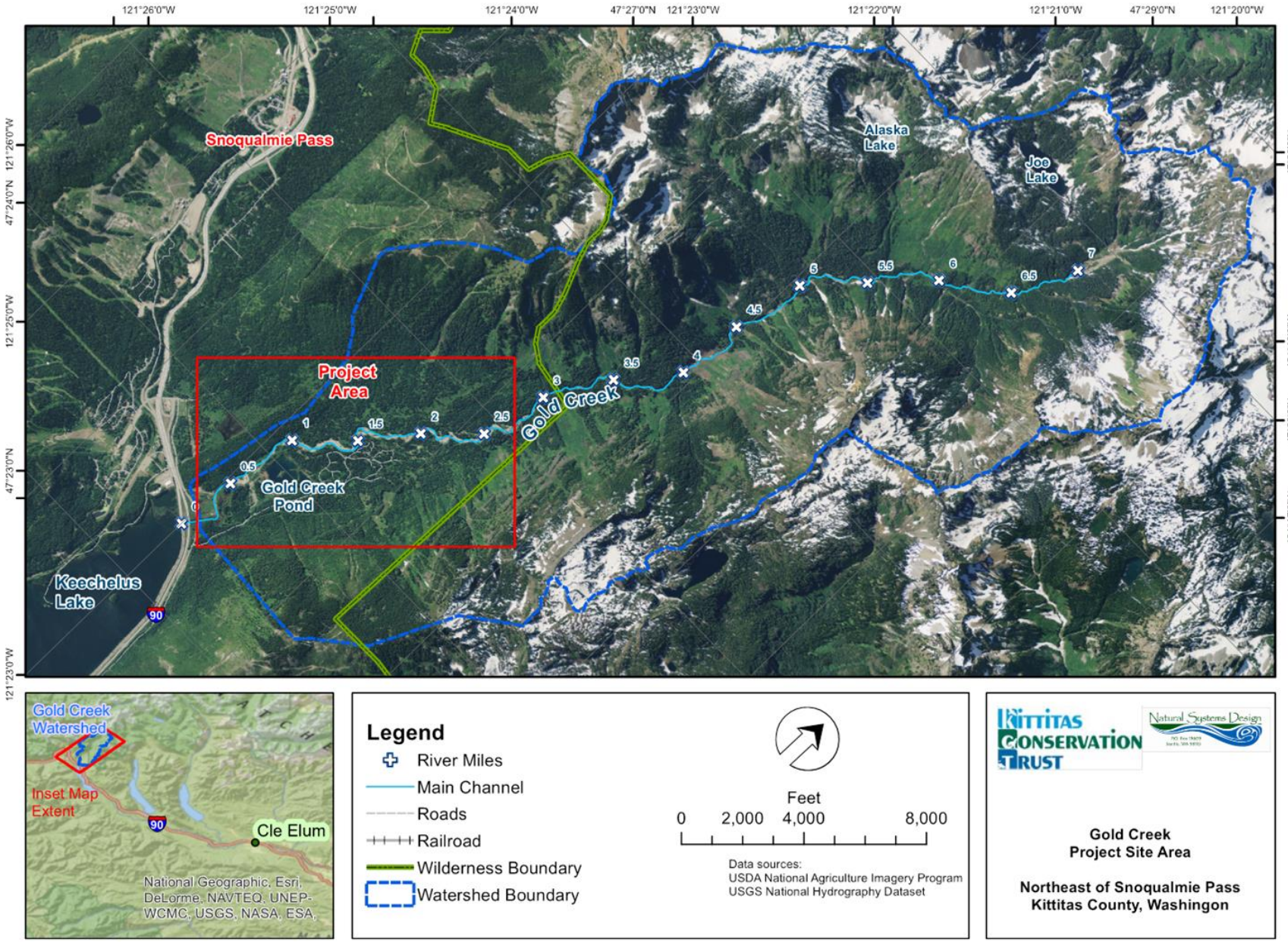
KITTITAS CONSERVATION TRUST

- Two Year Assessment Results
- Conceptual Designs
- Moving Forward

Gold Creek Habitat Assessment & Conceptual Design

Project Location



7/26/2013

8/26/2013

10/2/2013

The Problem

- Habitat Degradation
- Seasonal Dewatering

Project Goals

- Identify the causal mechanisms of habitat loss and seasonal dewatering
- Produce detailed ***conceptual*** design plans

Bull Trout – Salvelinus confluentus

Photo of stranded Bull Trout taken on 9/26/2013 in shallow riffle below Gold Creek Pond

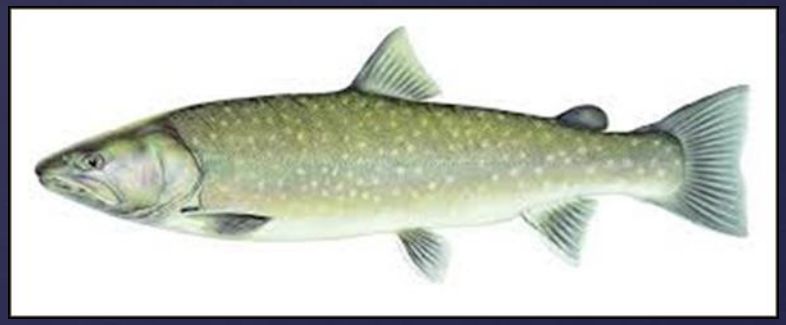
Bull Trout

Salvelinus Confluentus

One of only three know distinct populations left in the Upper Yakima Basin

The population is at high risk of extirpation

Gold Creek is the only tributary to Lake Keechelus that supports all life stages for Bull Trout



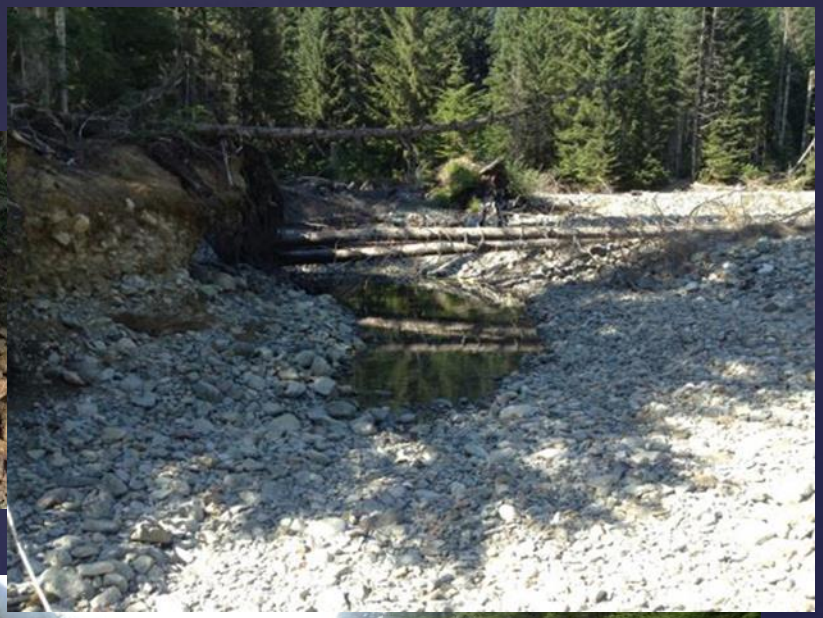
Why *Gold Creek* Restoration is Important

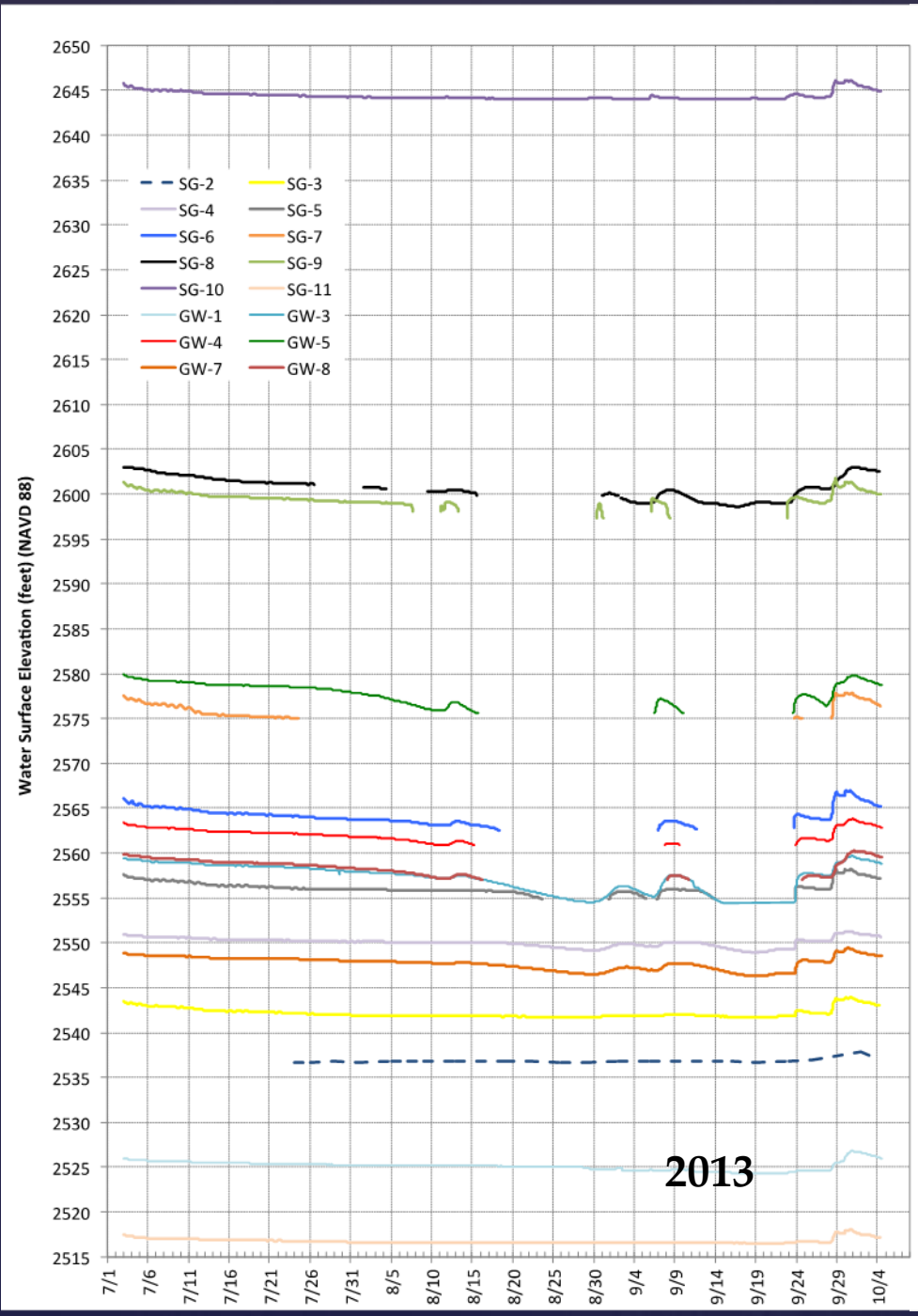
Project Status

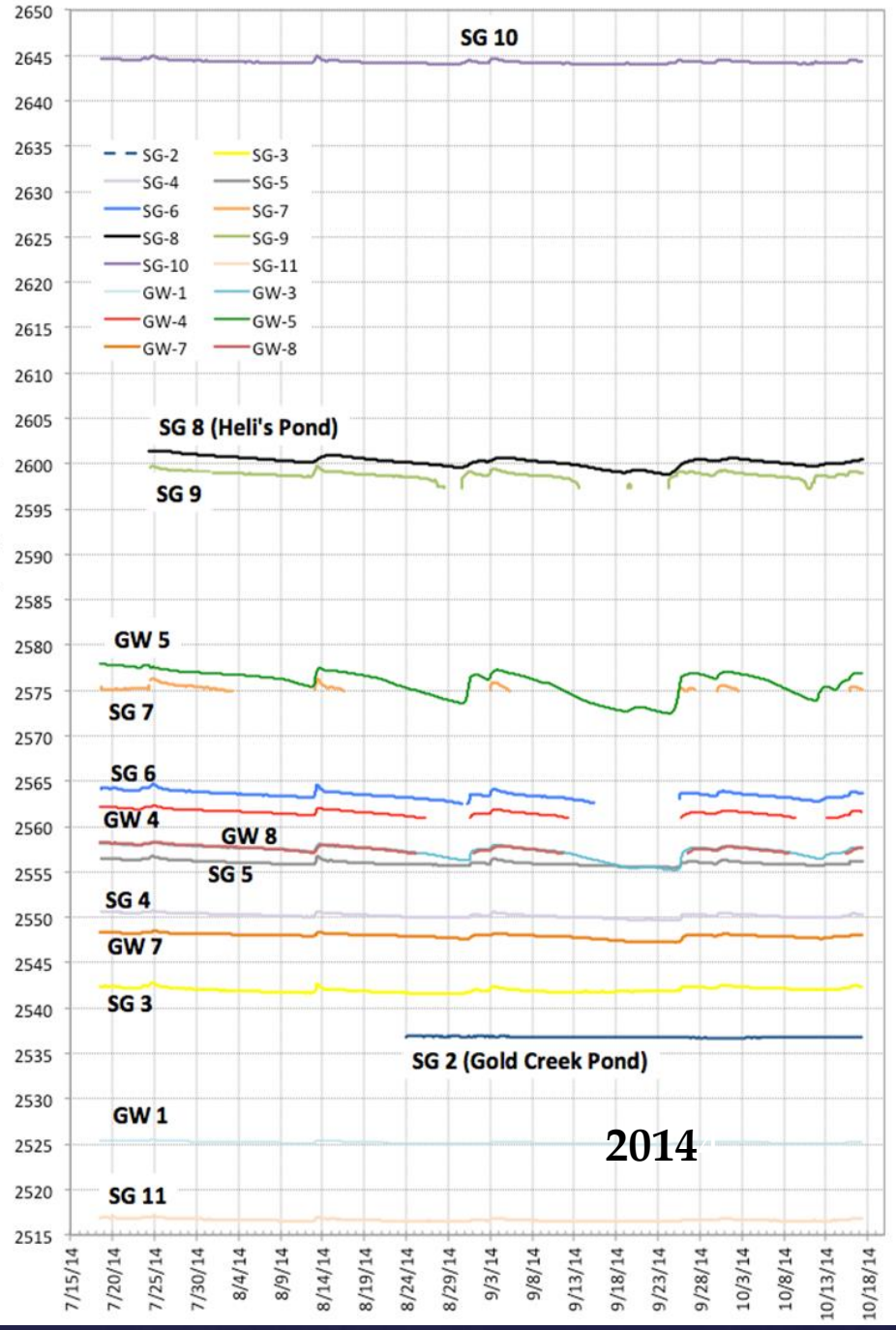
Tasks Completed in 2013 – 2015:

- Data Inventory and Gap Analysis
- 2013 & 2014 Hydrologic Assessments
- Habitat Assessment
- Geomorphic Assessment
- Conceptual Design
- Outreach
- Inclusion in USBOR DEIS for KDRPP & K to K Projects
- 2015 SRFB Proposal for Phase 1 Instream Habitat Restoration (RM 1 – 2.1)

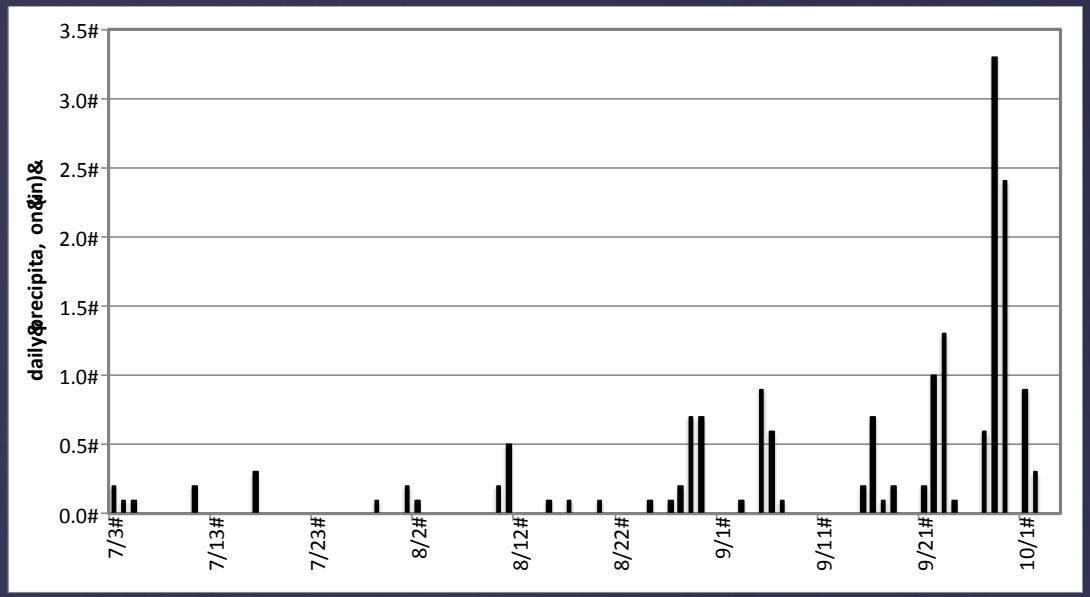
2014 Hydrologic Monitoring




Water Surface Elevation (feet) (NAVD 88)
SG-2
SG-3
SG-4
SG-5
SG-6
SG-7
SG-8
SG-9
SG-10
SG-11
GW-1
GW-3
GW-4
GW-5
GW-7
GW-8
2013

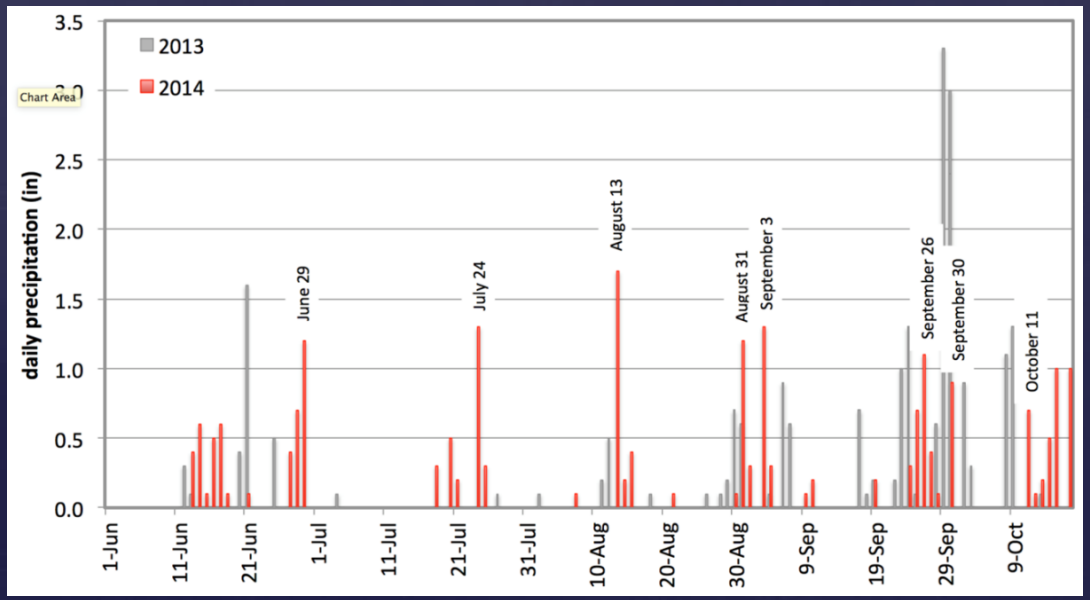

SG 10
SG-2
SG-3
SG-4
SG-5
SG-6
SG-7
SG-8
SG-9
SG-10
SG-11
GW-1
GW-3
GW-4
GW-5
GW-7
GW-8
SG 8 (Heli's Pond)
SG 9
GW 5
SG 7
SG 6
GW 4
GW 8
SG 5
SG 4
GW 7
SG 3
SG 2 (Gold Creek Pond)
GW 1
SG 11
2014

Rainfall



2013

- Extended period of little to no rainfall from July to Mid-September
- Extended period of seasonal dewatering



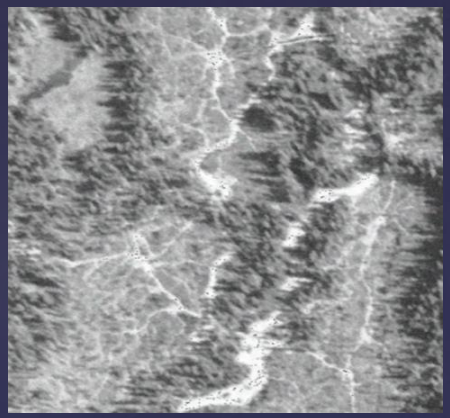
2014

- Four rainfall events throughout the summer over 1”
- Four distinct dewatering events through this same period

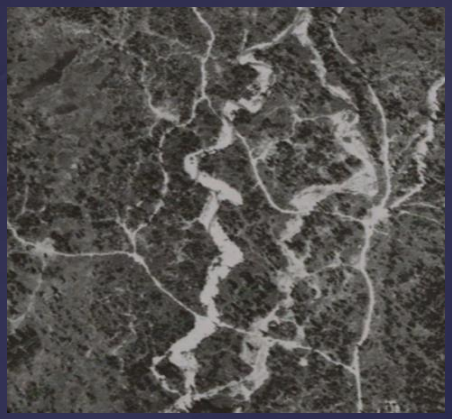
Geomorphic Assessment

1944

1957



1970



1985

Historic Disturbances

- Mining
- Lake Keechelus Dam & Reservoir Operations
- Logging
- Road Development
- Residential Development

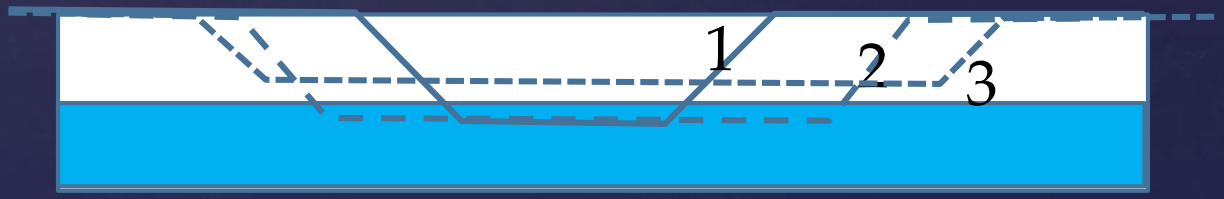
2015

GEOMORPHIC ASSESSMENT

HISTORIC DISTURBANCES

- Accelerated widening following logging in the 1950's
- Average peak width in the 1990's
- Expansion greatest downstream of RM 1 and between RM 1.4 and 1.75
- Current trends suggest the riparian trees are starting to achieve key size (60 years after logging)

YEAR	AVERAGE ACTIVE CHANNEL WIDTH (FT)	AVERAGE INCREASE IN ACTIVE CHANNEL WIDTH SINCE 1944 (%)	MAXIMUM ACTIVE CHANNEL WIDTH MEASURED
1944	96	0	233
1954	104	7.8	253
1957	123	27	446
1970	179	86	403
1985	179	85	373
1991	183	90	339
1998	183	90	315
2003	169	75	282
2006	158	64	318
2011	181	88	332
2014	168	74	290

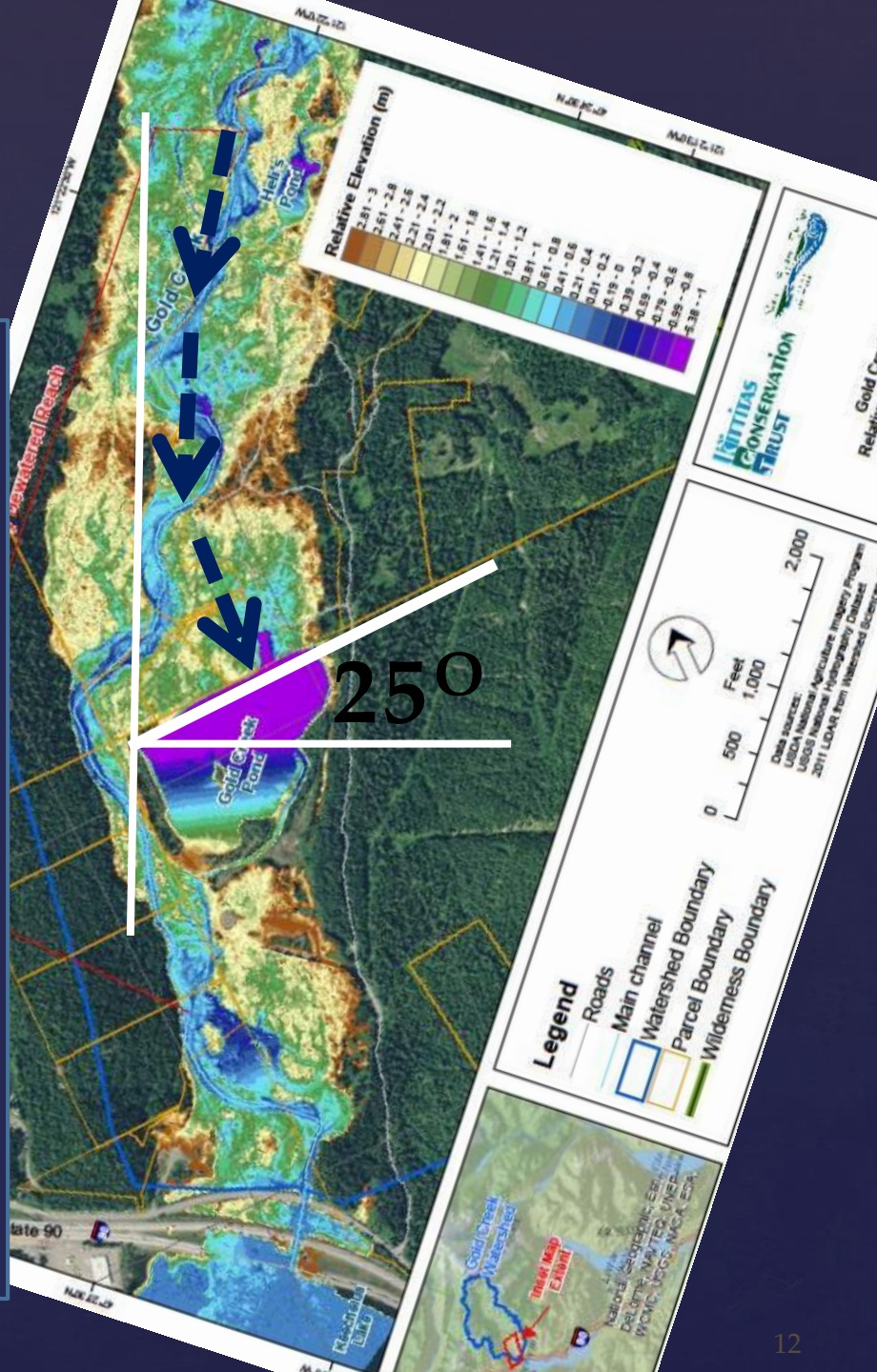


Stream discharge into creek bed (Q) α Surface area of creek bed (A)

↑ stream bed surface area = ↑ infiltration into groundwater

GOLD CREEK POND

- Influence of Gold Creek Pond
  - Modifies groundwater gradient (estimated drop of 10′ from historic levels)
  - Lower wse on eastern floodplain relative to western floodplain
  - Orientation of Pond relative to valley axis
  - WSE in Gold Creek Pond remains constant
  - Groundwater elevations level closer to the Pond than further upstream



INSTREAM RESTORATION

Restoration of forested floodplain

- Restoration of historic channel widths
- Roughened floodplain to confine flows and reduce infiltration area
- Target sub-reaches with most significant widening
- Use of large timber to provide bank strength


PHASE III
PHASE I
PHASE II
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
RM 0.5
RM 1
RM 1.5
RM 2
RM 2.5
Gold Creek
Gold Creek Pond
Helis Pond
753449
754949
756449
759449
1420856
1421856
1422856
0
750
1,500
3,000 Feet

Gold Creek Instream Habitat Design #15-1153

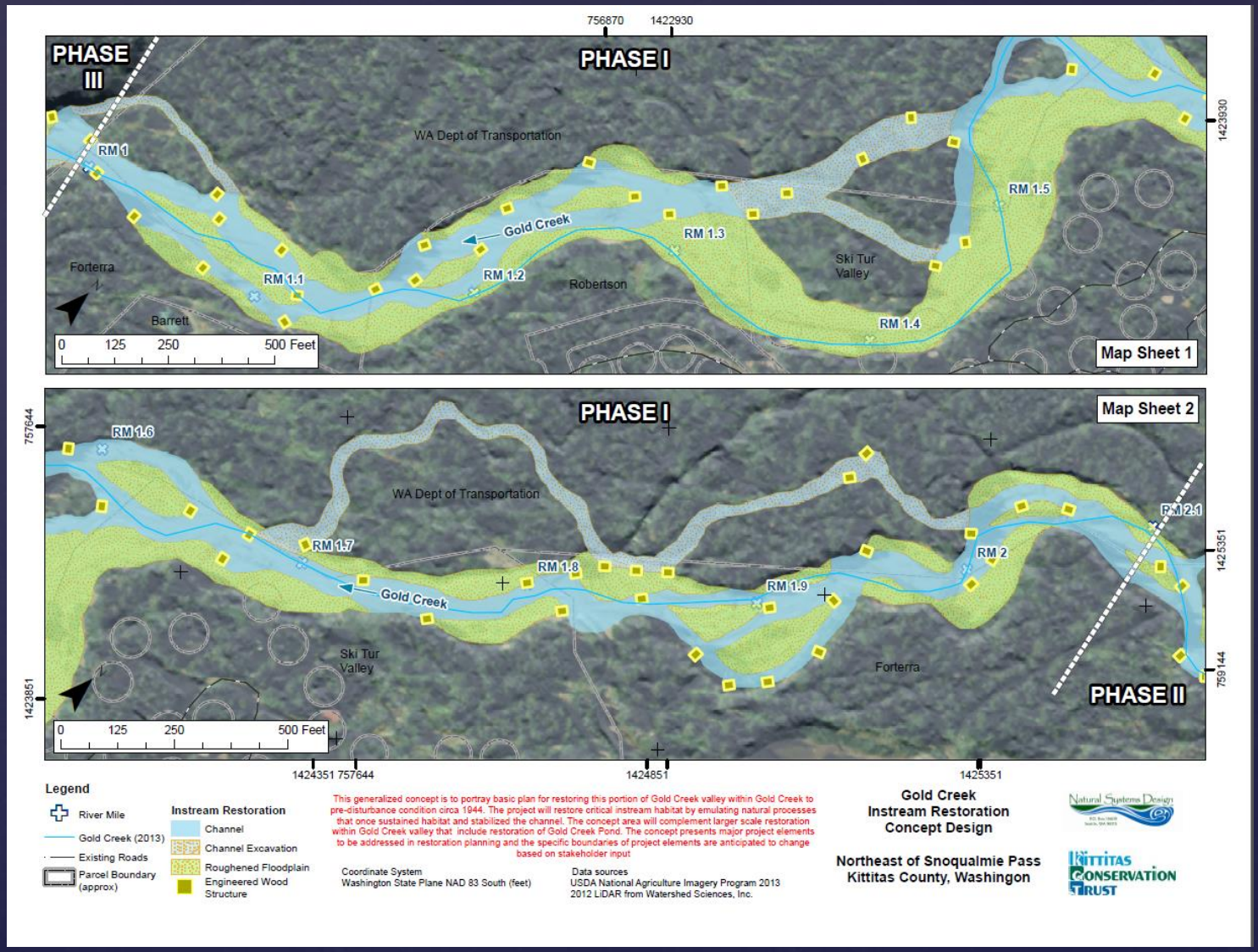
2015 SRFB Project Proposal

PRISM #15-1153

RM 1 – 2.1

Main Dewatered Reach

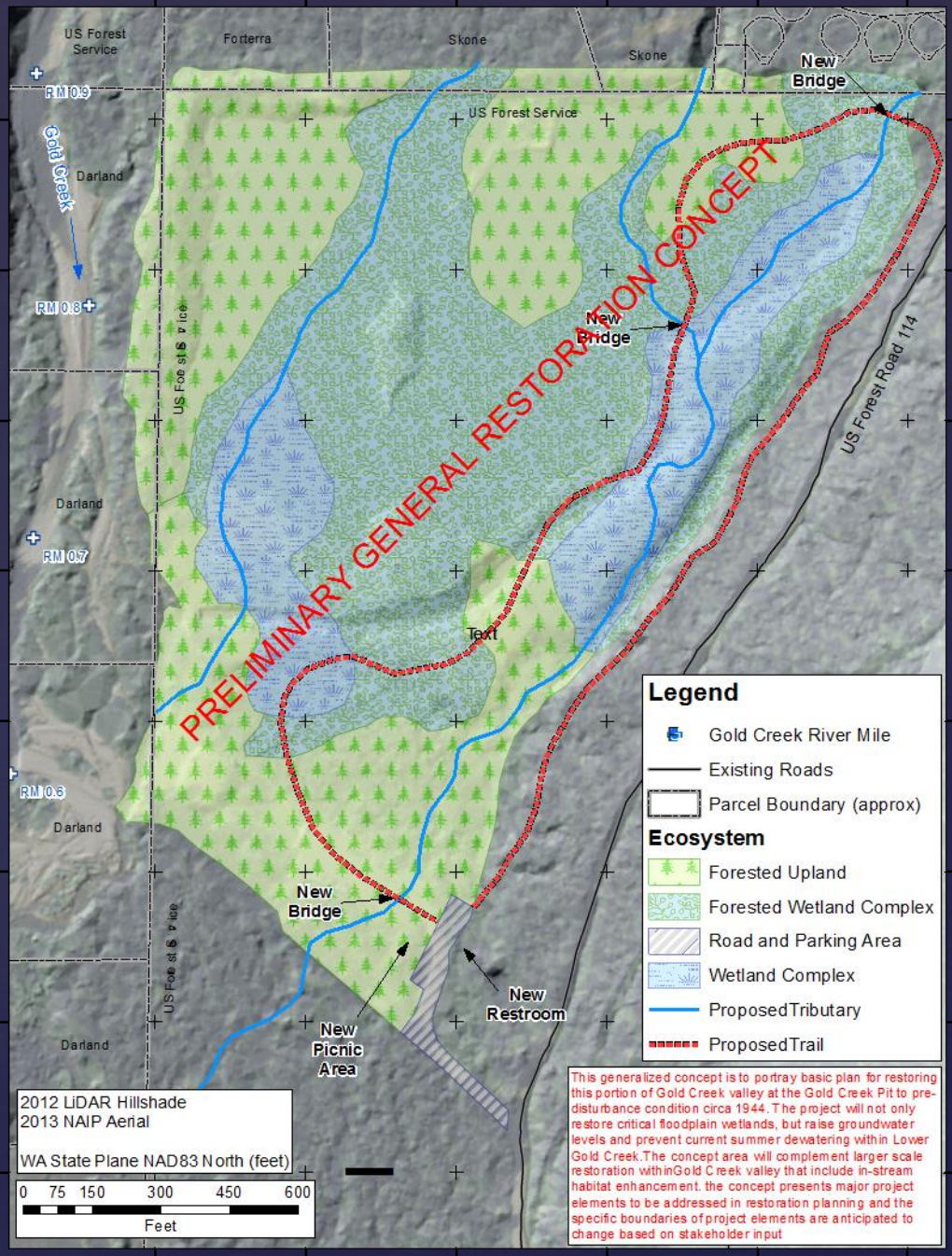
Minimizes Impact to Bull Trout



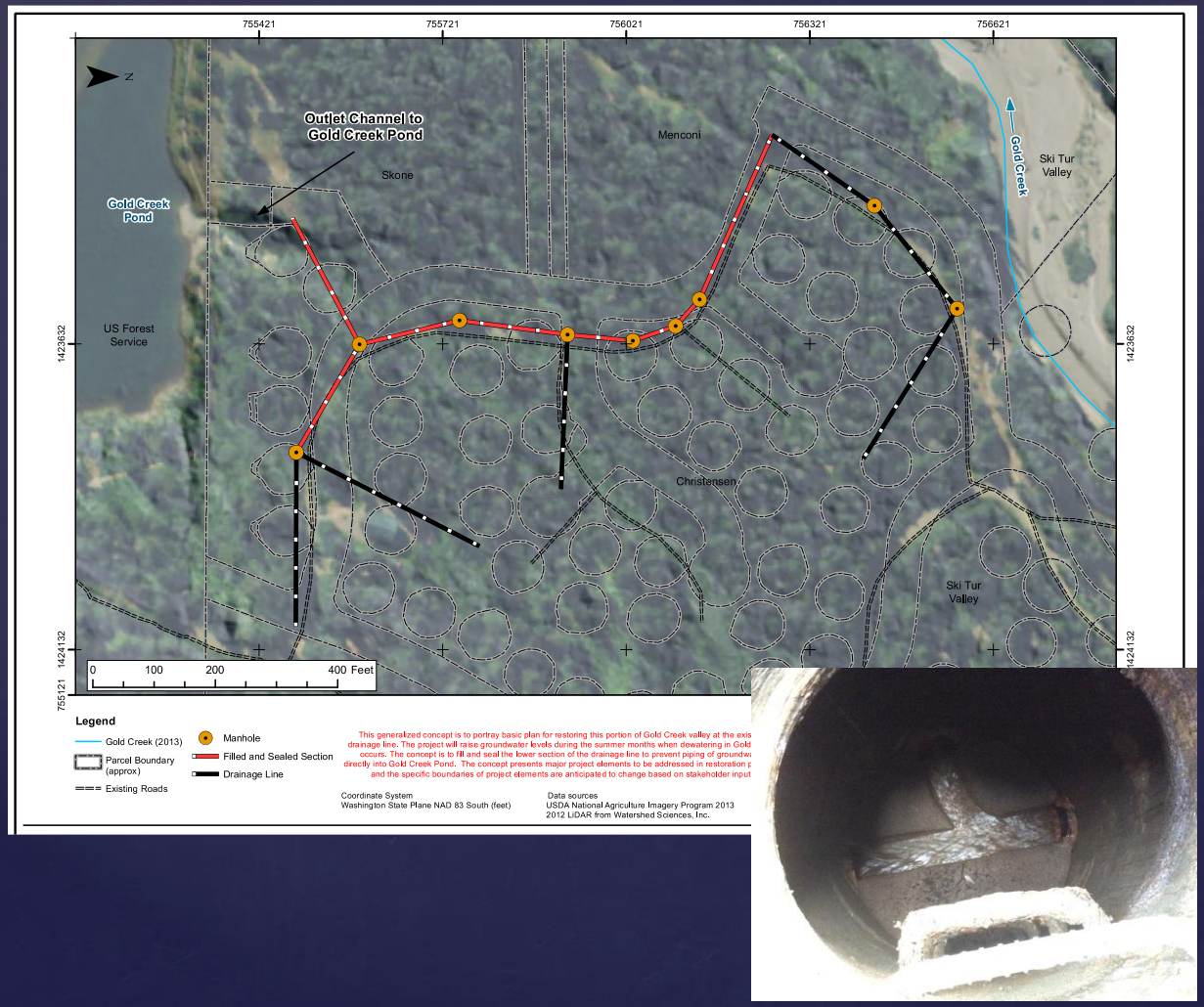
CONCEPT DESIGNS GOLD CREEK PIT RESTORATION

Restore Pre-Disturbance Condition

- Wetland mosaic
  - Forested wetlands
  - Emergent wetlands
  - Open water
- Upland Forests
- Tributary Re-Alignment



CONCEPT DESIGNS
DRAINAGE LINE RESTORATION



During dewatering, relative elevation along pipe changes

- Invert above groundwater table at upstream end
- Invert below groundwater table at downstream end (observed at manholes 1, 9, 8)

Documents can be found at:

kittitasconservationtrust.org