



Truckee River Watershed Council

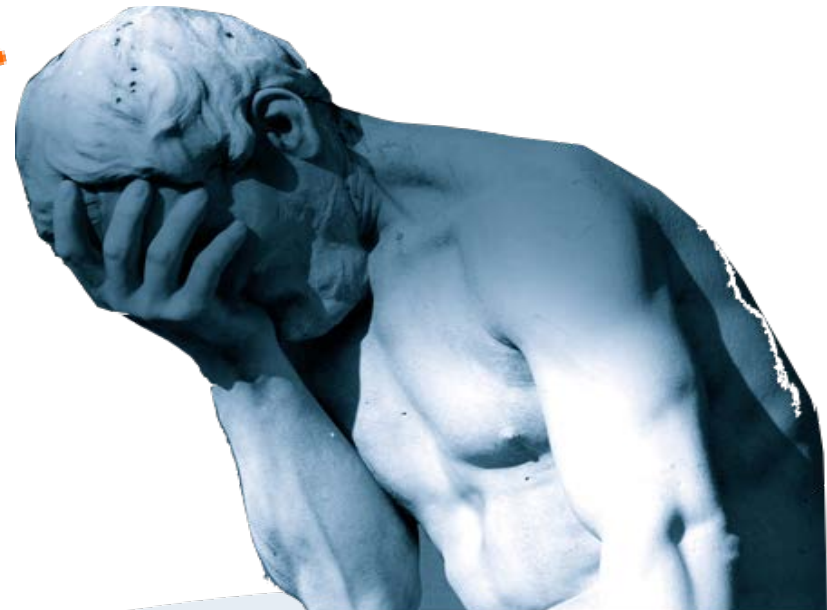
Collaborative solutions to protect, enhance and restore the Truckee River Watershed



Thank You



The Truckee River is NOT Pristine.



The Truckee

It may look pretty

but it's not happy



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If you look closer...

Erosion



Down cuts



Dams



That impact our

Birds



Fish



Humans



We need to fix this...



And get to this...



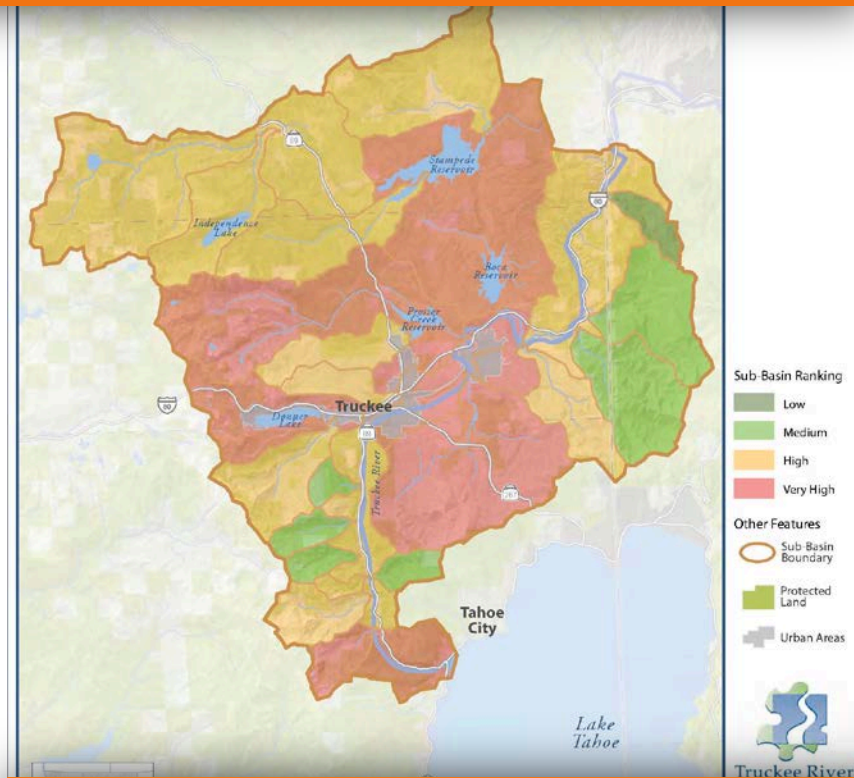
So nature and community can thrive together



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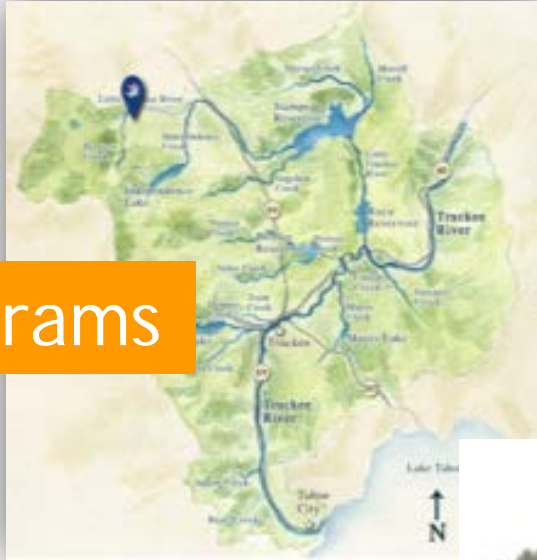
It takes a lot

Diverse partners and multiple funders



to find ecological & economical solutions

Here's how we do it



Programs

Policy



People



Here's what we do

Collaborate. Convene. Coordinate.



Restore

Prevent



Engage



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To create...



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Together...



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Piecing Together the Restoration Puzzle

Cedar House, Feb. 9th, 2016

Beth Christman, Director of Restoration Programs

Tonight's Talk

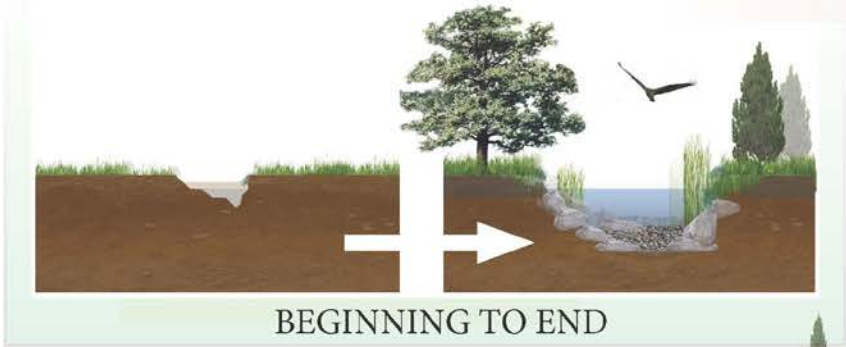
- Pieces of the restoration puzzle
- Selected projects
 - 2015 Implementation Projects
 - Revisit some "Old Friends"
- Q & A with our project partners
 - John Svahn - Truckee Donner Land Trust
 - Deborah Urich - US Forest Service
 - Randy Westmoreland - US Forest Service



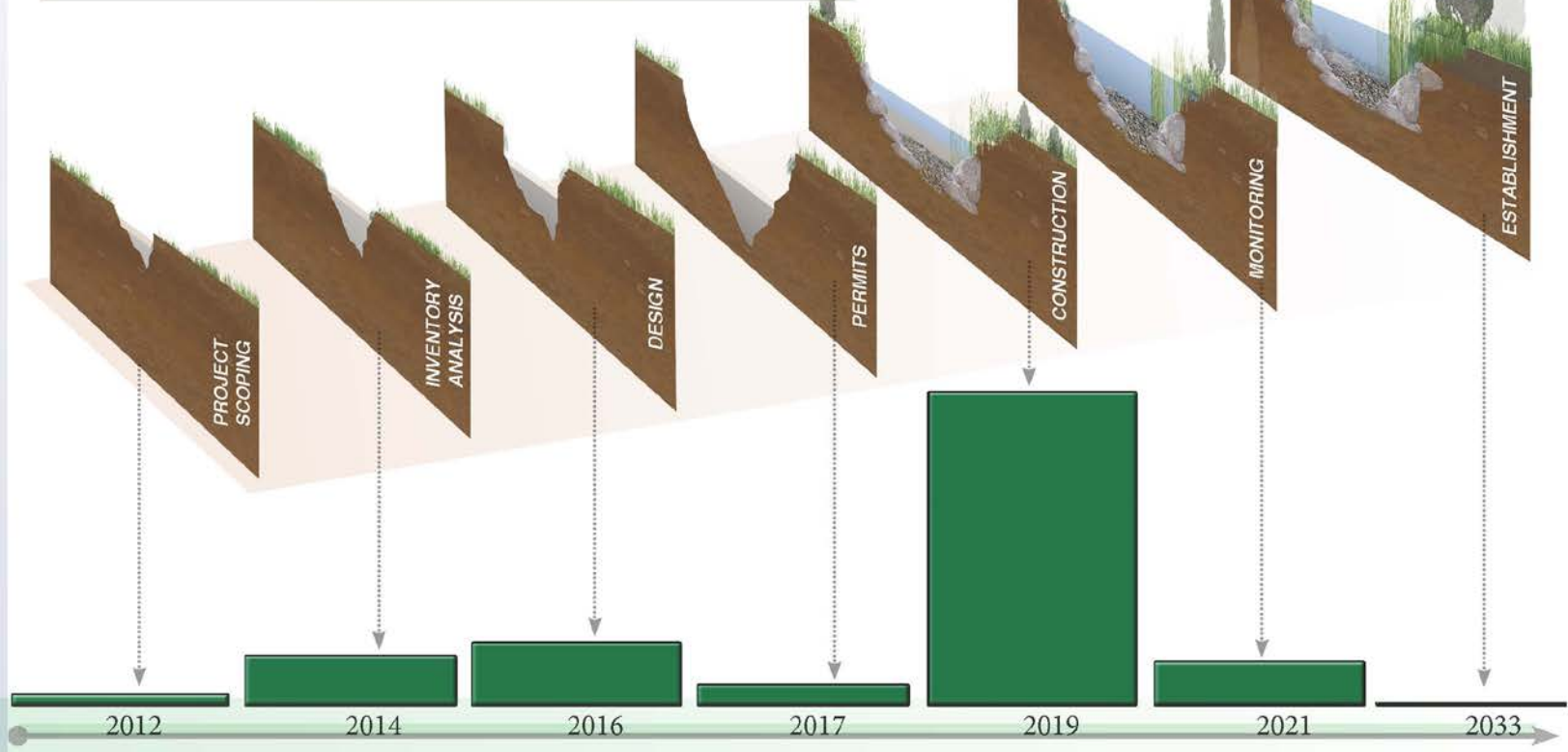
RESTORATION PROCESS

- ESTABLISH 
- MONITOR 
- CONSTRUCTION 
- PERMITS 
- DESIGN 
- INVENTORY 
- SCOPING 

RESTORATION LIFESPAN



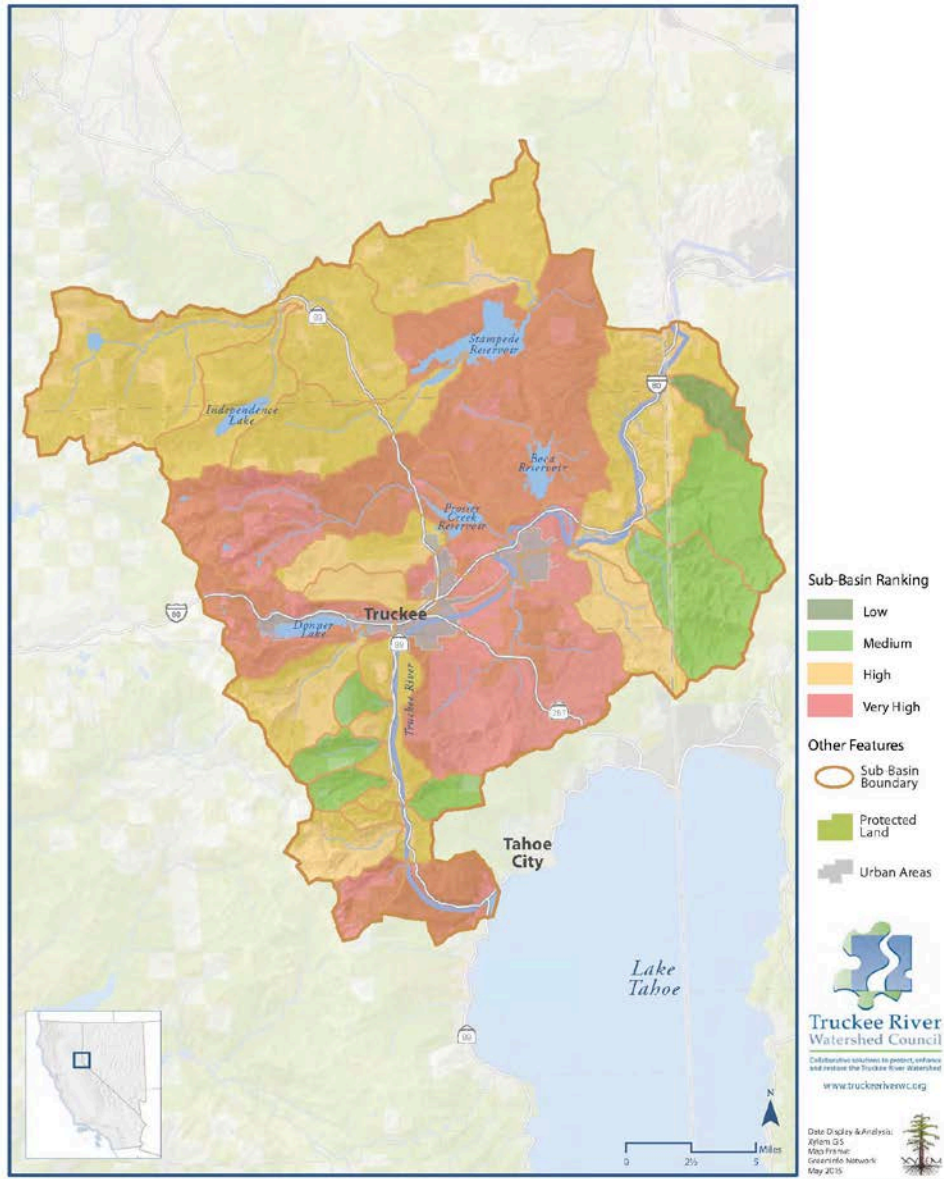
BEGINNING TO END



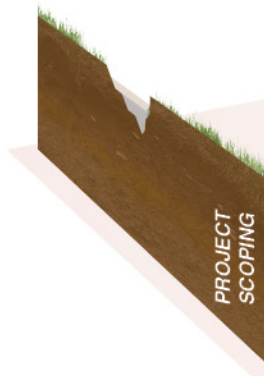
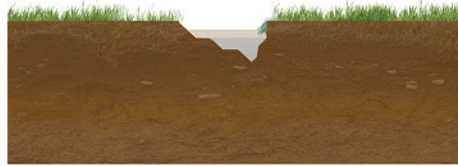
COSTS

Watershed Priorities

The Middle Truckee River Watershed Priorities



 PROJECT SCOPING



- Problem identification
- Preliminary estimate of scale

2012

2014

2016

2017

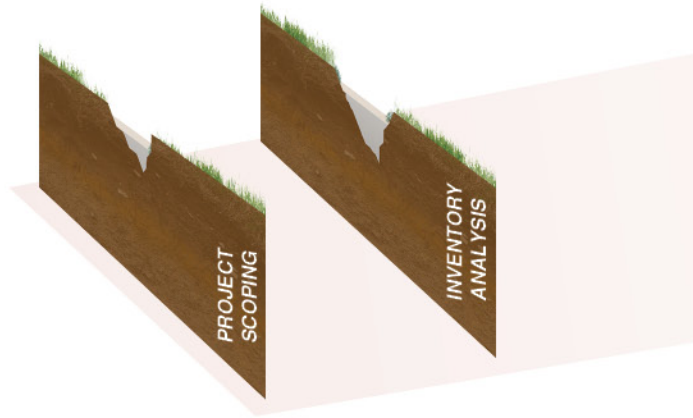
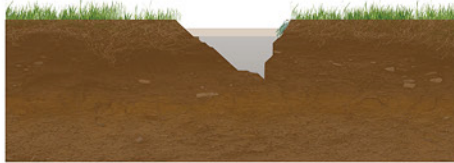
2019

2021

2033

RESTORATION LIFESPAN

INVENTORY & ANALYSIS



2012

2014

2016

2017

2019

2021

2033

Assessment Outcomes

- Understand root causes
 - Determine impairment of natural functions
- Develop stakeholder relationships
- Identify restoration opportunities
- Pre-project monitoring

Dry Creek Watershed Assessment

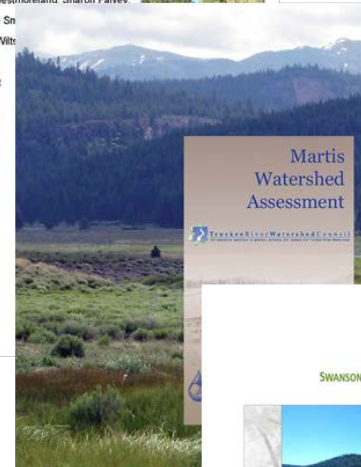


Prepared by Randy Westmoreland, Sharon Falvev,
Sally Hallowell, Carrie Sn,
Scott Conway, Karie Wiltz

Tahoe National Forest



March, 2013



Martis Watershed Assessment

TRUCKEE RIVER WATERSHED COUNCIL

SWANSON HYDROLOGY + GEOMORPHOLOGY



Final Technical Report

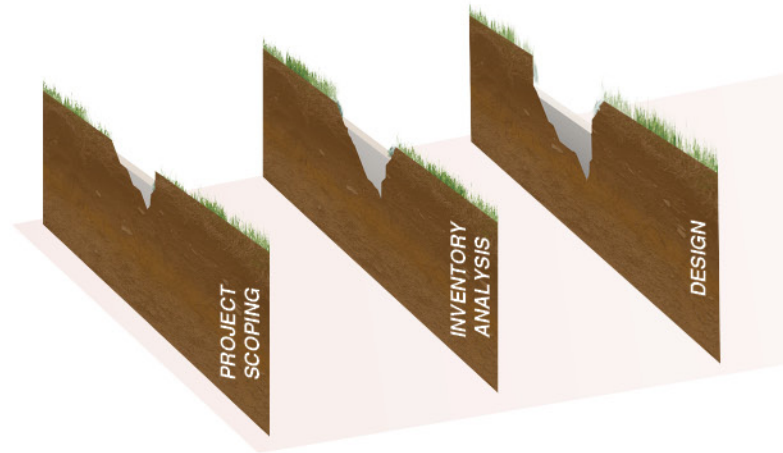
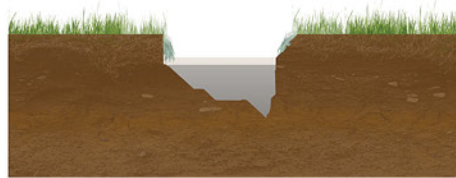
Prairie Meadows Geomorphic Assessment

for Truckee River Watershed Council

May 2005



RESTORATION LIFESPAN



2012

2014

2016

2017

2019

2021

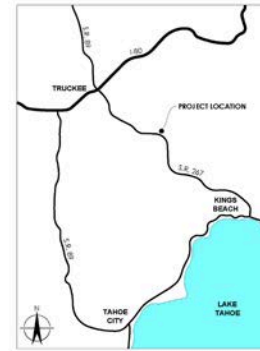
2033



DESIGN

MIDDLE MARTIS CREEK WETLAND RESTORATION PLACER COUNTY, CALIFORNIA

LOCATION MAP



100% SUBMITTAL - NOT FOR CONSTRUCTION

SHEET INDEX

- SHEET 1.0 COVER SHEET
- SHEET 2.0 SYMBOLS AND GENERAL NOTES
- SHEET 3.0 KEY MAP AND CONSTRUCTION ACCESS AND STAGING PLAN
- SHEET 3.1 LOG FLOW DIVERSION AND HEADCUT REPAIR
- SHEET 3.2 HEADCUT REPAIR
- SHEET 3.3 CHANNEL DIVERSION AND REALIGNMENT
- SHEET 3.4 FLOW DISPERSAL LOGS AND RR GRADE MODIFICATIONS
- SHEET 3.5 BOULDER GRADE CONTROL
- SHEET 3.6 WADDELE RANCH HEADCUT STABILIZATION
- SHEET 3.7 WADDELE RANCH ROAD STA 1+00 TO 19+00
- SHEET 3.8 WADDELE RANCH ROAD STA 19+00 TO 19+40
- SHEET 3.9 WADDELE RANCH ROAD STA 19+40 TO 28+00
- SHEET 3.10 WADDELE RANCH ROAD STA 28+00 TO 35+77
- SHEET 4.0 MARTIS ESTATES ROAD CROSSING DETAILS
- SHEET 4.1 ROADWAY AND HEADWALL DETAILS
- SHEET 4.2 HEADCUT REPAIR AND ROCK SLOPE PROTECTION DETAILS
- SHEET 4.3 HEADCUT REPAIR DETAILS
- SHEET 4.4 BOULDER GRADE CONTROL AND BEAVER DAM DETAILS
- SHEET 4.5 CHANNEL DIVERSION AND REALIGNMENT STAGING PLAN
- SHEET 4.6 CHANNEL DIVERSION AND REALIGNMENT CROSS SECTIONS
- SHEET 5.0 PLANNING MATRIX
- SHEET 5.1 LOG FLOW DIVERSION PLANNING PLAN
- SHEET 5.2 HEADCUT REPAIR PLANNING PLAN
- SHEET 5.3 CHANNEL DIVERSION AND REALIGNMENT PLANNING PLAN
- SHEET 5.4 SARMILL FLAT ROAD EAST PLANNING PLAN
- SHEET 5.5 SARMILL FLAT ROAD WEST PLANNING PLAN
- SHEET 5.6 PLANNING DETAILS

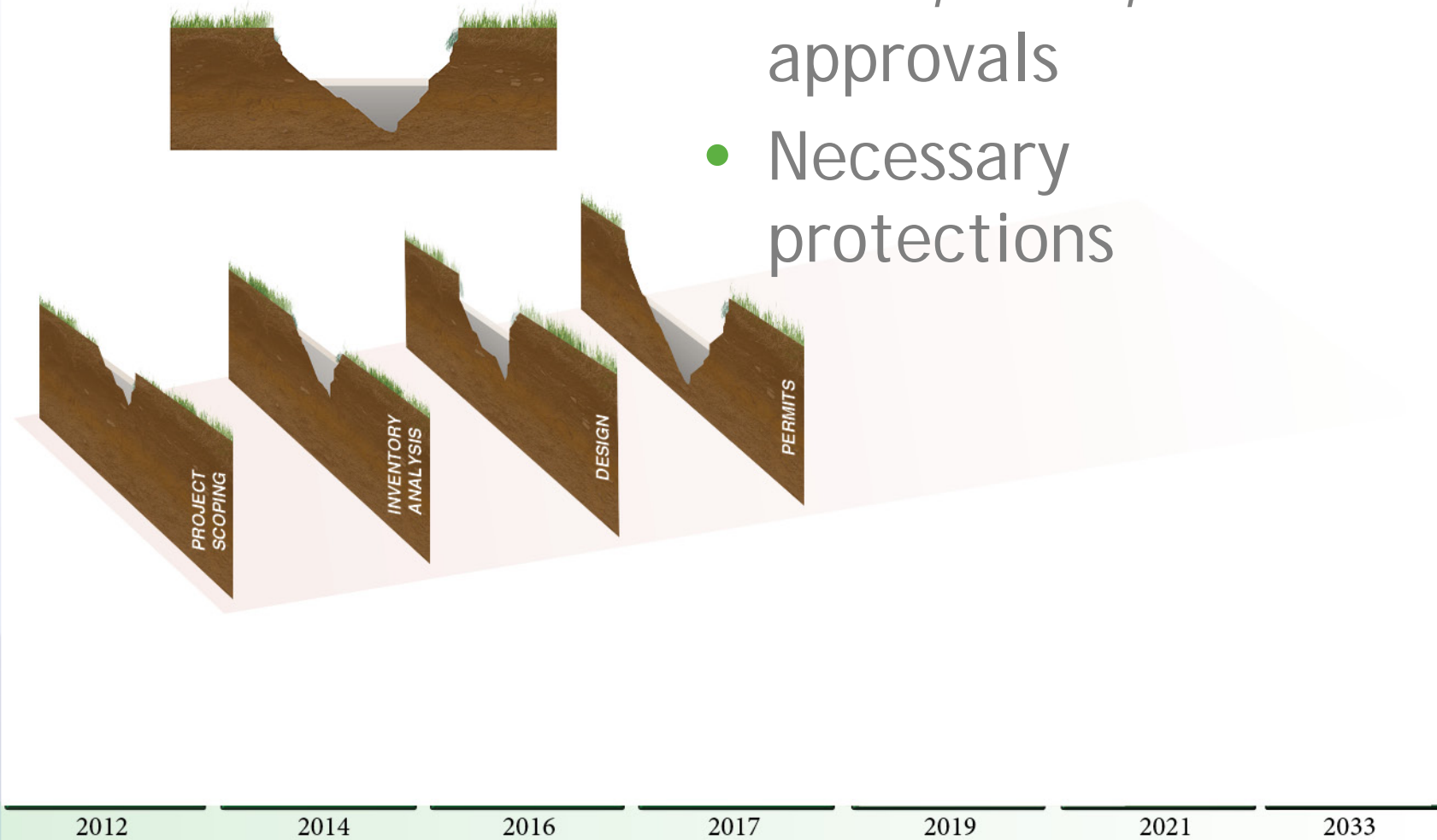
PROJECT TEAM

- CLIENT
TRUCKEE RIVER WATERSHED COUNCIL
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GEORGE WITKOWSKI
BALANCE HYDROLOGICS
EDWARD BALAMAN, P.E.
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PIETER KULCHAWIK, P.E.
1300 COPPER PASS ROAD, SUITE B1
TRUCKEE, CALIFORNIA 96161
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INTEGRATED ENVIRONMENTAL RESTORATION SERVICES
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2780 LAKE FOREST ROAD
TAHOE CITY, CALIFORNIA 96145
TEL. (530) 581-0369
- LANDSCAPE ARCHITECT/
BIOLOGICAL RESTORATION
DUDEK
JOHN LIND, B.L.A.
CALIFORNIA LICENSE NO. 2933
180 RIVIERA DRIVE, SUITE 1100
SACRAMENTO, CALIFORNIA 95814
TEL. (916) 443-8330

DUDEK

COVER SHEET
 MIDDLE MARTIS CREEK
 WETLAND RESTORATION

RESTORATION LIFESPAN



PERMITS

- State, local, federal approvals
- Necessary protections

Construction!

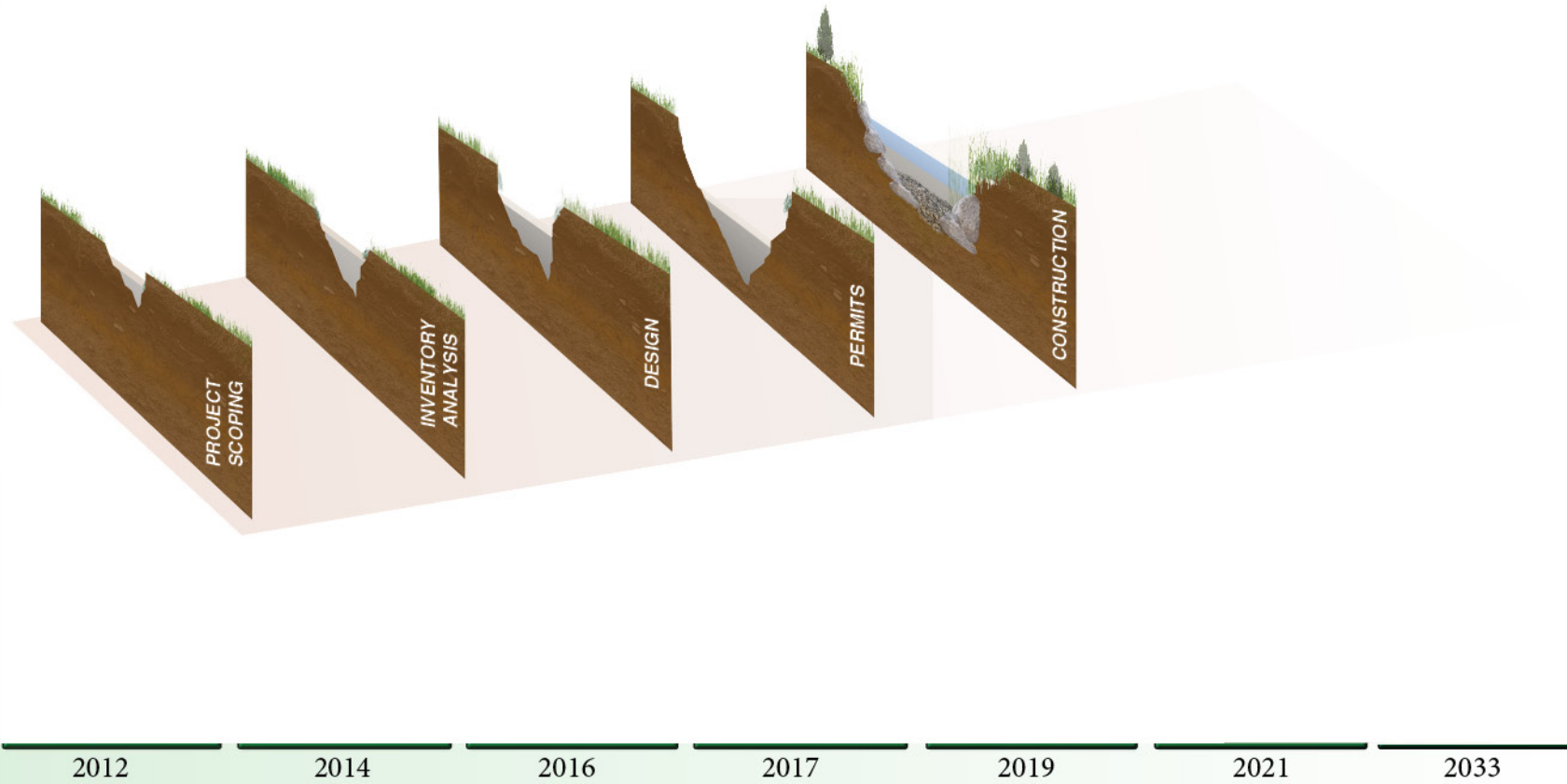
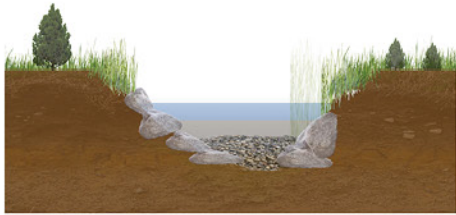
R. Westmoreland



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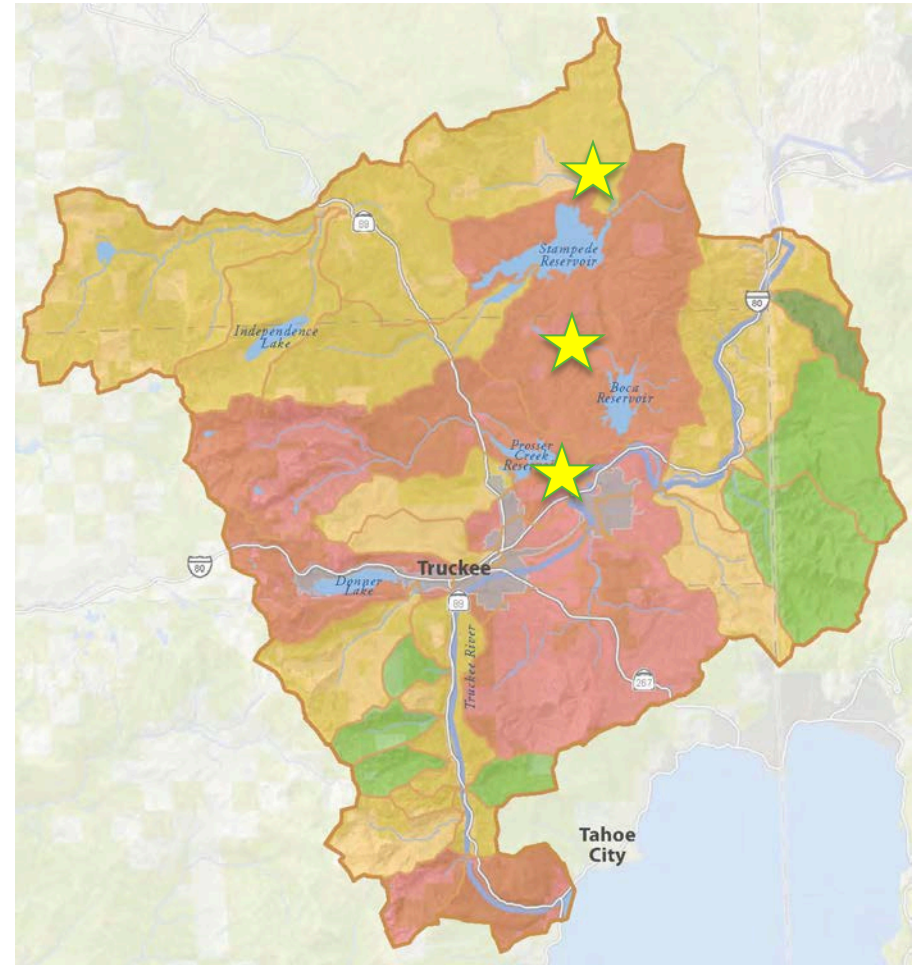
RESTORATION LIFESPAN

CONSTRUCTION



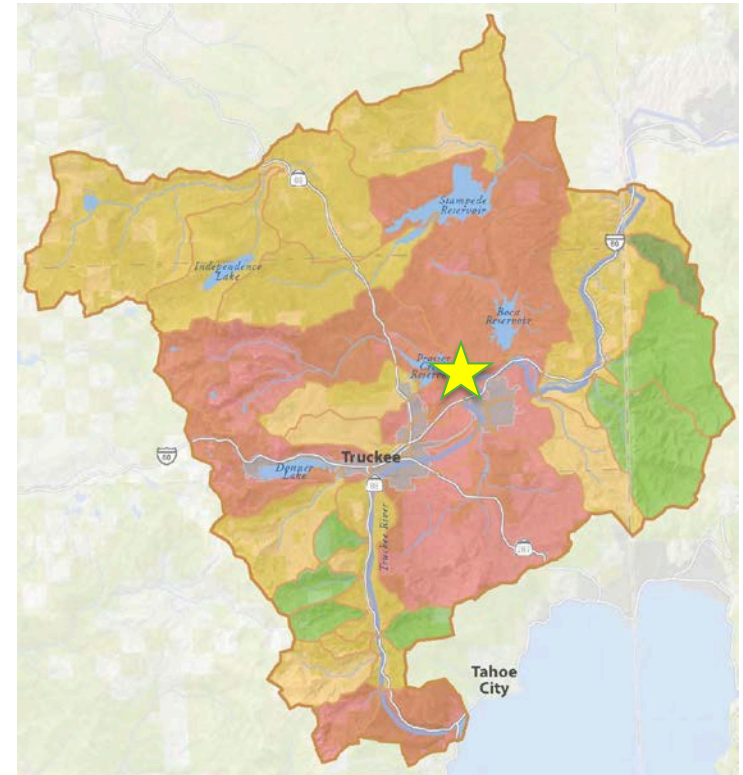
2015 Construction Projects

- Prosser Creek Fish Habitat*
- Dry Creek Meadow Restoration - two sites*
- Jammer Chair
- All in partnership with USFS - Tahoe National Forest



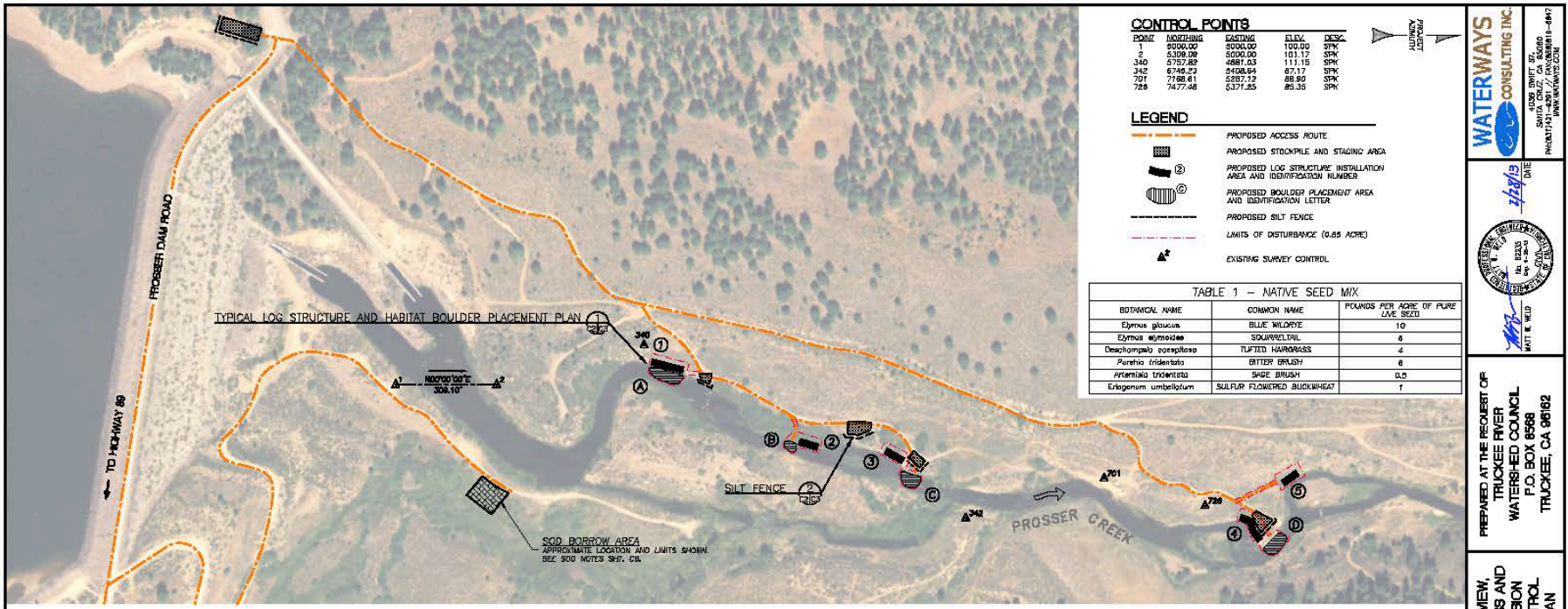
Prosser Creek Fish Habitat

- Dam limits material transport
- Reduced habitat complexity
- Degraded biological community



Prosser Project Area

Increase habitat complexity along 2,500 feet of Prosser Creek



Isolate Work Area



Coarse Grading



Setting Footer Log



Building Log Structures



Plant Willows, Stabilize Area



Place Boulders



2016 Plans

Starker, Field Assistant

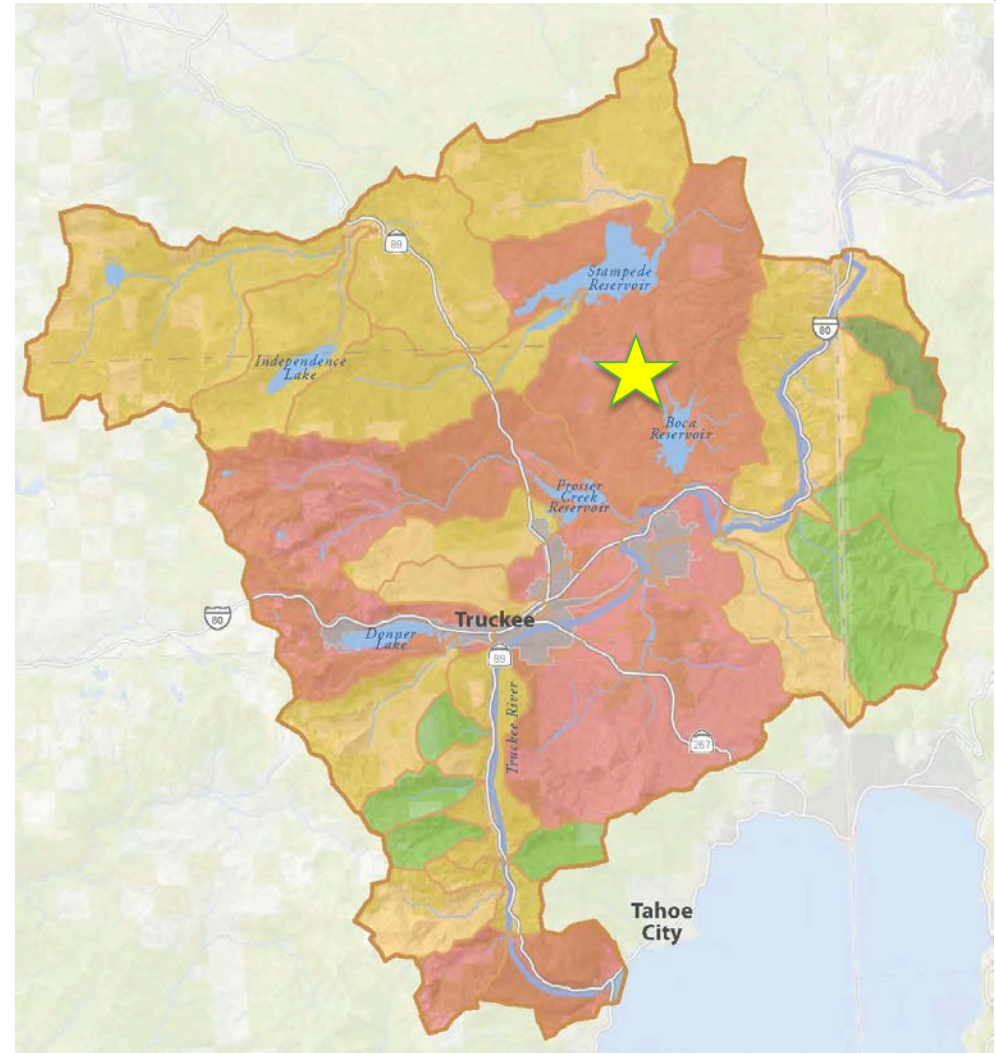


- Fish population monitoring
- Aquatic insect monitoring
- Adaptive management



Dry Creek Meadow Restoration

- Significant early-era logging impacts
- Road erosion
- Stream channel alteration
- Meadow degradation



Project Plan

- Stream diverted to straight channel
- Increased erosion
- Meadow loss
- Solution:
 - Restore stream to natural channel
 - Reconnect floodplain
 - Restore hydrologic function



Figure 4. Site Plan, Plan view, Site 1c

Salvage Sod and Topsoil



Generate Fill



Shape Fill

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Replace Topsoil and Sod

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Seed and Mulch Site

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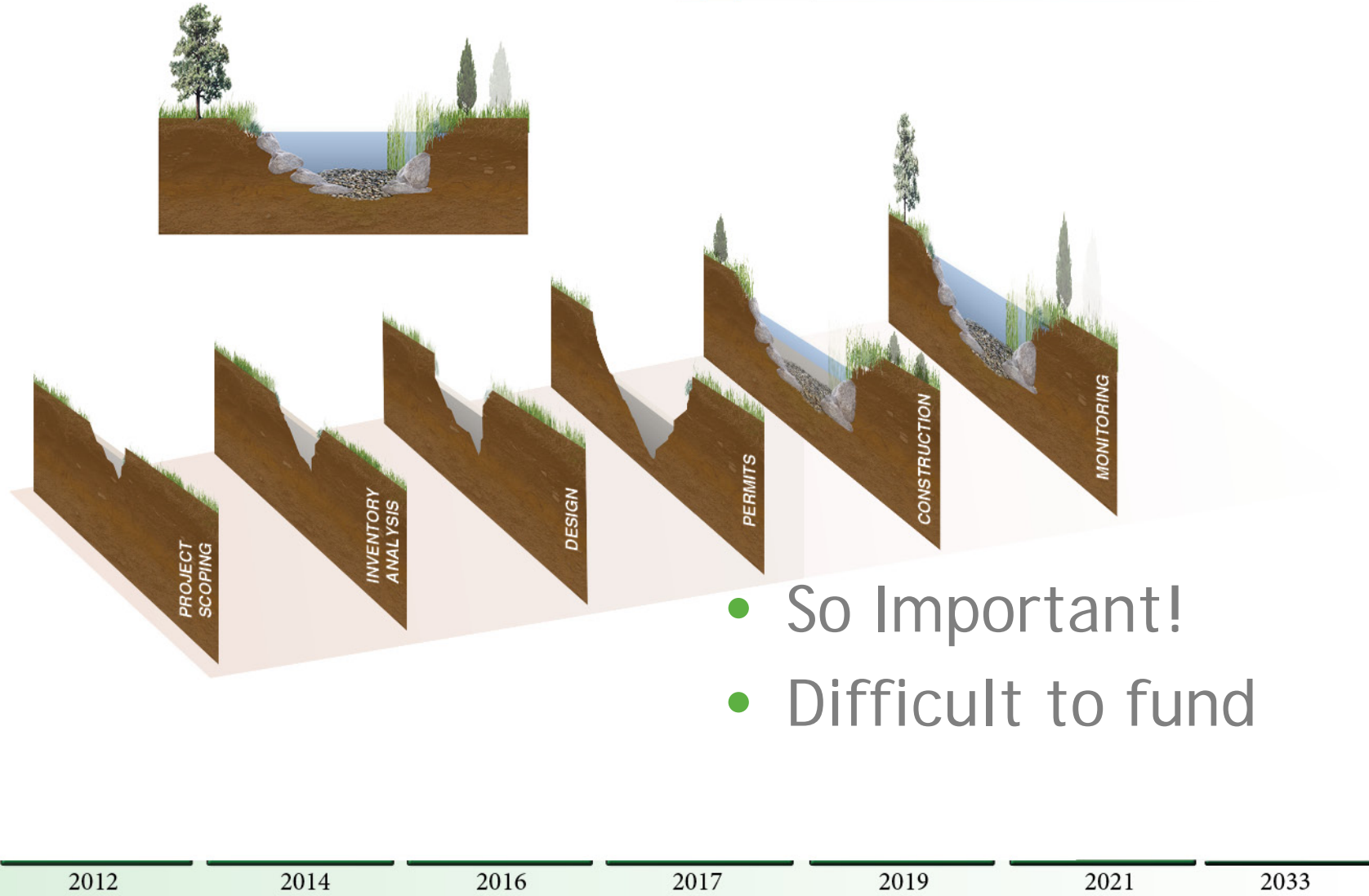


Immediately After



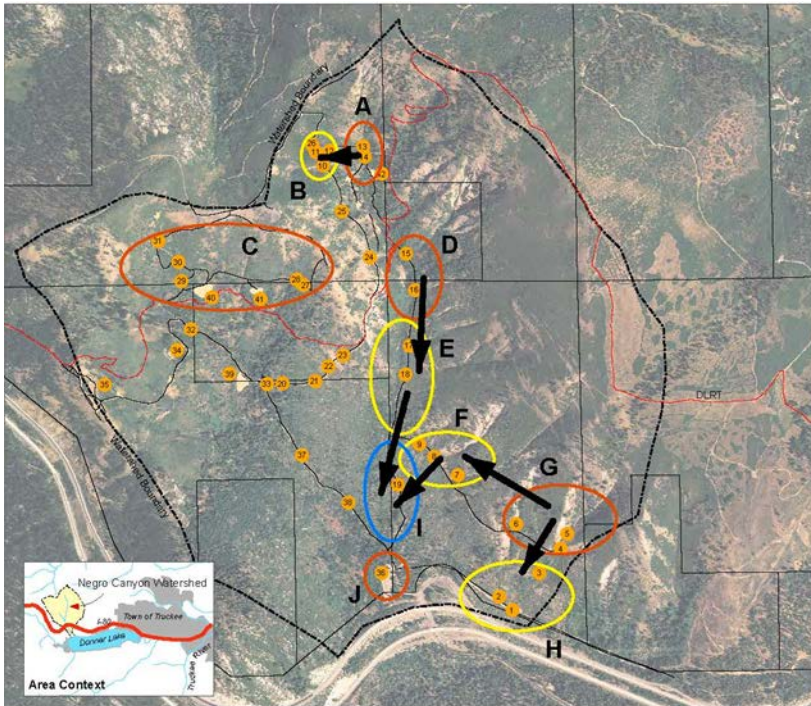
RESTORATION LIFESPAN

MONITORING



Johnson Canyon Restoration

- Assessment completed 2010
- Sites D, E, F, I restored 2014
- Partners: Truckee Donner Land Trust, Tahoe Donner Association



Restored Drainages

Pre-project



Post-project



Removed Road Beds

Pre-project



Post-project



Relocated Wendin Way Trail

Old Trail



New Trail

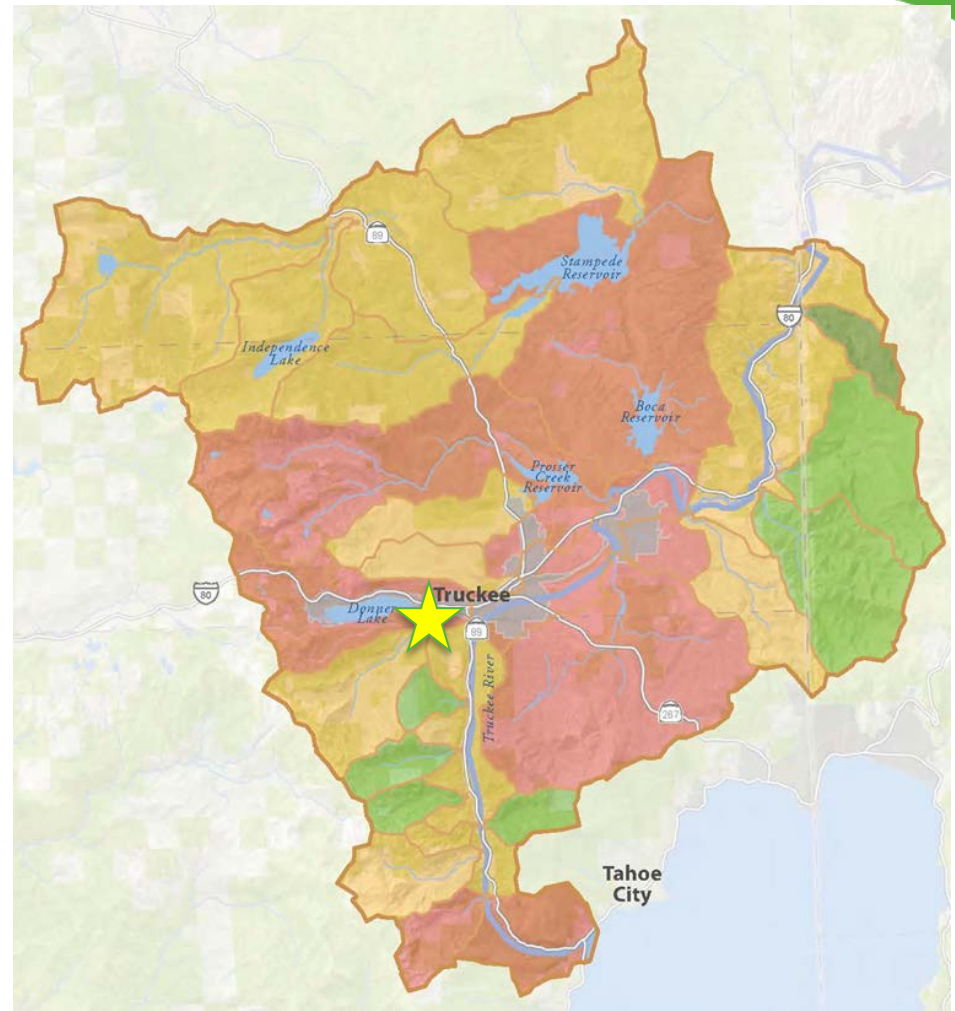


RESTORATION LIFESPAN



Cold Creek Floodplain

- Assessment completed 2007
- Implementation 2012 - 2013
- Partner: California State Parks

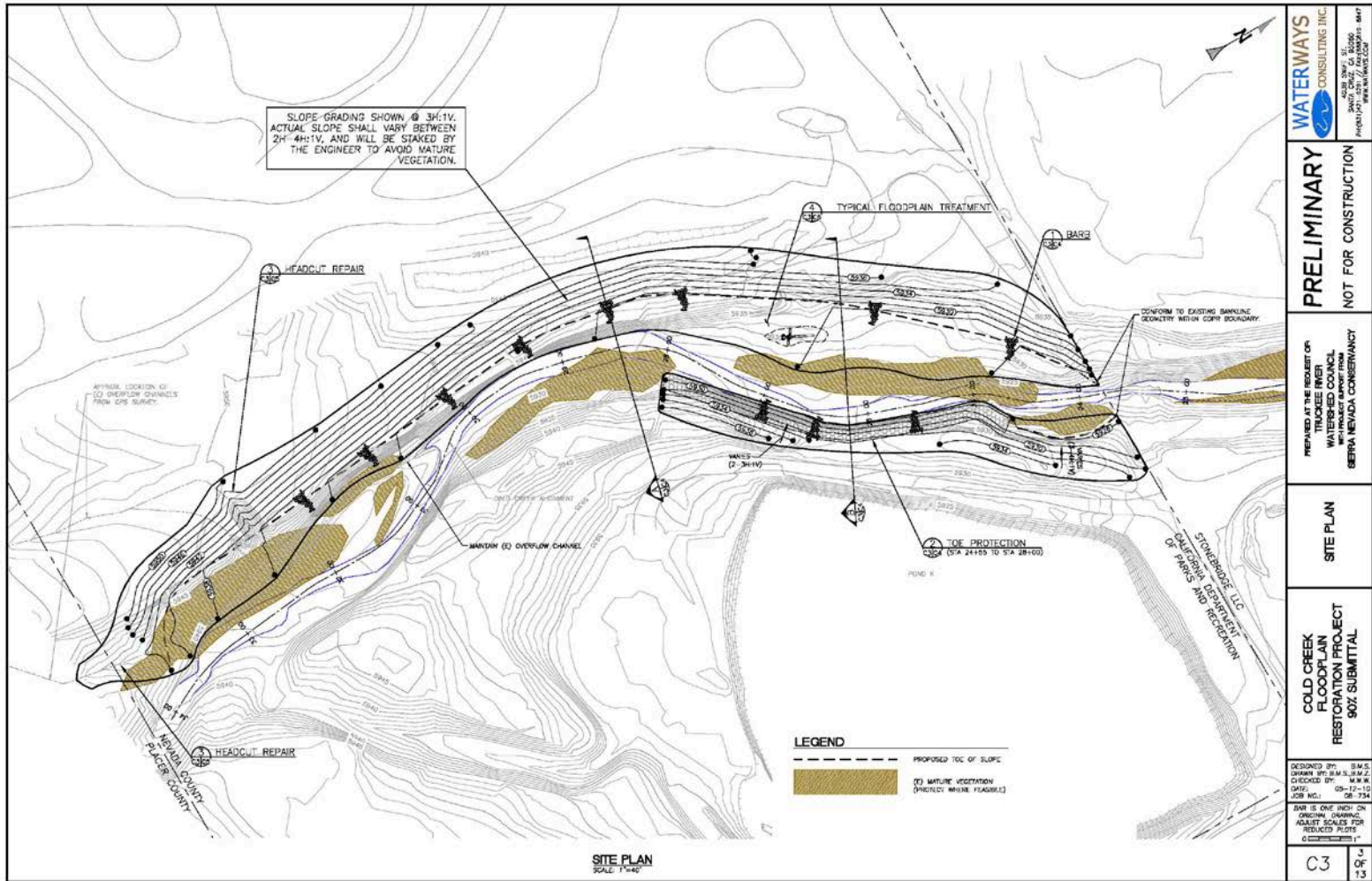


Cold Creek Floodplain Restoration

Historic gravel mining impacts



Cold Creek Implementation



Create Floodplain

Pre-project



2015 Post-project



Grade Eroding Banks

Pre-project



CA State Parks

2012 Post-project



CA State Parks



Immediately After Restoration

Pre-project



2012 - Post-project



Vegetation Matures

2012 Immediately post-project



2015 Post-project



Willows Sprout from Sticks!

2012

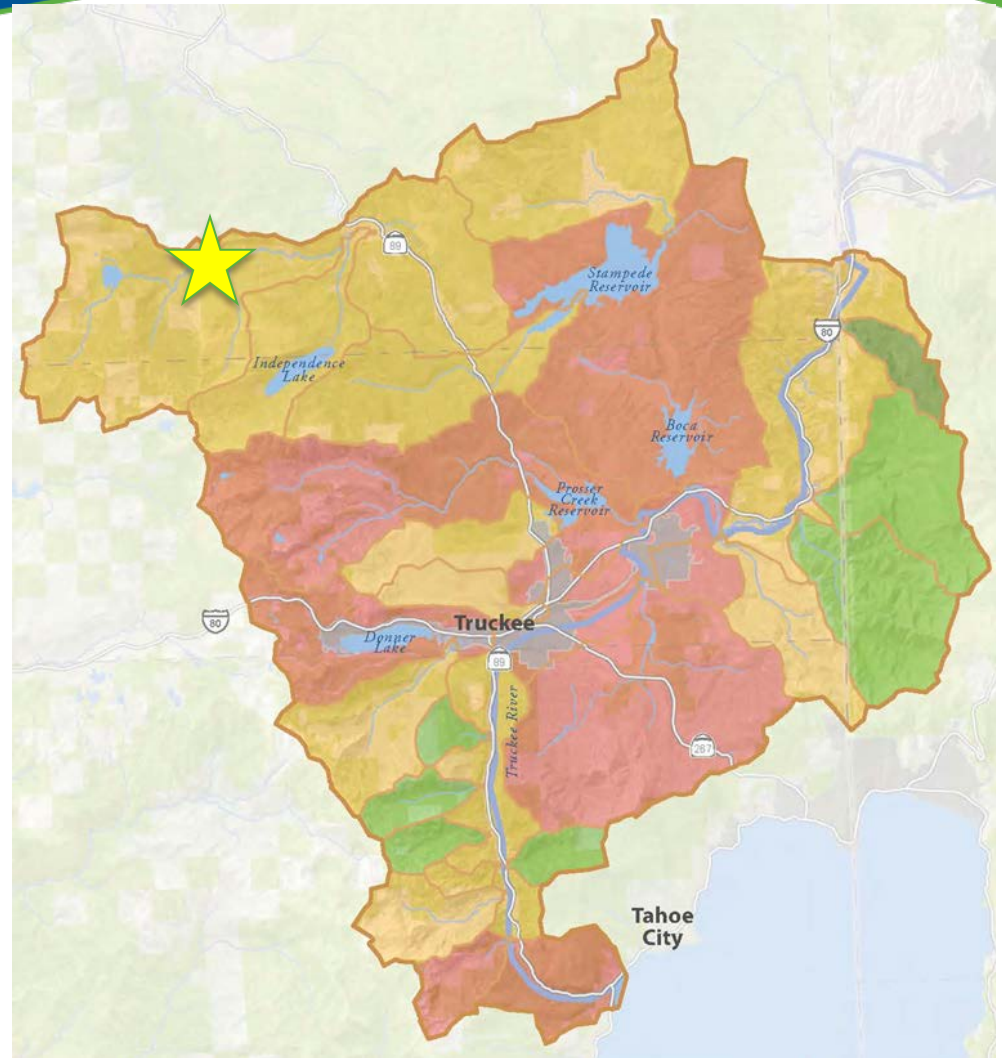


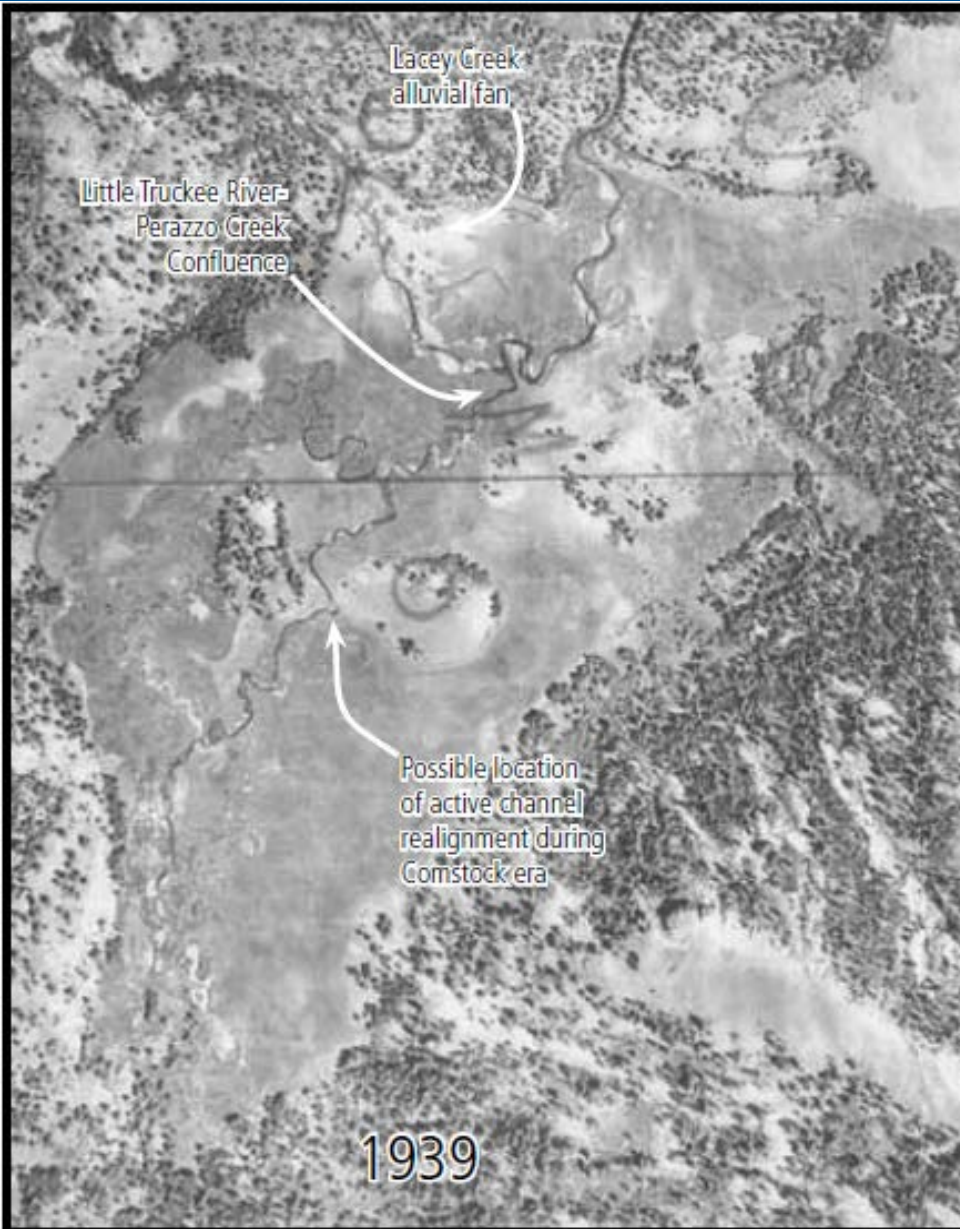
2015



Perazzo Meadows

- Stream channel realignment
- Meadow loss
- Stream incision and erosion
- Lowered water table





Restoration Design

- Restore 1.5 miles remnant channel
- Block eroding gully
- Results:
 - Floodplain connectivity
 - Raised water table



J. Dvorsky



R. Westmoreland



Before and After



D. Shaw



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Restored Channels

Upper Meadow, 1 month post-restoration



R. Westmoreland



Hydrologic Monitoring

- Groundwater
- Surface Flow
- Results:
 - Improved Hydrologic function
 - Increased floodplain connectivity
 - Increased groundwater table

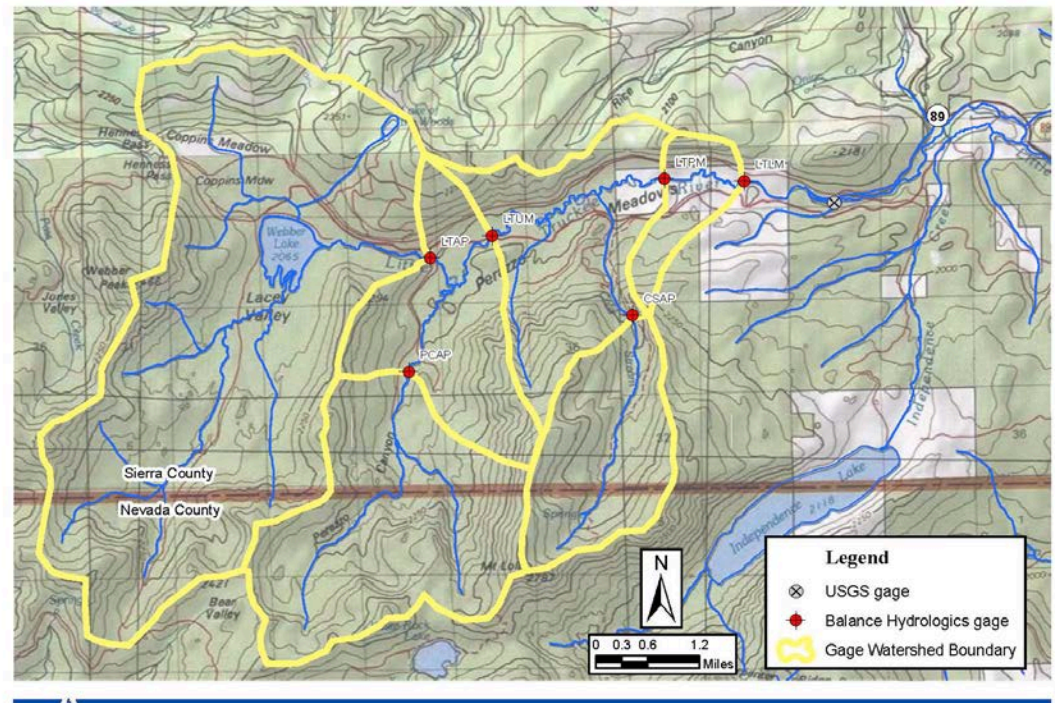


Figure 4. Stream gaging locations and contributing watersheds, Perazzo Meadows, Sierra and Nevada Counties, California

209116 streamgage locations.mxd

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Middle Meadow Monitoring Wells

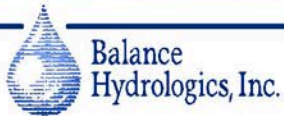
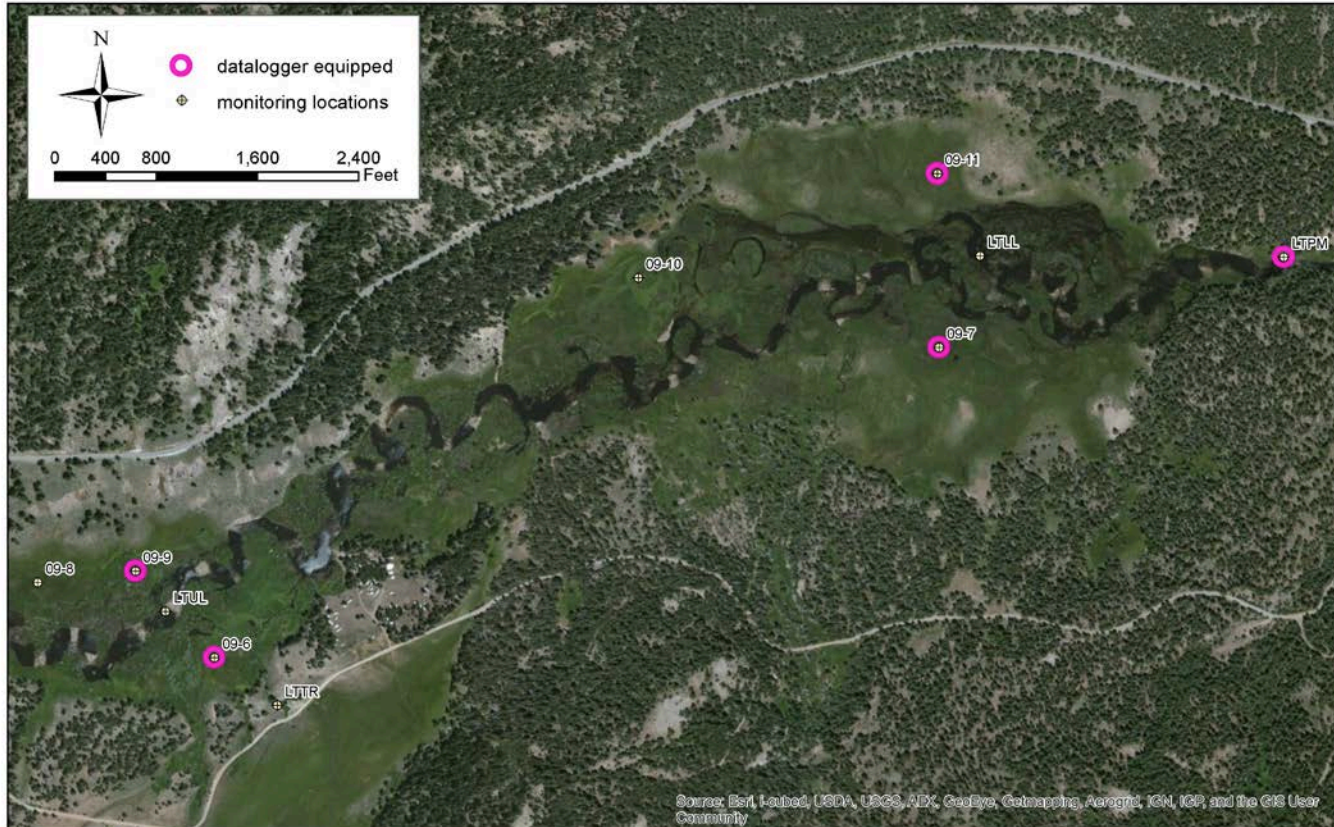
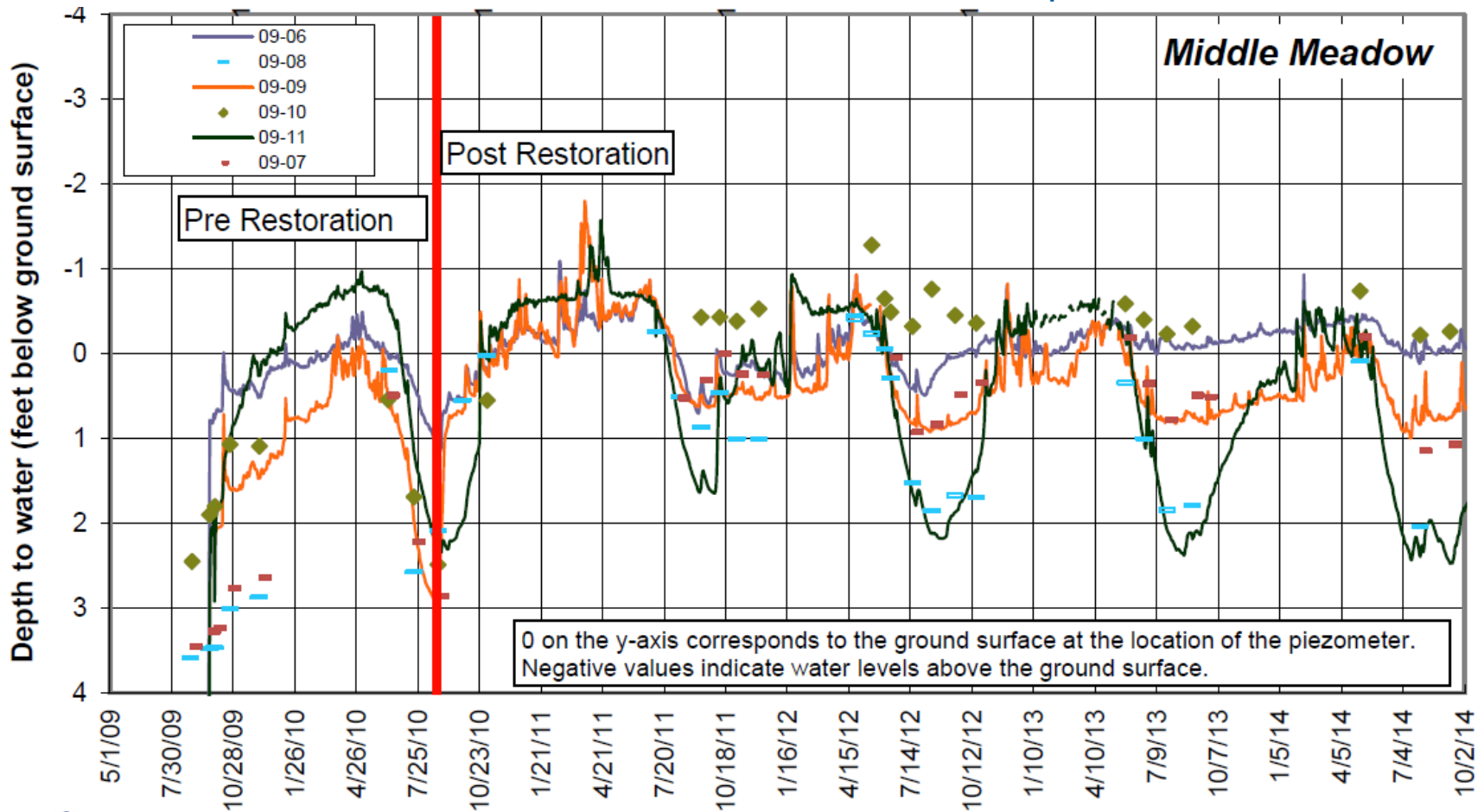


Figure 3. Location of groundwater and surface water monitoring stations Middle Perazzo Meadow, Sierra County, California

Groundwater Monitoring Results

1 - 6 foot increase in Upper and Middle Meadow post-restoration



Annual Overbank Flow

Restored Upper Meadow July 2011



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Restored Meadow!



Funders

- Donors of the Truckee River Watershed Council
- Bella Vista Foundation
- California Natural Resources Agency
- California State Parks
- Lahontan Regional Water Quality Control Board
- Overall Family Foundation
- National Fish and Wildlife Foundation
- National Forest Foundation
- Sierra Nevada Conservancy
- South Tahoe Public Utility District
- State Water Resources Control Board
- Tahoe Truckee Community Foundation
- Truckee River Fund
- U.S. Forest Service - Tahoe National Forest



Q & A with our partners!

- John Svahn - Truckee Donner Land Trust, Johnson Canyon
- Deborah Urich - US Forest Service, Prosser Creek
- Randy Westmoreland - US Forest Service, Dry Creek, Perazzo Meadows

