Nevada Irrigation District
Board of Directors Presentation
May 28, 2025

English Meadow Restoration Project and The Headwaters Stewardship Program

NID Mission Statement

The District will provide a dependable, quality water supply; continue to be good stewards of the watersheds, while conserving the available resources in our care.

Water comes from watersheds

From Peak to Valley

What does watershed stewardship look like at NID?

NID is working to restore forest resilience and to protect the headwaters region

Goals

- Ensure secure and dependable water supply through integrated watershed management.
- Create healthy and resilient forest communities and habitat
- Reduce risk of wildfire
- Protect infrastructure

Strategies

Forest Management

Create multi-species and multi-aged stands

Thin dense fuels and promote increased water yield

Enhance snow accumulation

Improve carbon sequestration

Habitat Restoration and Protection

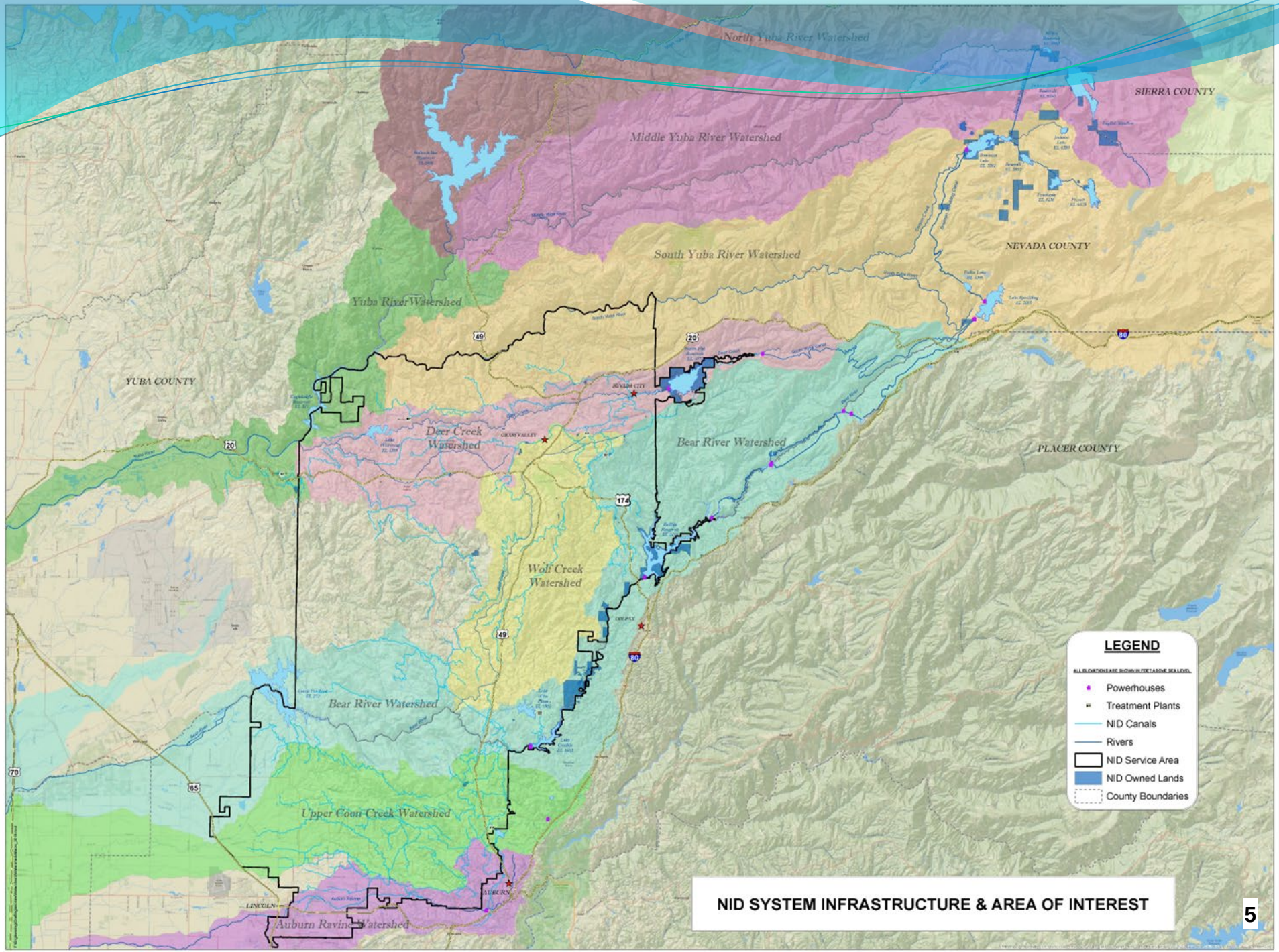
Wildfire risk reduction, invasive species management

Meadow Restoration

Spread, slow and store spring runoff

Attenuate sediment

Watershed Education



NID SYSTEM INFRASTRUCTURE & AREA OF INTEREST

Watershed Management Projects

Recent Past Projects

- Scotts Flat Reservoir Healthy Forests Project
- Rollins Reservoir Fuels Reduction Projects
- Magnolia / Parker Ranch Fire Fuels Reduction Project
- Bear River Reforestation Project

Currently underway

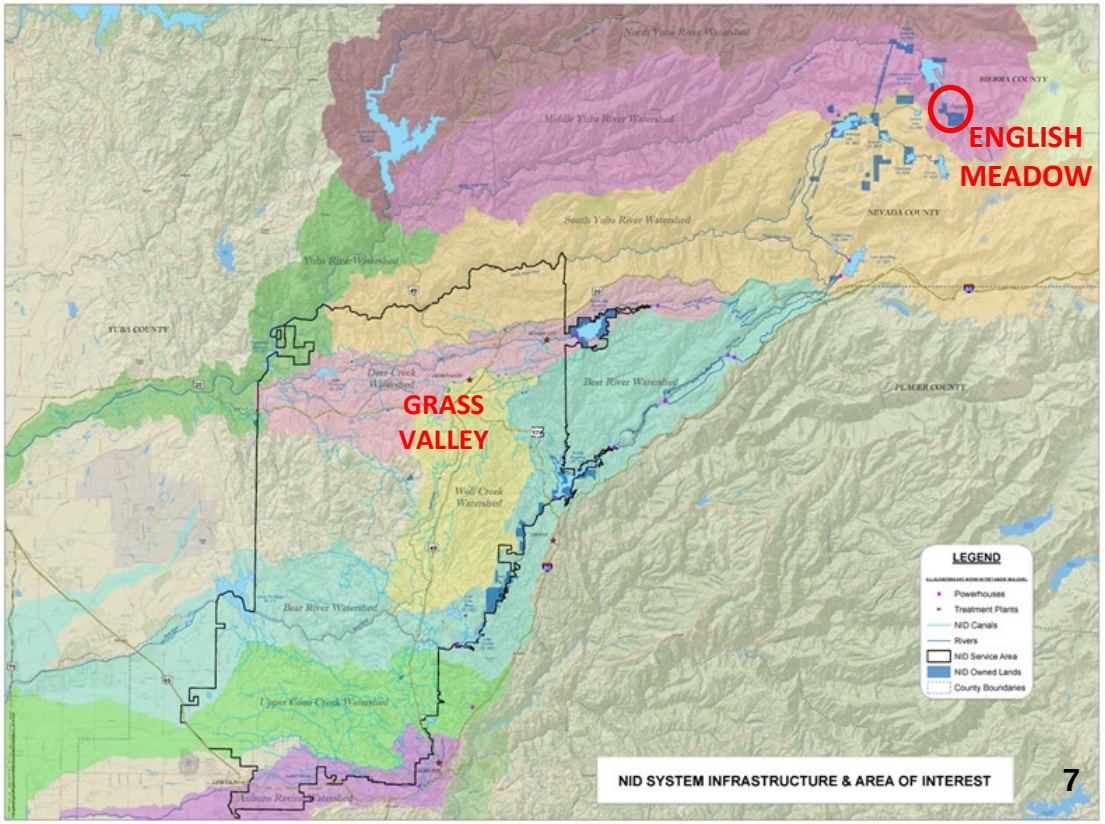
- **English Meadow Floodplain Restoration and Fire Fuels Reduction Project (GRANT)**
- Upper Yuba Headwaters Forest Restoration Project (GRANT)
- Bear River Wildfire Recovery Project (GRANT)
- Upper Yuba Headwaters Forest Restoration Project (Planning GRANT with USFS)

Upcoming/Ongoing

- Hazard tree removal, defensible space projects, general fire fuels reduction
- Selective commercial logging
- Adaptive management and maintenance at English Meadow
- Watershed education
- New grants for restoration, healthy forests, fire fuels reduction, etc…

Improving the Headwaters of the Middle Yuba River Watershed:

English Meadow Floodplain Restoration and Fire Fuels Reduction Project

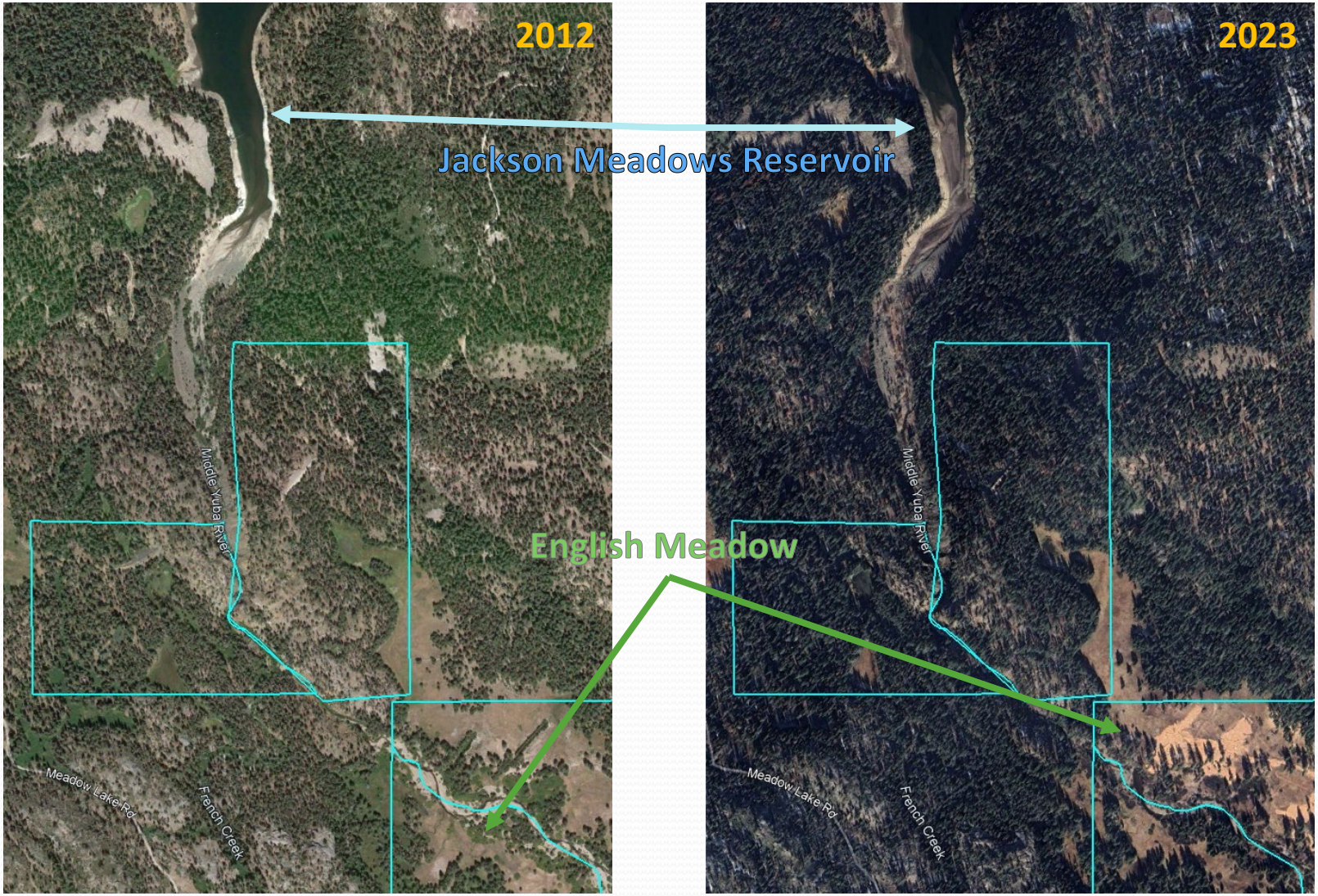


Project Hypotheses:

- 1. **Can we modify current hydrology and timing of runoff in the Middle Yuba River using a process-based approach to build instream river structures with trees, woody debris and onsite gravel and cobble?**
  - Did we reduce peak flow?
  - Did we extend falling limb of hydrograph? More flow Aug-Oct.
  - Did streamflow (quantity) increase?
  - Did wetland community, including wet meadow complex, expand its range in the project?
  - Did water temperatures remain the same or decrease?
  - Do we see greater aquatic community pool:riffle complexity after project implementation?
- 2. **Did thinning lodgepole pine stands on the slopes and within the meadow benefit streamflow?**
  - Can we see an increase of ground level snow accumulation later in the spring/early summer on north facing slopes?
  - Has timing and volume of streamflow changed?
  - How was temperature changed?
  - Can we use prescribed fire to manage regeneration in the future?

English Meadow is located near Jackson Meadows Reservoir at 6,000 ft in elevation and is bisected by the Middle Yuba River. Historically impacted (inundation under English Reservoir) for hydraulic mining 1871. Contemporarily at risk of wildfire and other climate related impacts.

Sediment Delivery into Jackson Meadows Reservoir



Significant bank erosion and downcutting which isolates the river mainstem from its floodplain was observed in the meadow during site surveys conducted in 2018.

Why are meadows important in the Sierra Nevada headwaters region?

- Mountain meadows are rare – only 2% of the Sierra Nevada landscape
- Store and release clear, cold water into source watersheds
- Carbon sequestration
- Sediment attenuation during spring runoff
- Rare habitat for migratory and resident wildlife and plant species
- Natural and effective fuel breaks and refuge during wildfires

Meadows support rich aquatic and terrestrial biodiversity

The English Meadow Restoration Project began in 2023!

- Assessed by interdisciplinary team of resource managers and scientists from 2016-2022, a restoration design was created.
- Restoration treatments started Aug. 2023
- Project goals: **slow, spread and absorb water** in the meadow; reconnect Middle Yuba River channel to its floodplain; and reduce the likelihood of destruction from catastrophic wildfire by creating healthy forest stands and re-wetting dry areas.

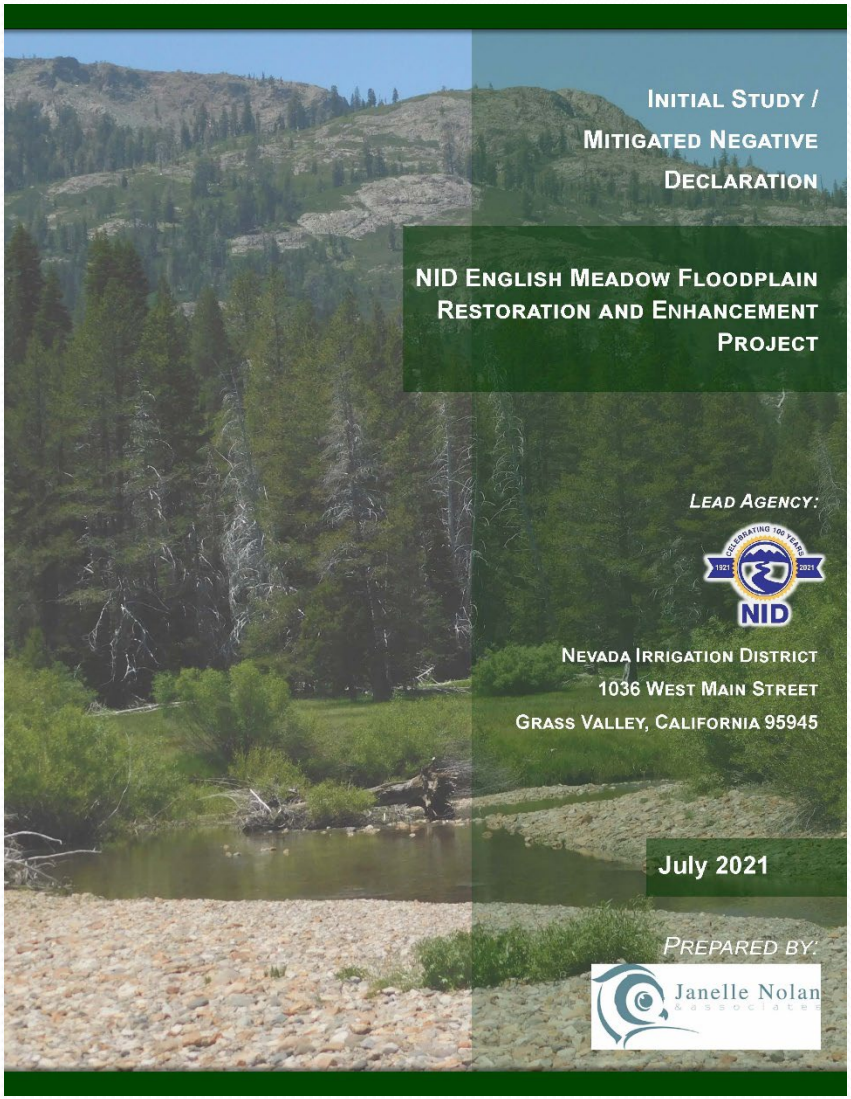
Thank you Wildlife Conservation Board and the Sierra Nevada Conservancy, CSU Sacramento, USFS and local partners and contractors!

NID installed a stream gage on the Middle Yuba River below English Meadow and above Jackson Meadows Reservoir in 2017

- Stream gages provide critical information about streamflow, temperature and other parameters
- Environmental Resources staff and Hydro installed and O&M since
- This information provides quantified data regarding flow, timing of runoff, temperature, and we also collect field measurements of river cross sections and turbidity

Project Planning & Environmental Compliance and Permitting

- Initial Study / Mitigated Negative Declaration to satisfy CEQA
  - Completed in 2021
- All Permits finalized January 2023
  - Regional Water Quality Control Board 401 Permit
    - Stormwater Pollution and Prevention Plan & SWPPP Monitor
  - Army Corps of Engineers 404 Permit
  - California Department of Fish and Wildlife Lake and Streambed Alteration Permits



Meadow Restoration in the Sierra Nevada Region

- In the mid-1900's, advancements in science and understanding of the importance of meadows and associated natural processes led to restoration in California.
- Today, organizations like WCB, SNC and CDFW fund implementation of meadow restoration in CA in support of the Sierra Meadows Partnership goal of treating 30,000 acres by 2030.
- The English Meadow Project is approximately 375 total ac., $2.2M, over 2 years of implementation
- Van Norden Meadow, 485 ac. $6.25M over 3 years of implementation
- Ackerson Meadow, 230 ac. $20-30M over 3 years of implementation

Perazzo Meadows, Little Truckee River
Truckee River Watershed Council restored 50 ac.
2008-2010

Project Partners:

Grant Funding:
Wildlife Conservation Board and the Sierra Nevada Conservancy

Project Planning and Design:
Plumas Corp, Under the Trees, many biologists and CSU Sacramento

Project Implementation:
Frank Dial Logging, Black Dog Enterprises and the Symbiotic Restoration Group

Heavy equipment was needed to remove dense lodgepole pine stands to reduce wildfire risk in the headwaters, and to build woody debris structures in the Middle Yuba River to restore floodplain connectivity.

Collecting lodgepole pine trees.

Above is an instream structure with pine trees buried below the gravel and cobble, with transplanted willow.

Trees were used as our building blocks for over 60 structures in the river.

Woody debris and beaver dam analog structures in English Meadow 2024.

English Meadow Expenses 2016-2025

Years	Project	Grant	NID Cash Match	NID Staff Time	Total
2018-2020	2206 Yuba Headwaters Forest Management Plan	$ 50,000	$ 21,627	$ 19,858	$ 91,485
2017-2023	2039 English Meadow Restoration Planning & Permitting & Stream Gage Install		$ 257,288	$ 88,516	$ 345,804
2022-2026	2592 WCB English Meadow Restoration Project	$ 1,221,000	$ 282,002	$ 281,889	$ 1,784,891
	TOTAL	**$ 1,271,000**	**$ 560,917**	**$ 390,264**	**$ 2,222,181**

Construction activities completed in 2024

$30,000 in grant funds for 2025 for adaptive management, maintenance and monitoring

- Grant closure date: 3/31/2027
- Continue project maintenance and monitoring through 8/26/2046

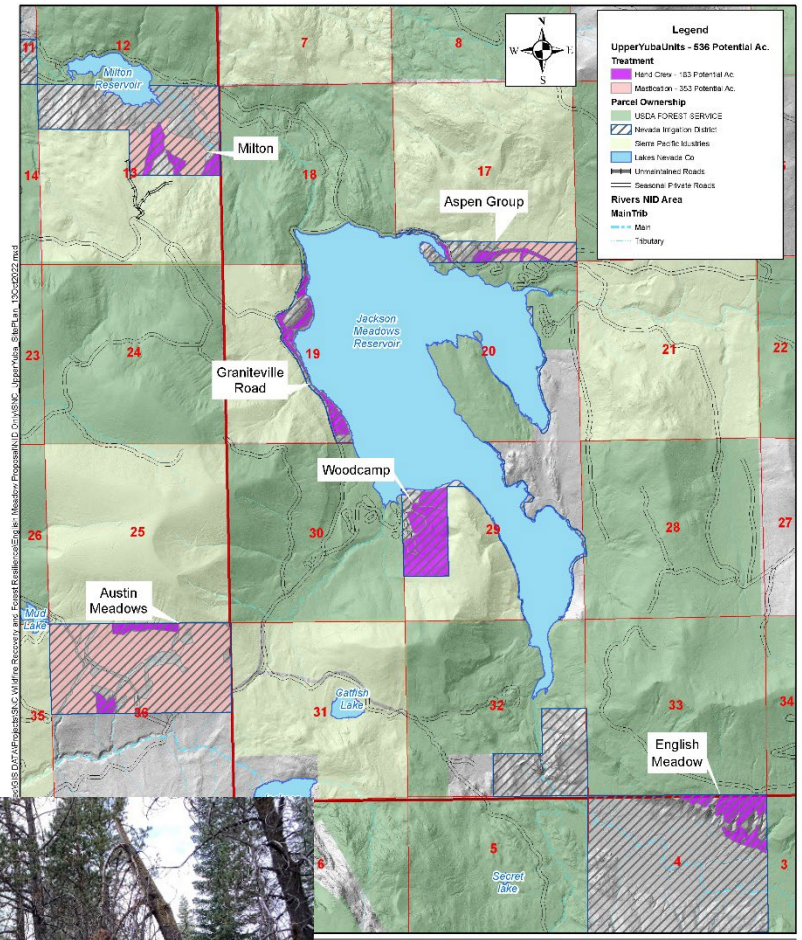
Next Steps:

- June 2025 CDFW Beaver Restoration Program coming up to evaluate habitat suitability for reintroduction of beaver ~ Sept. 2025
- Environmental Resources will complete a CDFW Stream Condition Inventory to compare pre and post-project pool:riffle structure complexity
- We will also complete Adaptive Management in areas that need a little work and continue to collect onsite native grass, wildflower and sedge seeds and spread to areas that were disturbed (year 3 of reseeding)
- Monitor invasive weeds and continue hand treatment
- Project photo-monitoring will be collected from trail cameras and redeployed for upcoming season
- Re-fly with drone for aerial imagery and elevation/vegetation analysis
- Identify Adaptive Maintenance tasks and funding needs and work with potential funders to secure grant funding to in 2027-2030

2023 CDFW and Maidu Summit Consortium released first beaver family into the wild in 75 years. The beavers will be the ecosystem engineers and maintenance crew in this meadow.

Upper Yuba Headwaters Forest Restoration Project - Continuing our work in our headwaters

- 400 acres of healthy forests restoration in the Upper Middle Yuba River watershed- thinning of 0-14”DBH and downed woody debris
- SNC Grant $1.27M, $1.8M total project budget
  - Near Jackson Meadows Reservoir
  - Began pre-treatment site preparation 2024
  - Implementation started 2024 above English Meadow
  - Bid package for 2025 to be released May 2025
- Anticipate completing 135 acres in 2025, with additional work 2026/27



SNC Project #1542

Thank you!

For more information please see our website page at:

https://www.nidwater.com/english-meadow-floodplain-restoration-project

The Project

The Nevada Irrigation District (NID) is taking a proactive approach to climate change and seeks to improve natural processes that deliver ecosystem services in its supply watersheds.

The English Meadow Floodplain Restoration and Enhancement Project was implemented during two field seasons, in the summer and fall of 2023-2024. This project will advance NID's goal of ensuring that the headwaters, or the origin of our water supply, is managed for forest health and year-round flows. This montane meadow is part of the Sierra Nevada headwaters, which is integral to the natural water supply infrastructure that NID manages for communities in Nevada, Placer and Yuba counties.

The restoration work is on about 375 acres within the headwaters of the Middle Fork of the Yuba River. The location is approximately one mile upstream of one of NID's largest water storage reservoirs, Jackson Meadows.

The project has utilized a process-based design to construct over 60 woody debris and gravel/cobble structures in the Middle Yuba River and multiple tributaries within the project area. The design anticipates natural movement or adjustment of installed structures as the water flows through the river during the peak of spring runoff. Additionally, beaver dam analog structures were built by hand crews on two small perennial tributaries that flow out of fens on the western side of the meadow.

This project expands the refuge habitats that meadows provide throughout the Sierra Nevada region, supporting aquatic and terrestrial migrating and resident species, and creating hydrologic systems that naturally attenuate spring runoff and provide fire buffers as green belts.

Desired Outcomes

The purpose of this project is to improve watershed/floodplain function and resilience of English Meadow and the surrounding forest to achieve the following benefits:

- Reduce the transport of bedload and fine sediment from the upper watershed into Jackson Meadows Reservoir (maintain reservoir water storage capacity).
- Increase seasonal retention and release of spring runoff in the meadow floodplain aquifer.
- Enhance habitat for meadow-dependent species.
- Improve forest health to reduce wildfire risk through fuels reduction.
- Increase snowpack and surface flow through mechanical thinning of the forest community.
- Reduce conifer encroachment into the meadow.

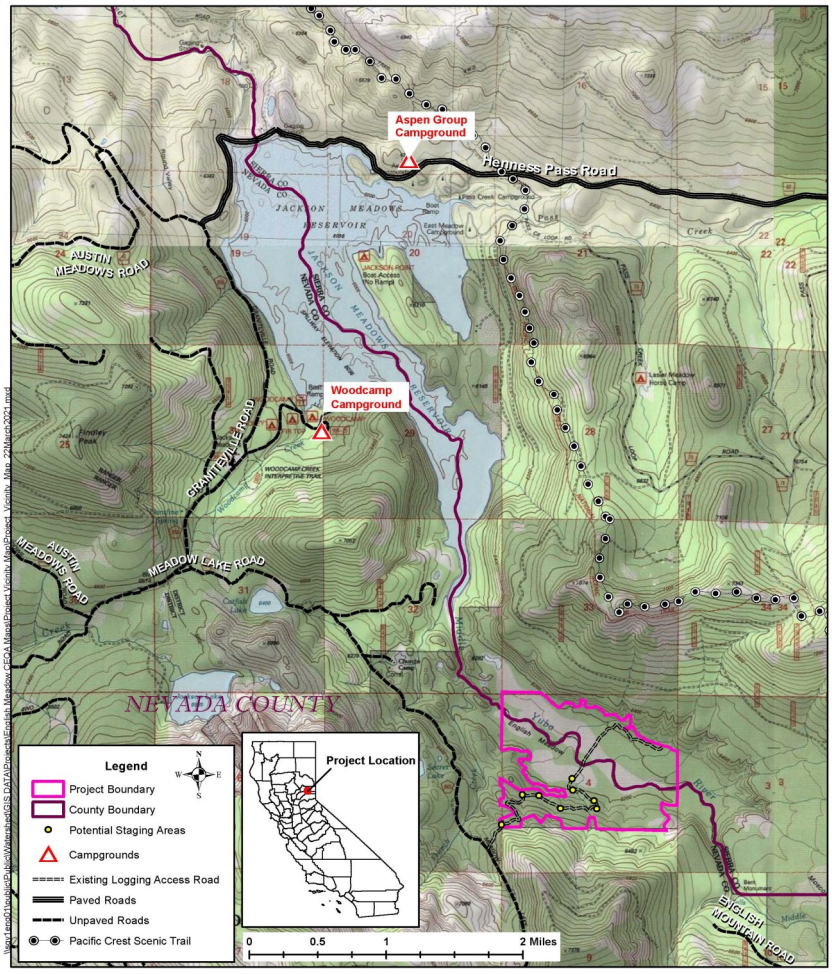
Aquatic and Terrestrial Habitat Benefit

This project will restore connectivity between the mainstem of the Middle Yuba River and its natural floodplain. This connection promotes more frequent flooding and saturation of the meadow during spring runoff, which benefits unique montane meadow habitats that are key refuge areas scattered throughout the Sierra Nevada.

Aquatic habitats will be enriched and fed by the natural storage of shallow groundwater which will flow into the Middle Yuba River as the summer months turn into fall each year, bringing cold, fresh water to sustain these communities. Additionally, forest thinning will promote snow accumulation, which will lengthen the period when melting surface waters reach the forest floor and protect terrestrial habitats from destruction due to catastrophic wildfire.

The Middle Yuba River headwaters support resident trout and other species, including birds that utilize riparian corridors, meadows and forest edges. Restoration of this important site will benefit these and other species.

In 2025, the project area will be evaluated by the California Department of Fish and Wildlife's Beaver Restoration Team as a potential beaver reintroduction location. If habitat is found to be suitable, a family of beavers will be transported into the meadow to facilitate re-establishment of a beaver engineered ecosystem. This is an ultimate goal of process-based restoration where anthropogenic efforts can be replaced by the natural processes of wildlife and natural hydrology within the headwaters region.



Map 2-1: English Meadow Restoration & Enchancement Project Vicinity Map

Date: 4/20/2021
Drawn By: C. TOWNSEND

NEVADA IRRIGATION DISTRICT
NEVADA COUNTY – PLACER COUNTY
GRASS VALLEY, CALIFORNIA

Scale: 1:47,520
Sheet: 1 of 1

Cost

Total estimated project cost is $2.2 million. NID has received $1.3 million in grants for the project from the California Wildlife Conservation Board and Sierra Nevada Conservancy.

About NID

For more than 100 years, the Nevada Irrigation District (NID) has been delivering high-quality water to its customers. What began as an old reservoir and canal system built during the California Gold Rush has been transformed into a modern public water system.

NID water originates as snowmelt found in 70,000 acres of high-elevation watershed near the headwaters of the Yuba River, Bear River and Deer Creek. Our dedicated employees manage water around the clock, moving supplies to one of 29 reservoirs, and later releasing water destined for drinking to one of six water treatment plants for filtration and purification.

The water passes through hundreds of miles of canals and pipes to become irrigation for farms and fields and drinking water for local neighborhoods. The annual result is three billion gallons of high-quality drinking water and enough irrigation water for 32,000 acres of agricultural land. NID also is a leader among water agencies in the production of hydropower, generating enough electricity to meet the energy needs of about 66,000 homes.