - eWRIMS)





Water Temperature Monitoring



Questions?

Photo Credit: Will Harling, May 17, 2022