

Reclaiming Seiad Creek – Part 1

After 100+ Years of
Placer Mining



Presented by: Jason E. Poulsen
May 4, 2016



Montana Tech Mine Design, Operation & Closure Conference



“Badges? We ain’t got no badges... We don’t need no badges... I don’t have to show you any stink’n badges.”



WARNER BROS. HIT A NEW HIGH IN HIGH ADVENTURE!



THE
NEARER
THEY
GET
TO
THEIR
TREASURE
THE FARTHER
THEY GET
FROM
THE LAW!

THE
TREASURE
OF THE
SIERRA MADRE

starring
HUMPHREY BOGART

WALTER
HUSTON
TIM HOLT • BRUCE BENNETT
DIRECTED BY
JOHN HUSTON • PRODUCED BY
HENRY BLANKE



44 / 709

GEOENGINEERS 



Walter Houston
Actor



GEOENGINEERS 



Walter Houston
Actor



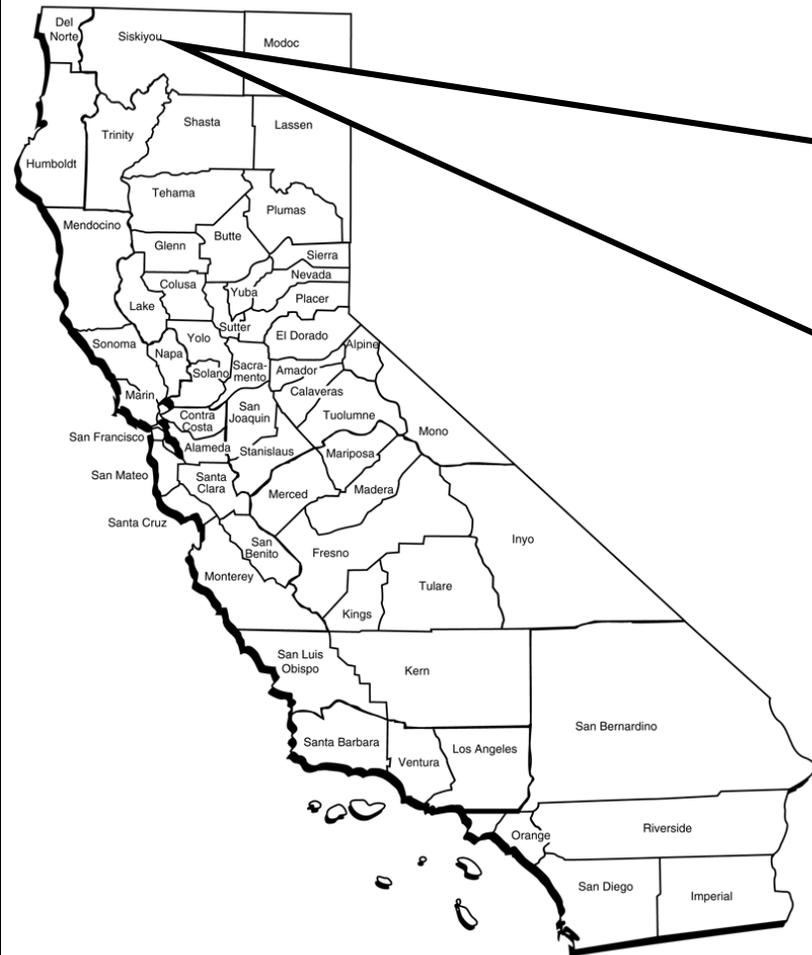
“We wounded this mountain and its our duty to close her wounds. It’s the least we can do to show our gratitude for the wealth she’s given us.”

- Howard

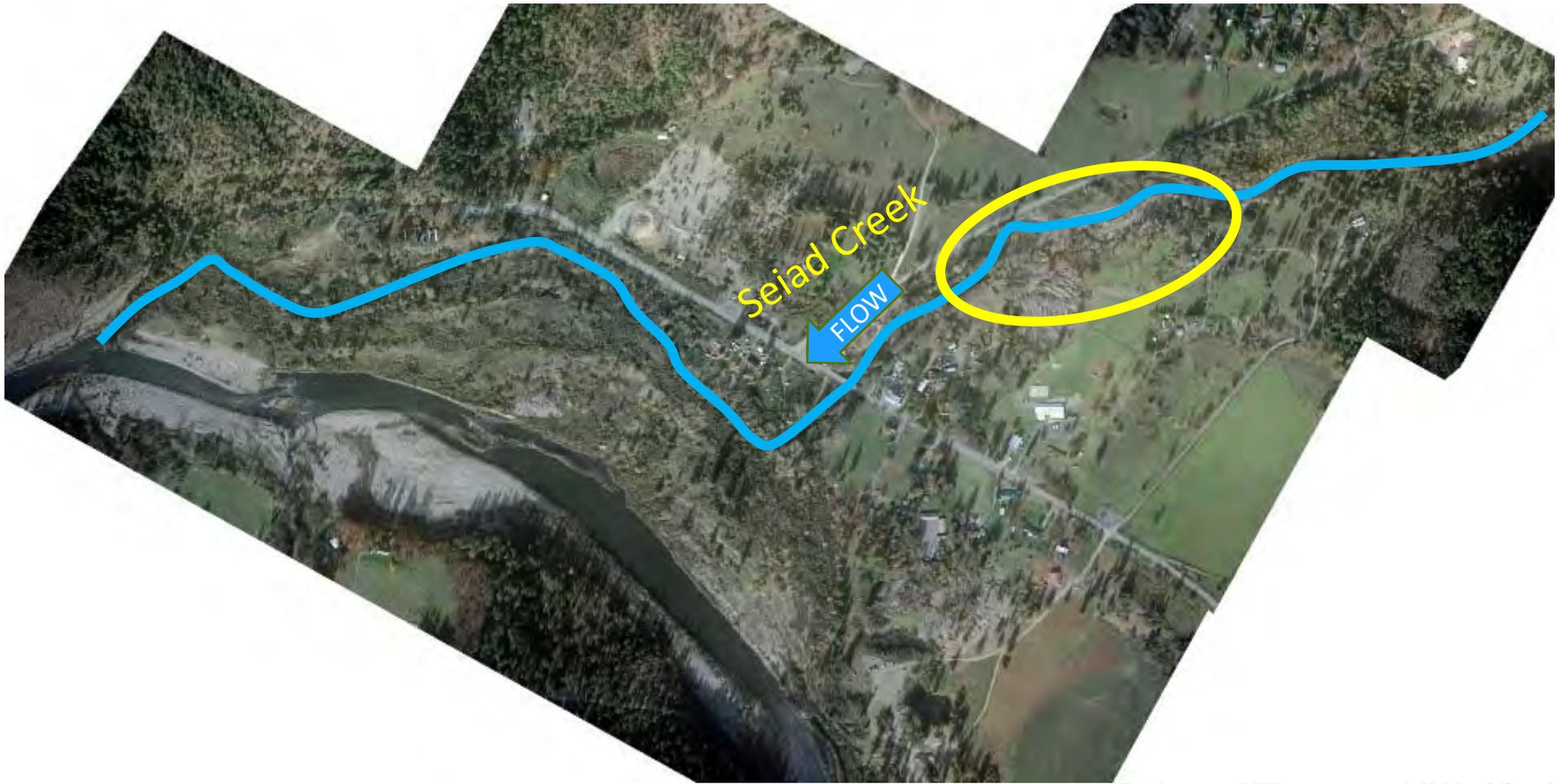
Treasure of the Sierra Madrë

1948



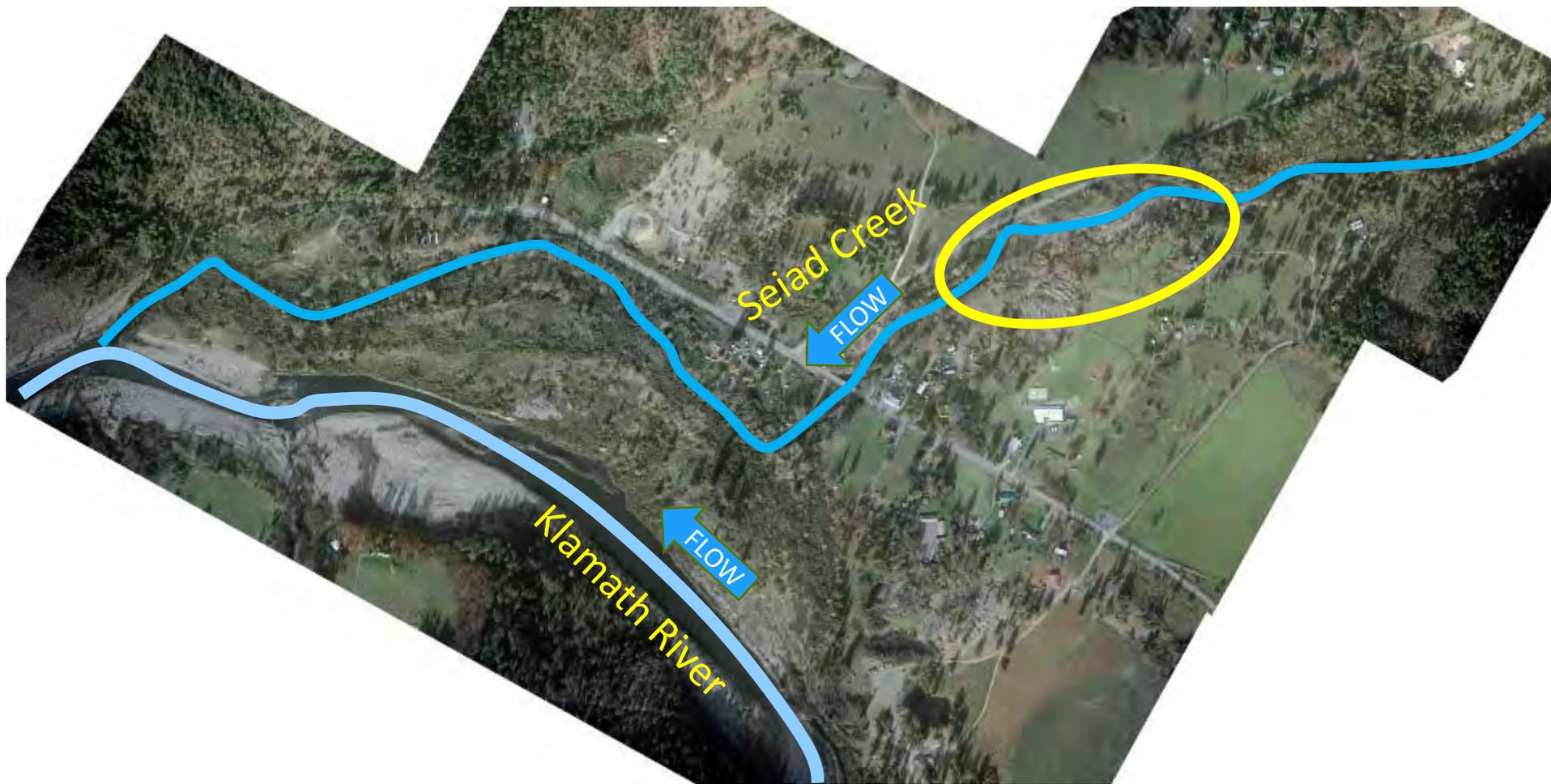


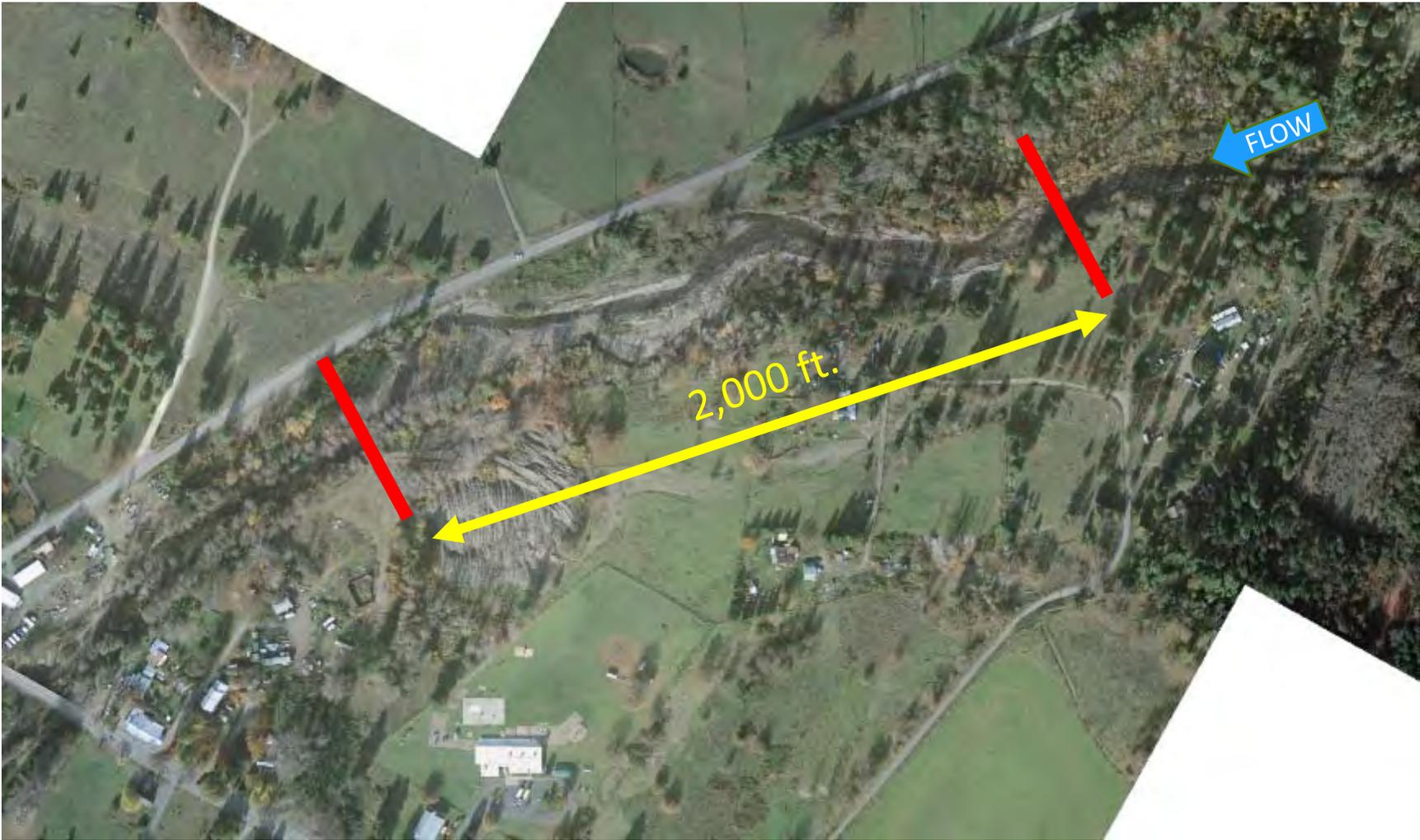




Seiad Creek

FLOW



























Emerald Triangle

- Humboldt County
- Trinity County
- Mendocino County







Seiad Creek Habitat Enhancement Project

Partnership between:



Seiad Creek Habitat Enhancement Project

Partnership between:

- Alfonso “Al” Durazo (Property Owner)

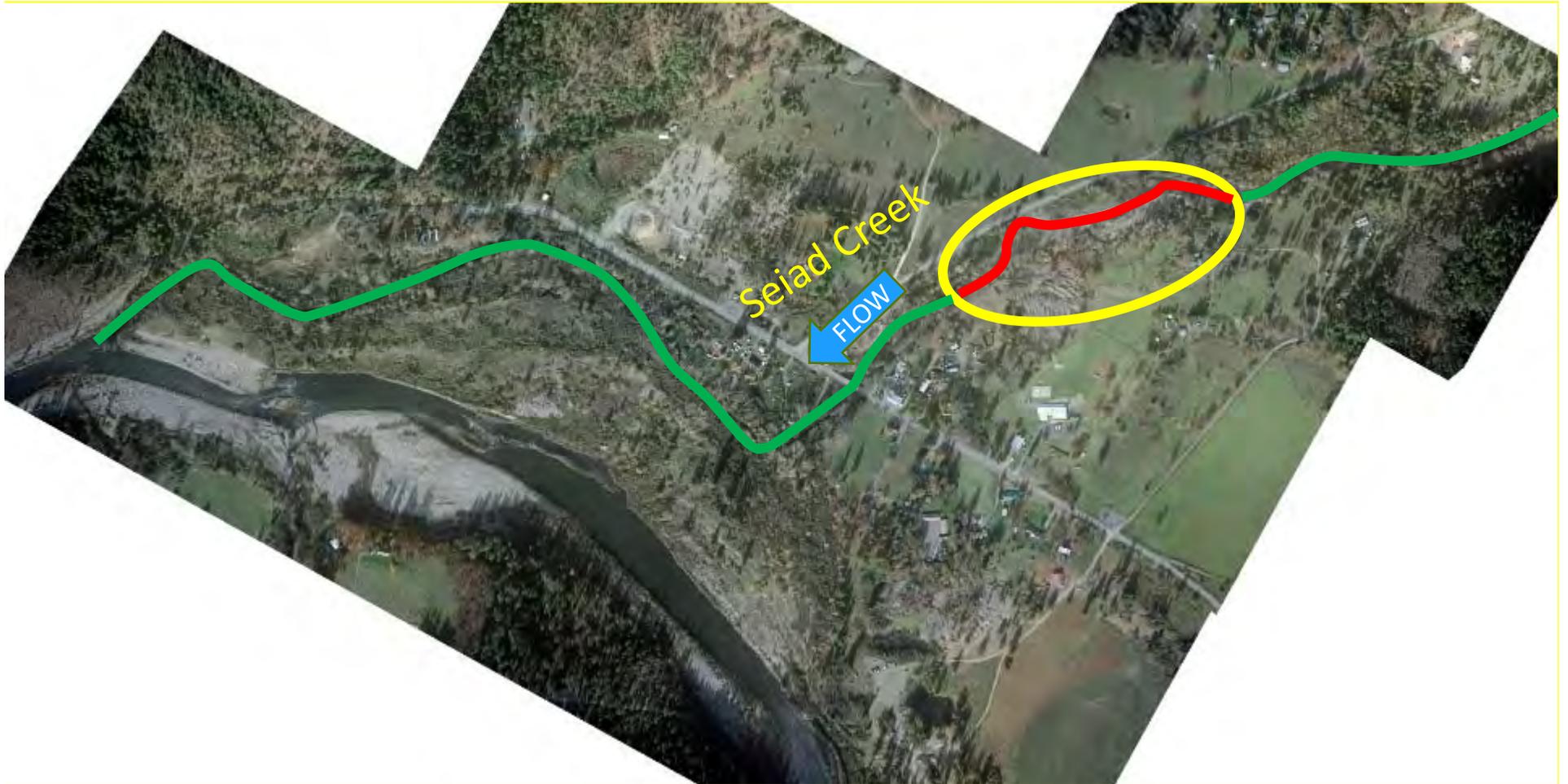


Seiad Creek Habitat Enhancement Project

Partnership between:

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- Karuk Tribe of California





Seiad Creek Habitat Enhancement Project

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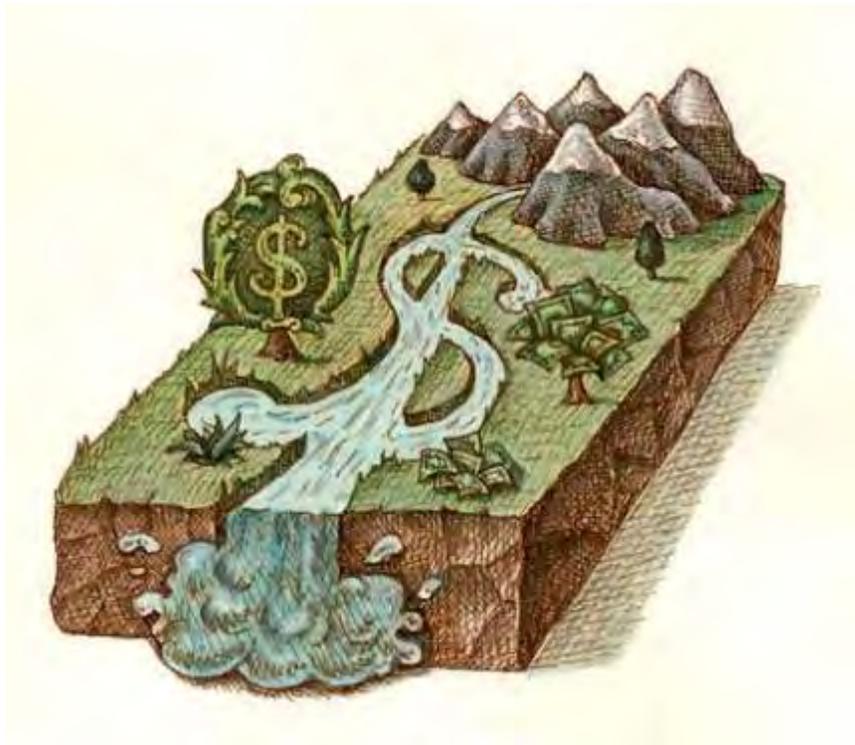
- Alfonso “Al” Durazo (Property Owner)
- Karuk Tribe of California
- Mid-Klamath Watershed Council



Mid Klamath
Watershed Council

GEOENGINEERS 

Seiad Creek Habitat Enhancement Project

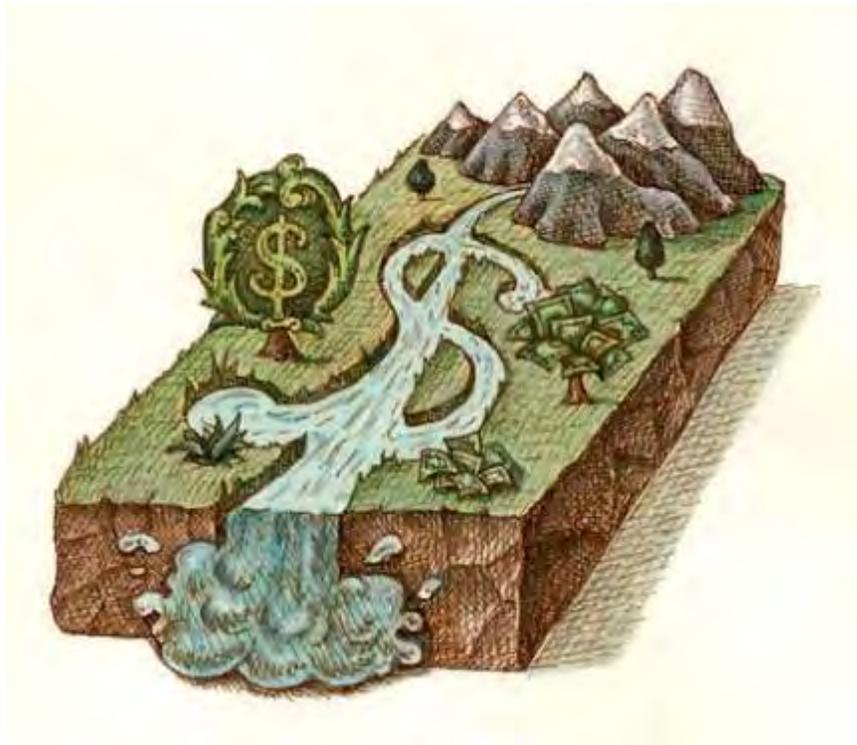


Partnership between:

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- Mid-Klamath Watershed Council
- GeoEngineers, Inc.
- National Fish and Wildlife Foundation



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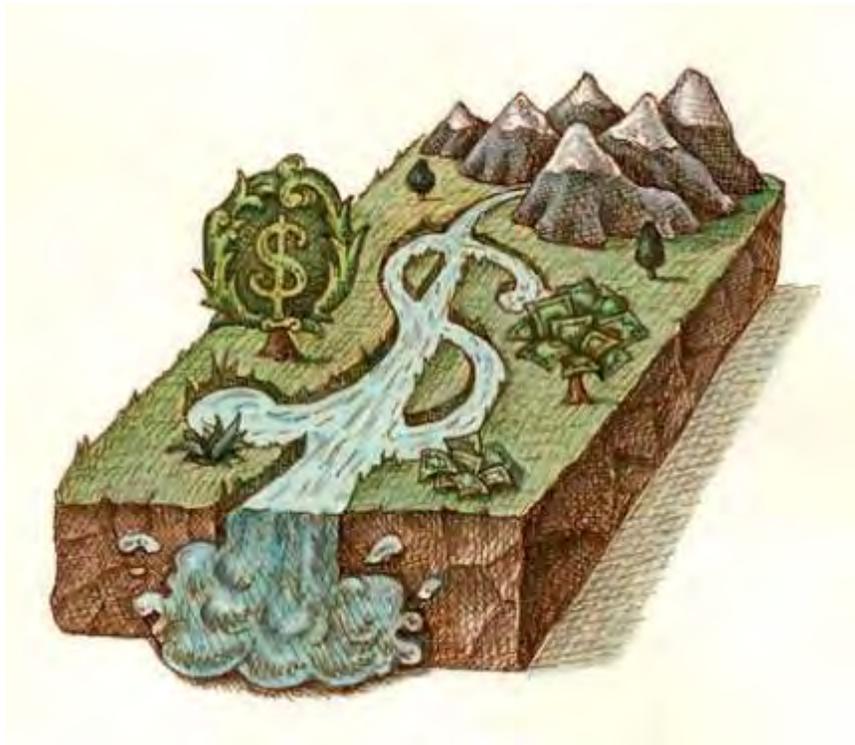


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- PacifiCorp



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- PacifiCorp
- California Department of Fish and Wildlife



Project Goals

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- Increase and Enhance Juvenile / Adult Coho Habitat

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- Increase Flood Protection for the Residence of Seiad Valley

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- Increase and Enhance Juvenile / Adult Coho Habitat
- Increase Flood Protection for the Residence of Seiad Valley
- Improve Overall Aquatic and Riparian Ecosystem Function

Project Objectives

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- Increase, Enhance & Diversify Aquatic Habitat
 - Develop multiple habitat types
 - Pools / Riffles / Runs
 - Increase Habitat (LWD) Structure and Cover
 - Develop Off-Channel, Low-Velocity Cover – Without Stranding Fish

Project Objectives

- Increase, Enhance & Diversify Aquatic Habitat
- Increase Bank Stabilization
 - Increase LWD structures in key locations
 - Near Roads, River Bends and key Eroding Sites

Project Objectives

- Increase, Enhance & Diversify Aquatic Habitat
- Increase Bank Stabilization
- Design the System to be Geomorphically Stable
 - Provide the System with the Ability to Move Over Time Within Certain Limitations

Project Objectives

- Increase, Enhance & Diversify Aquatic Habitat
- Increase Bank Stabilization
- Design the System to be Geomorphically Stable
- Increase Floodplain Connectivity
 - Remove Man-Made (Sugar) Levees
 - Design for Future Riparian Corridors

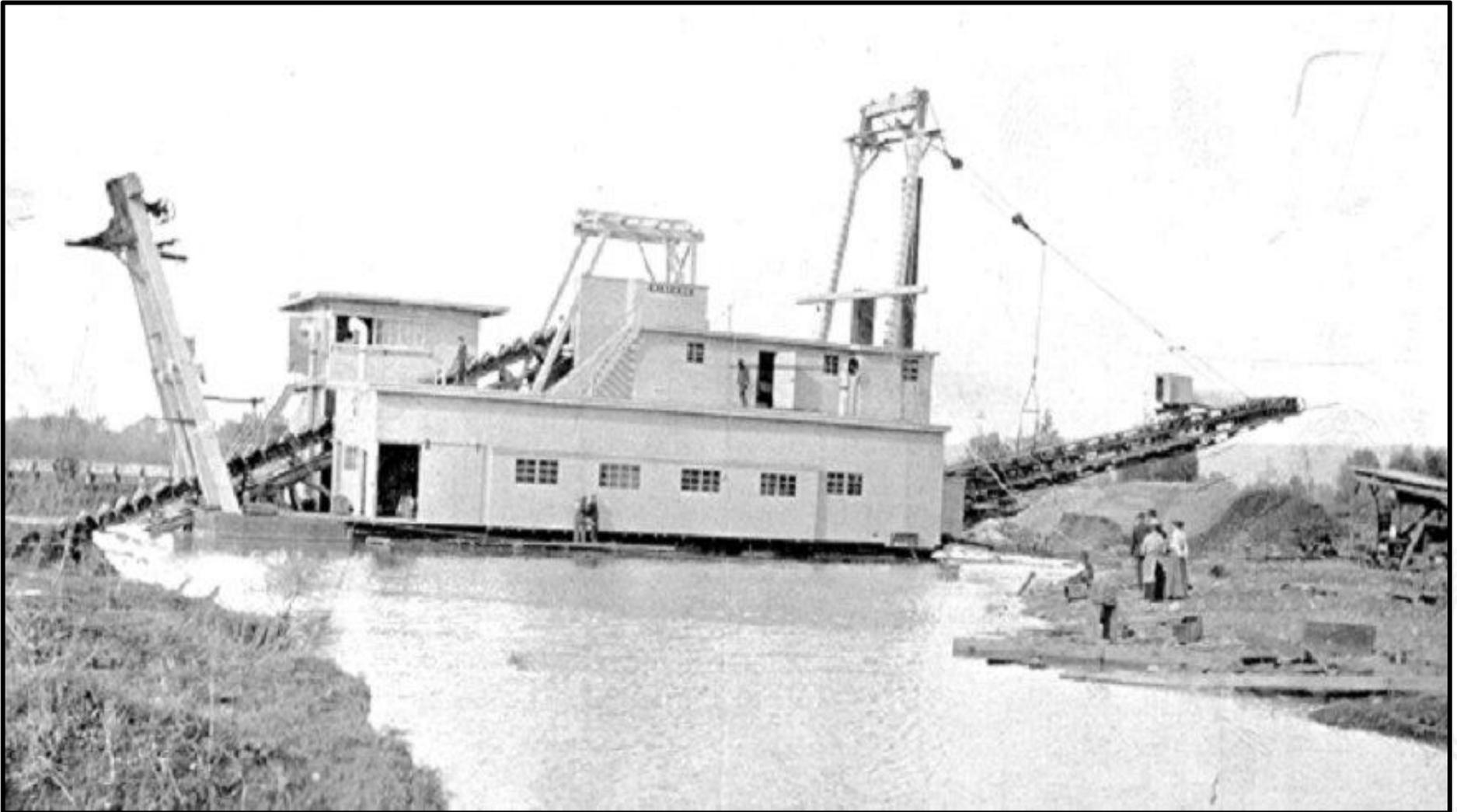
Project Objectives

- Increase, Enhance & Diversify Aquatic Habitat
- Increase Bank Stabilization
- Design the System to be Geomorphically Stable
- Increase Floodplain Connectivity
- Practical Design
 - Provide for Public Safety
 - Minimize Disturbances Where Possible
 - Identify Constraints: Property Boundaries, Bridges, Diversions & Flood Zones
 - Meet Local, State and Federal Permitting Constraints
 - Minimal Future Maintenance
 - **Cannot Remove Materials from the Site – Considered Mining / Extraction**

Project Objectives

- Increase, Enhance & Diversify Aquatic Habitat
- Increase Bank Stabilization
- Design the System to be Geomorphically Stable
- Increase Floodplain Connectivity
- Practical Design
- **Properly Address Public Expectations and Concerns**
 - Hold Public Meetings
 - Conduct Field Tours

Historical Mining Activities



1944



1944



1955

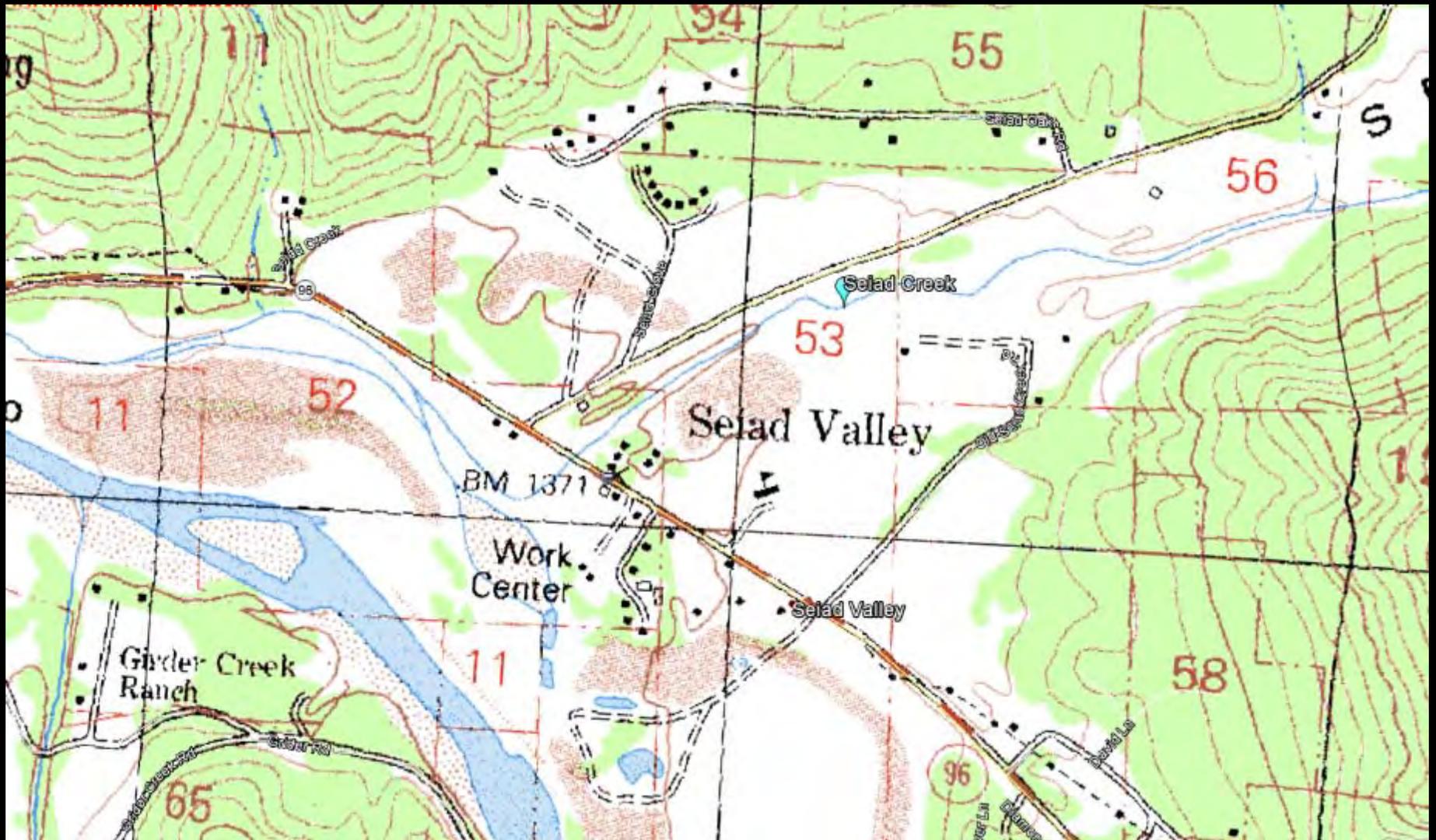


1955



1964





Stream Conditions Analysis and Assessment



























1944



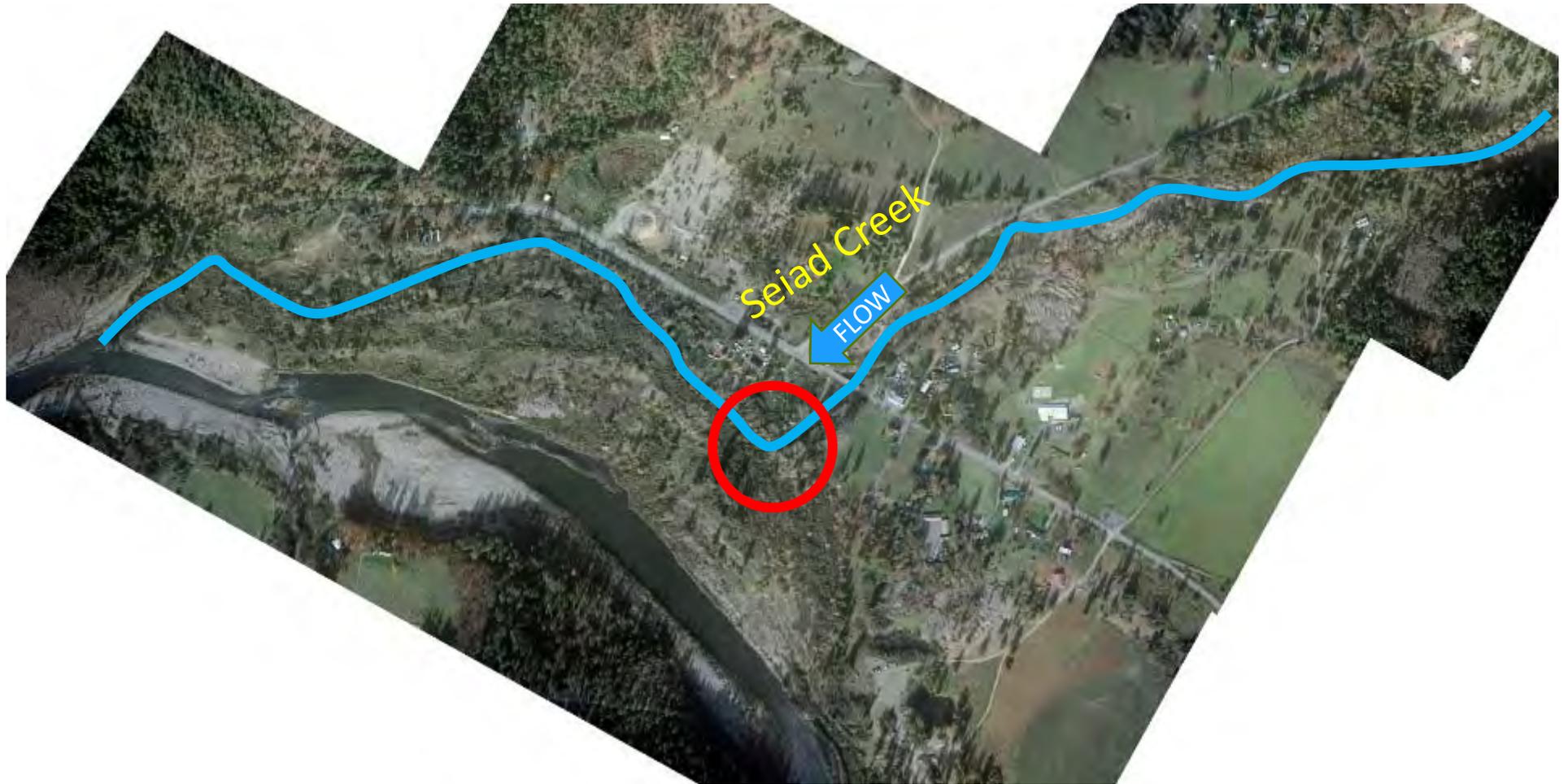






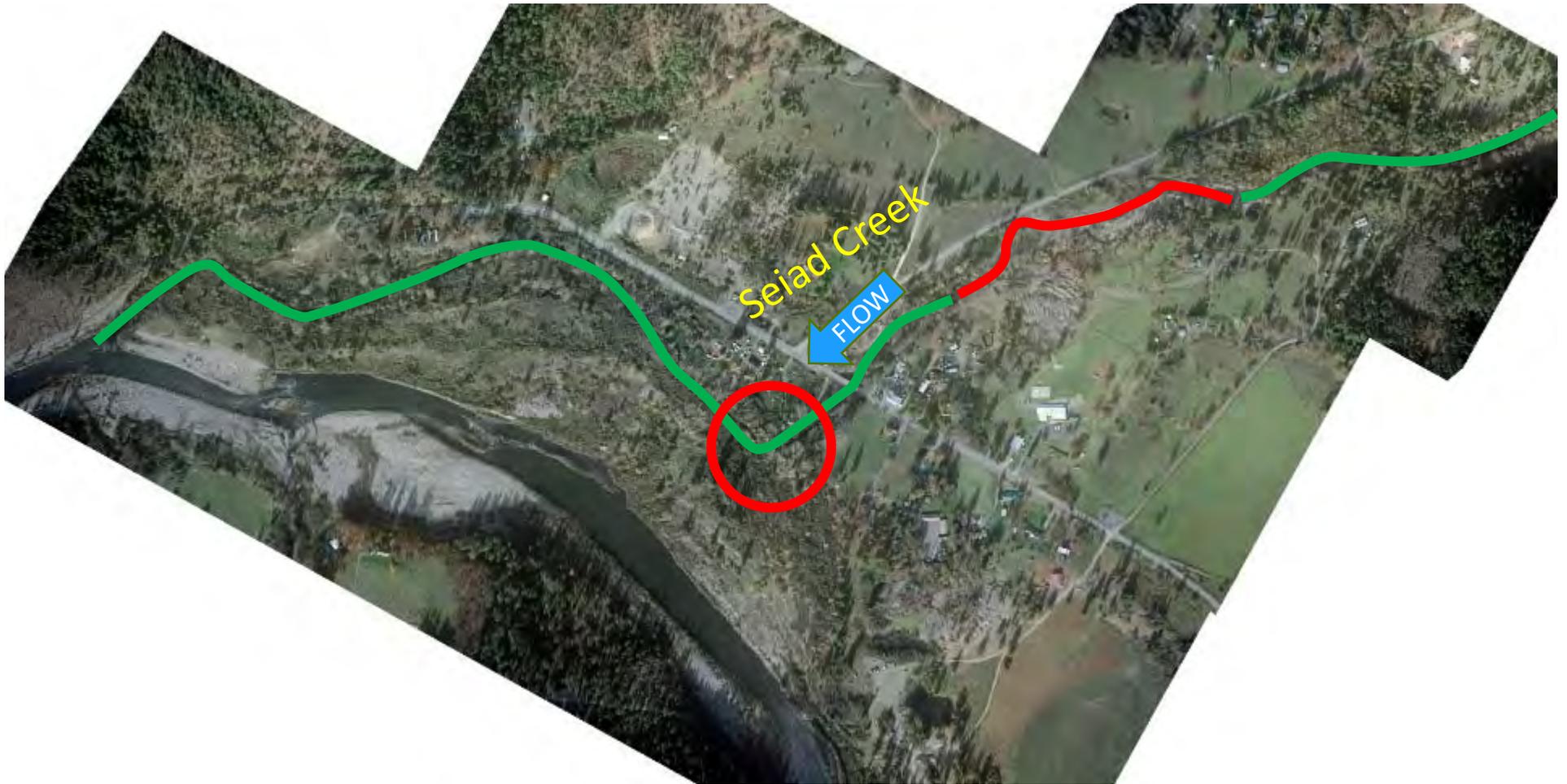
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Seiad Creek

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Project Issues Identified in the Field

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- Protect Bridge / Diversion

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- Protect Bridge / Diversion
- Erosion

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- Protect Bridge / Diversion
- Erosion
- Cover / Riparian Corridor

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- Protect Bridge / Diversion
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- Floodplain Connectivity
- Flood Protection

Project Issues Identified in the Field

- Protect Bridge / Diversion
- Erosion
- Cover / Riparian Corridor
- Floodplain Connectivity
- Flood Protection
- Water Quality / Quantity

Project Issues Identified in the Field

- Protect Bridge / Diversion
- Erosion
- Cover / Riparian Corridor
- Floodplain Connectivity
- Flood Protection
- Water Quality / Quantity
- Flash Flows

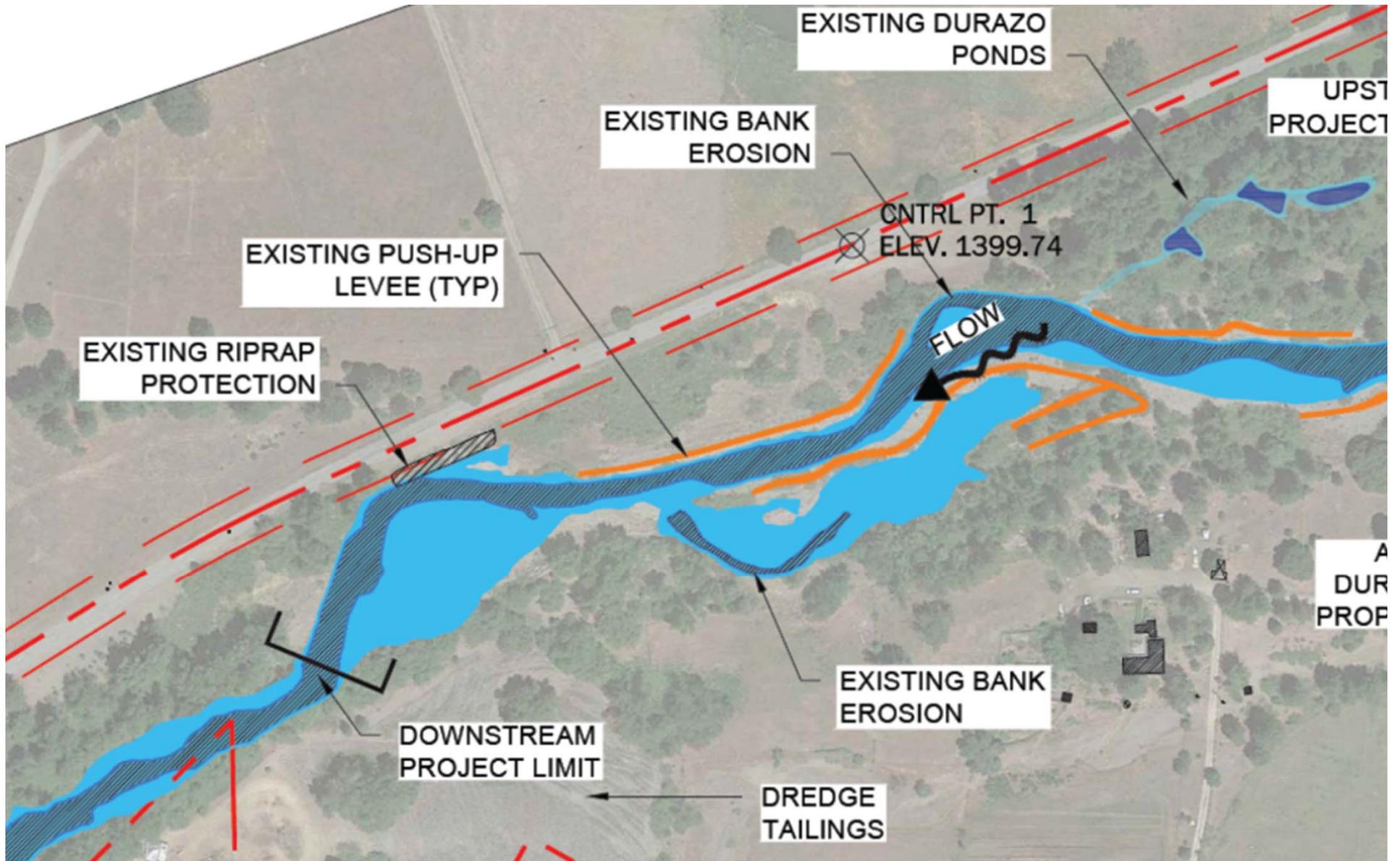
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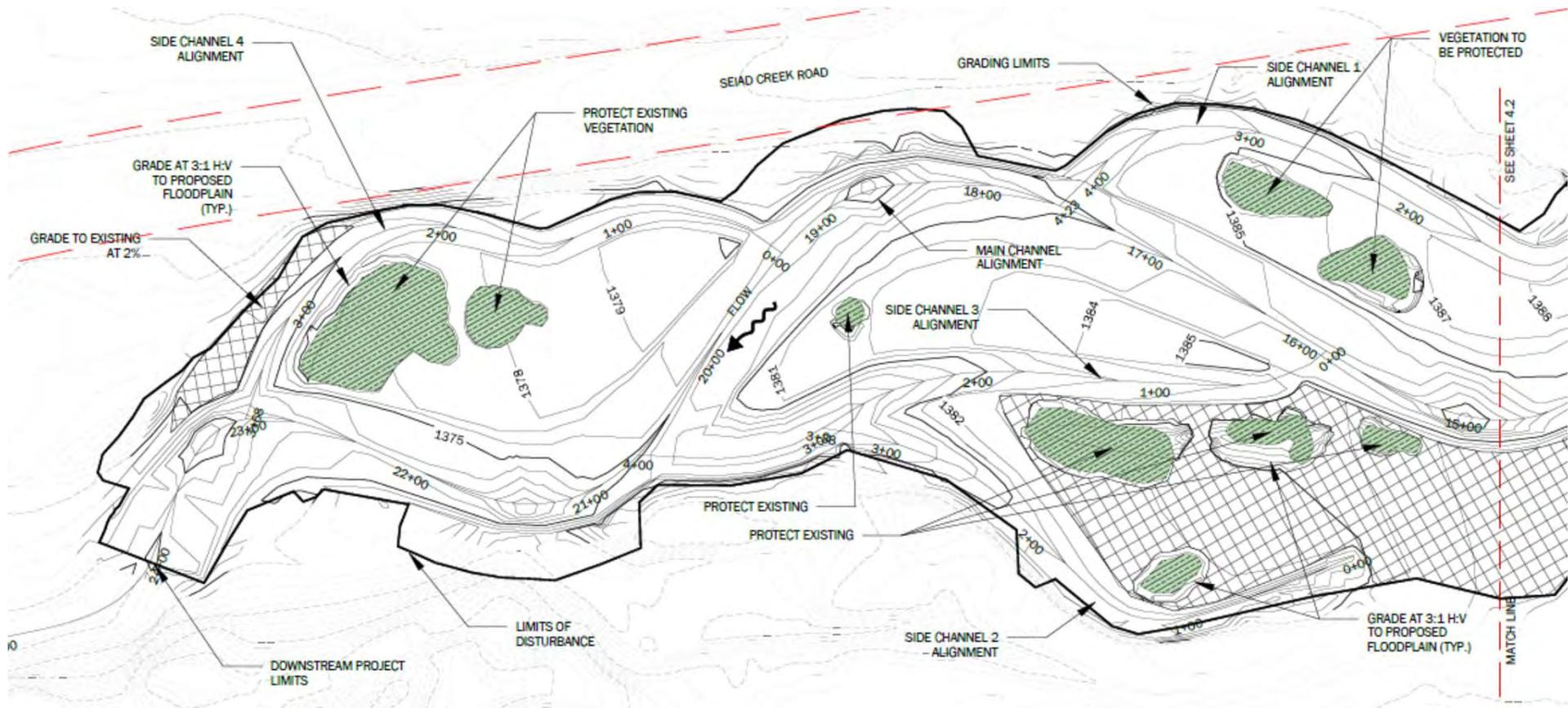
- Protect Bridge / Diversion
- Erosion
- Cover / Riparian Corridor
- Floodplain Connectivity
- Flood Protection
- Water Quality / Quantity
- Flash Flows
- Public Perception

Designs:

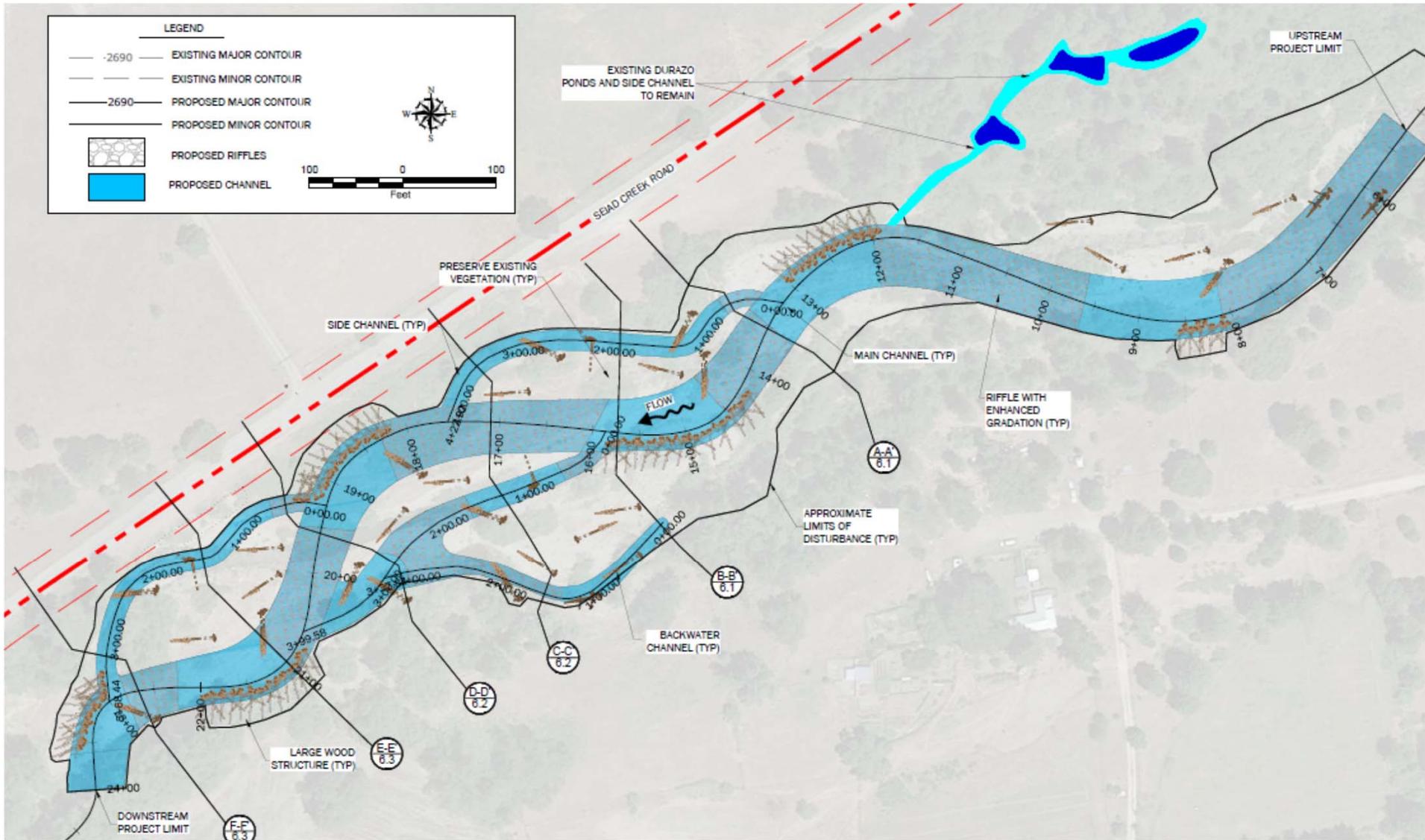
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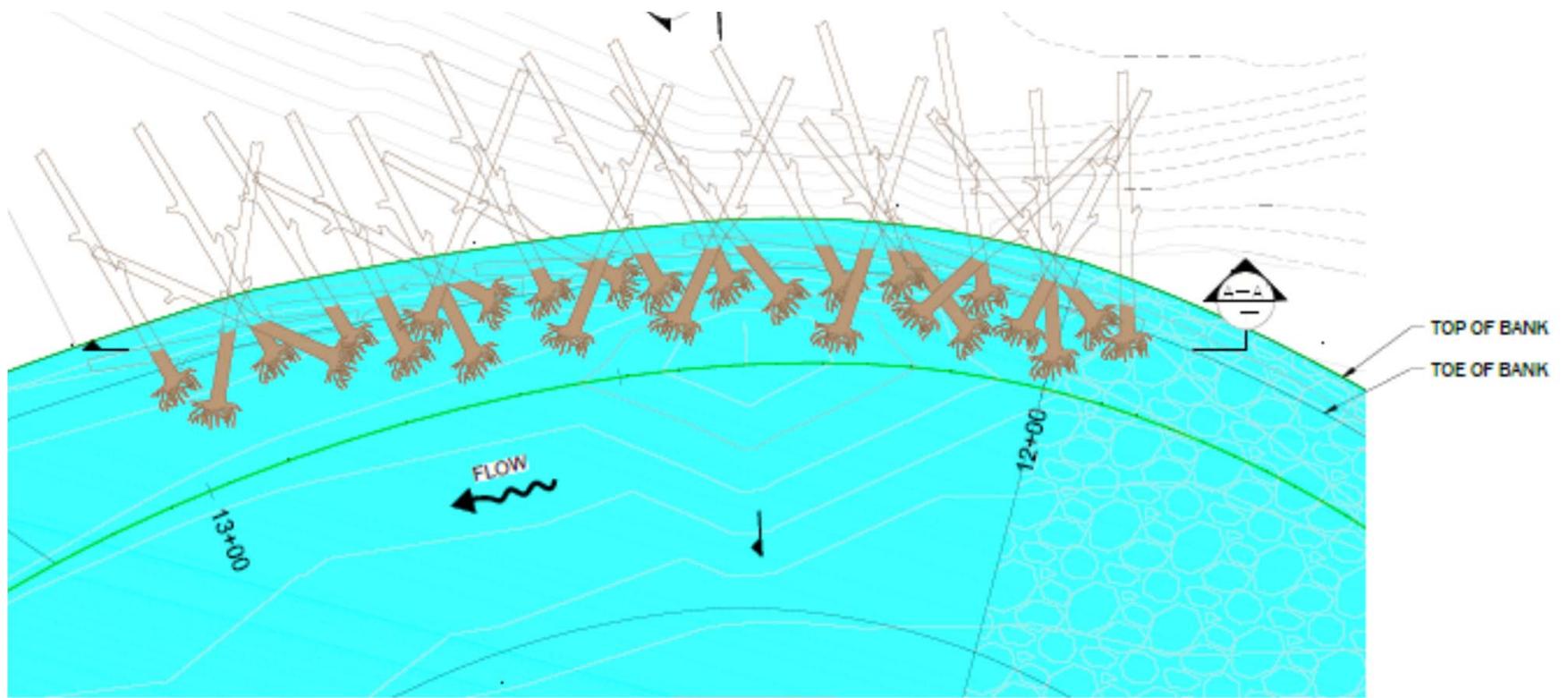




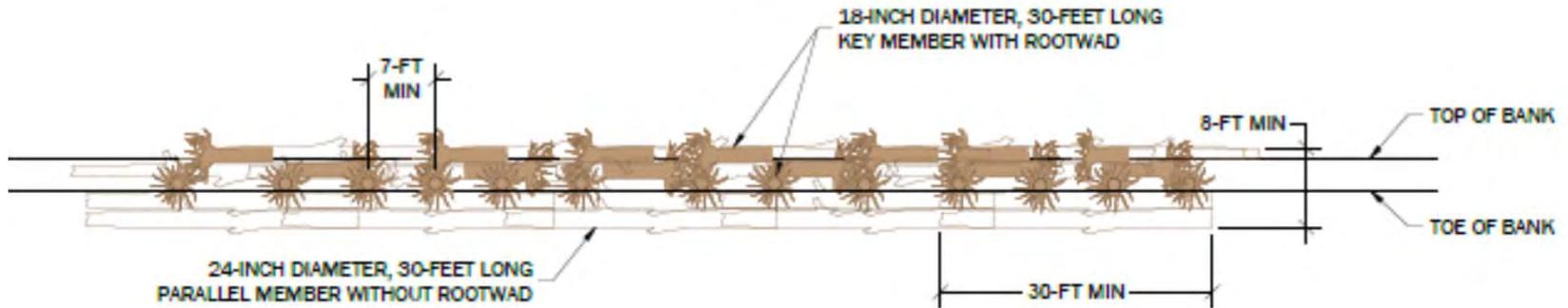








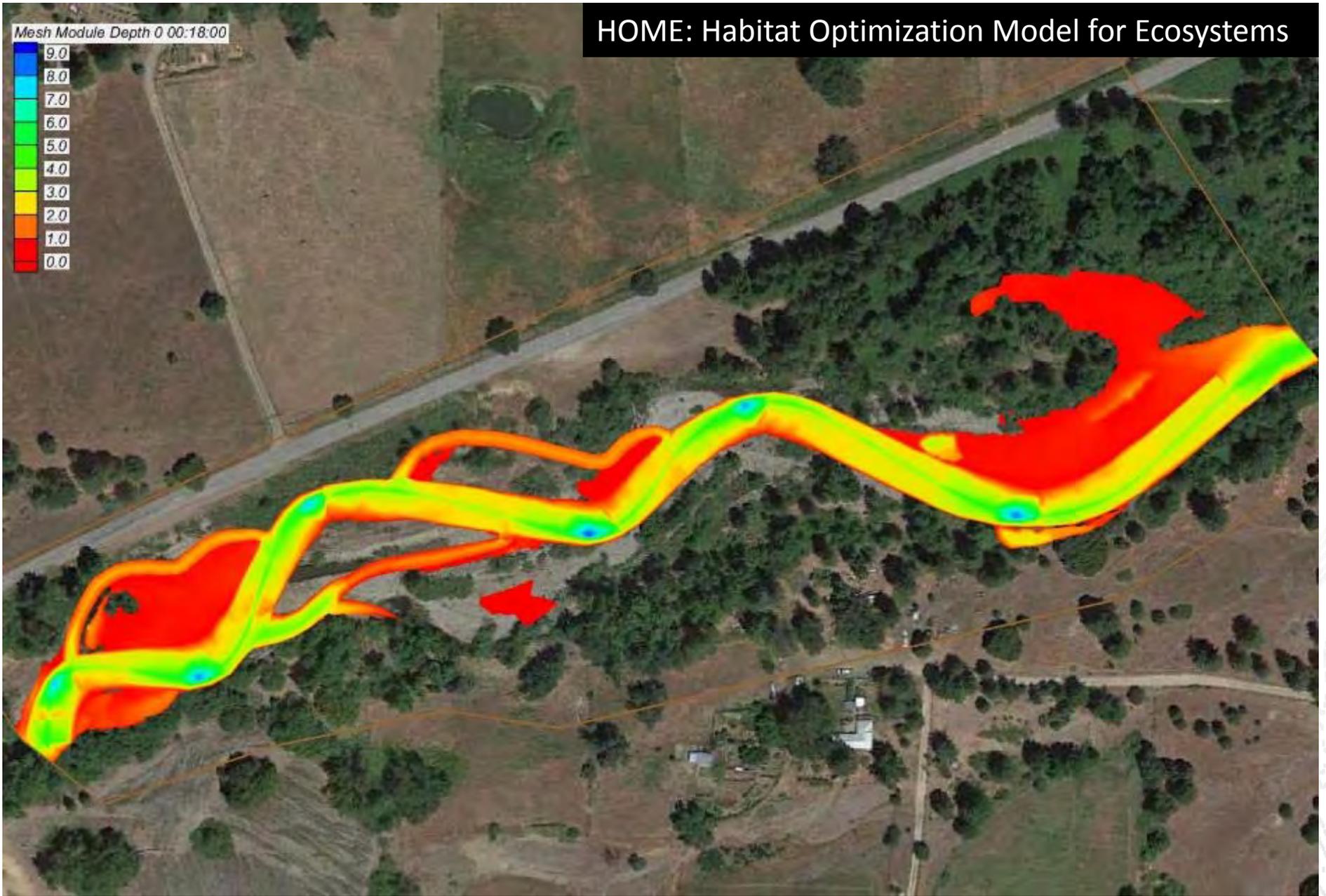
8 MEANDER JAM 2 PLAN VIEW
SCALE: 1"=20'





Proposed Two-Dimensional Hydraulic Model Bankfull Depth:

HOME: Habitat Optimization Model for Ecosystems



Next Steps:

- Contractor Bid / Selection – Spring 2016
- Construction & Observation – August to November 2016
- Conduct Monitoring Spring 2017 – Summer 2022





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