

# TCF– North Fork Teanaway Aquatic Restoration Proposal

WILLIAM MEYER WDFW, REBECCA WASSELL Mid Columbia Fish Enhancement Group, RYAN DEKNIKKER Yakama Nation



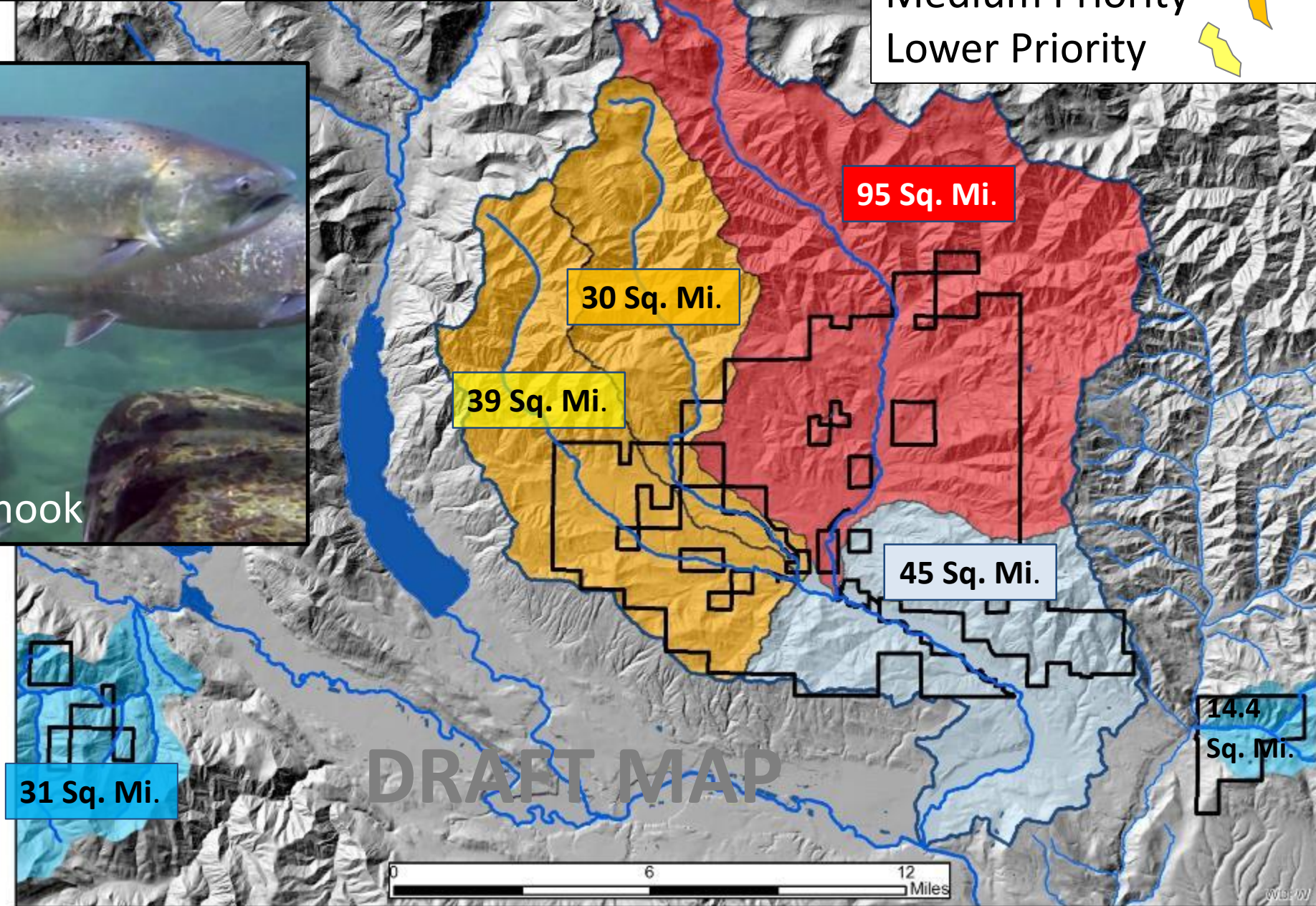


# TCF Aquatic Restoration Strategy

High Priority  
Medium Priority  
Lower Priority

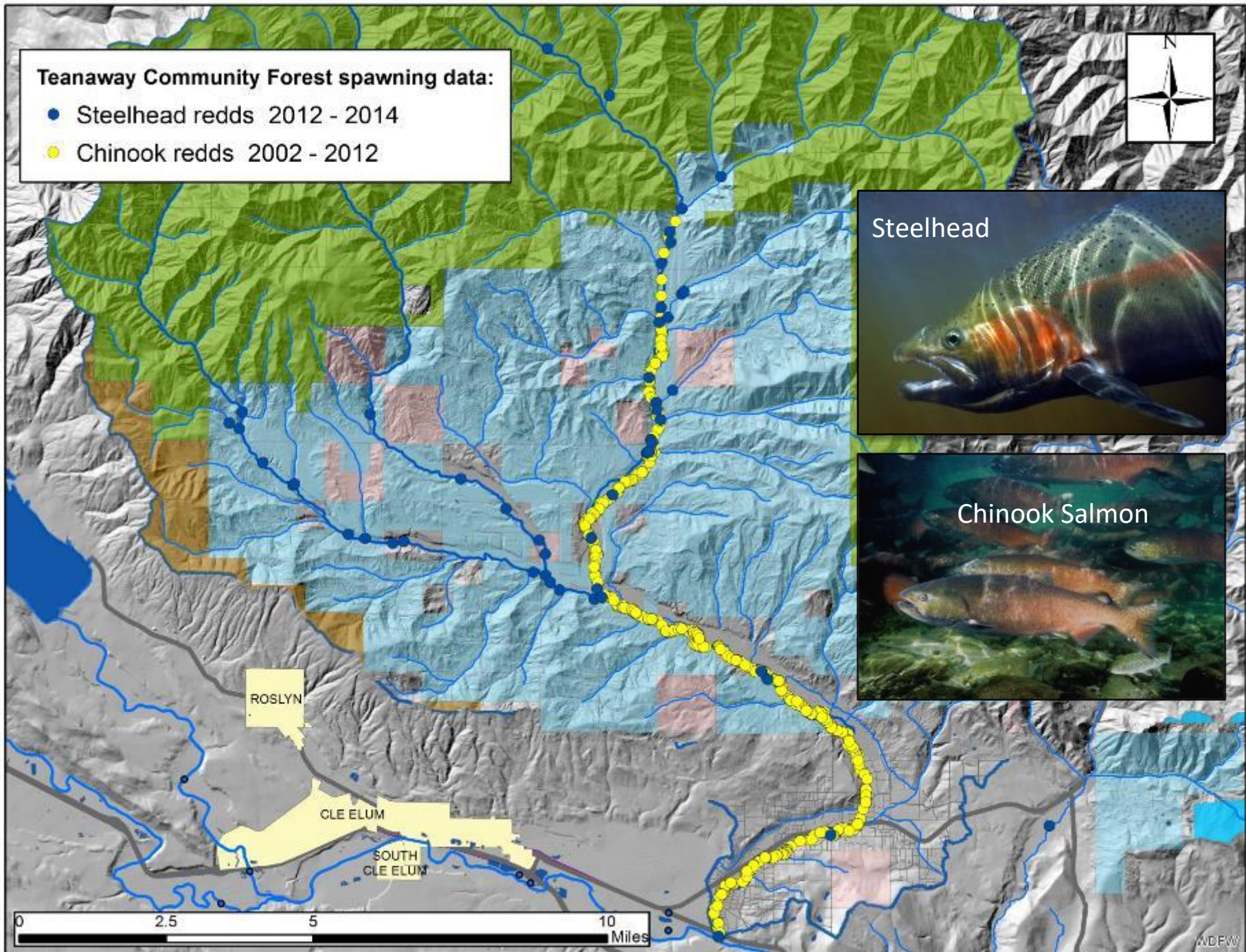


Spring Chinook





Why?



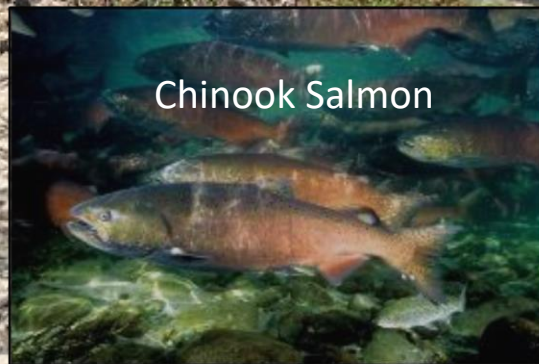


Why?

Steelhead

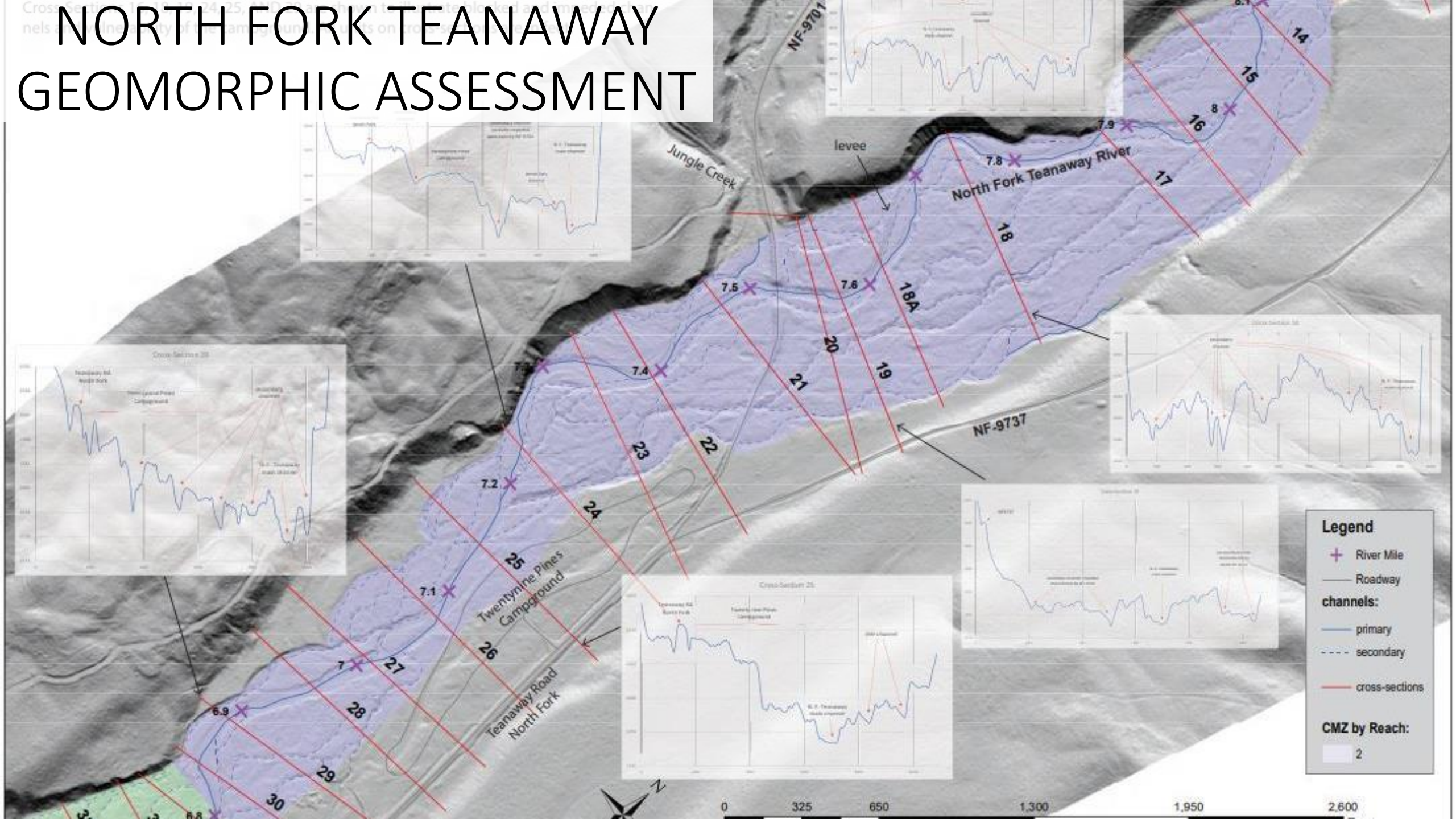


Chinook Salmon





# NORTH FORK TEANAWAY GEOMORPHIC ASSESSMENT



**Legend**

- ✦ River Mile
- Roadway channels

**channels:**

- primary
- - - secondary

**cross-sections**

- 

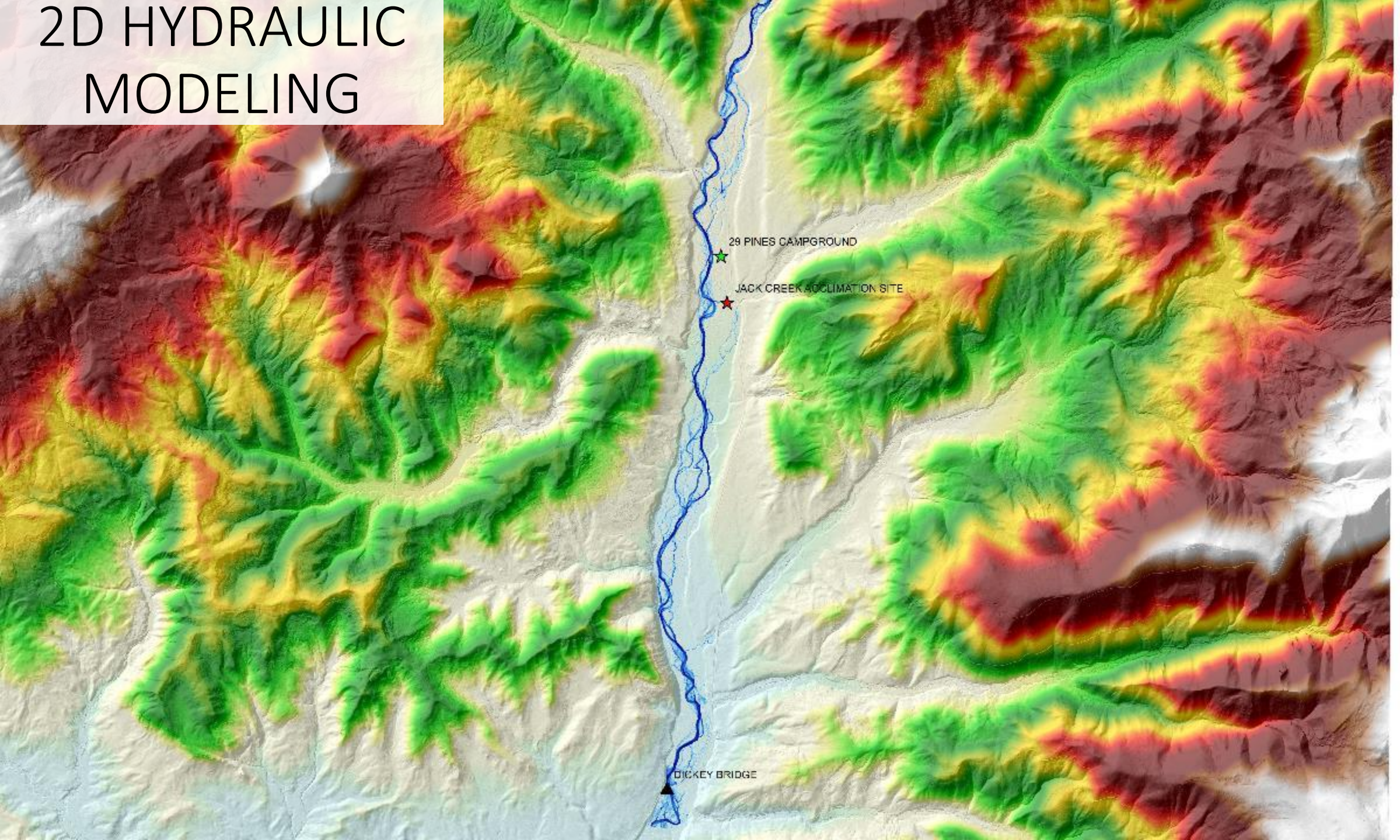
**CMZ by Reach:**

- 2

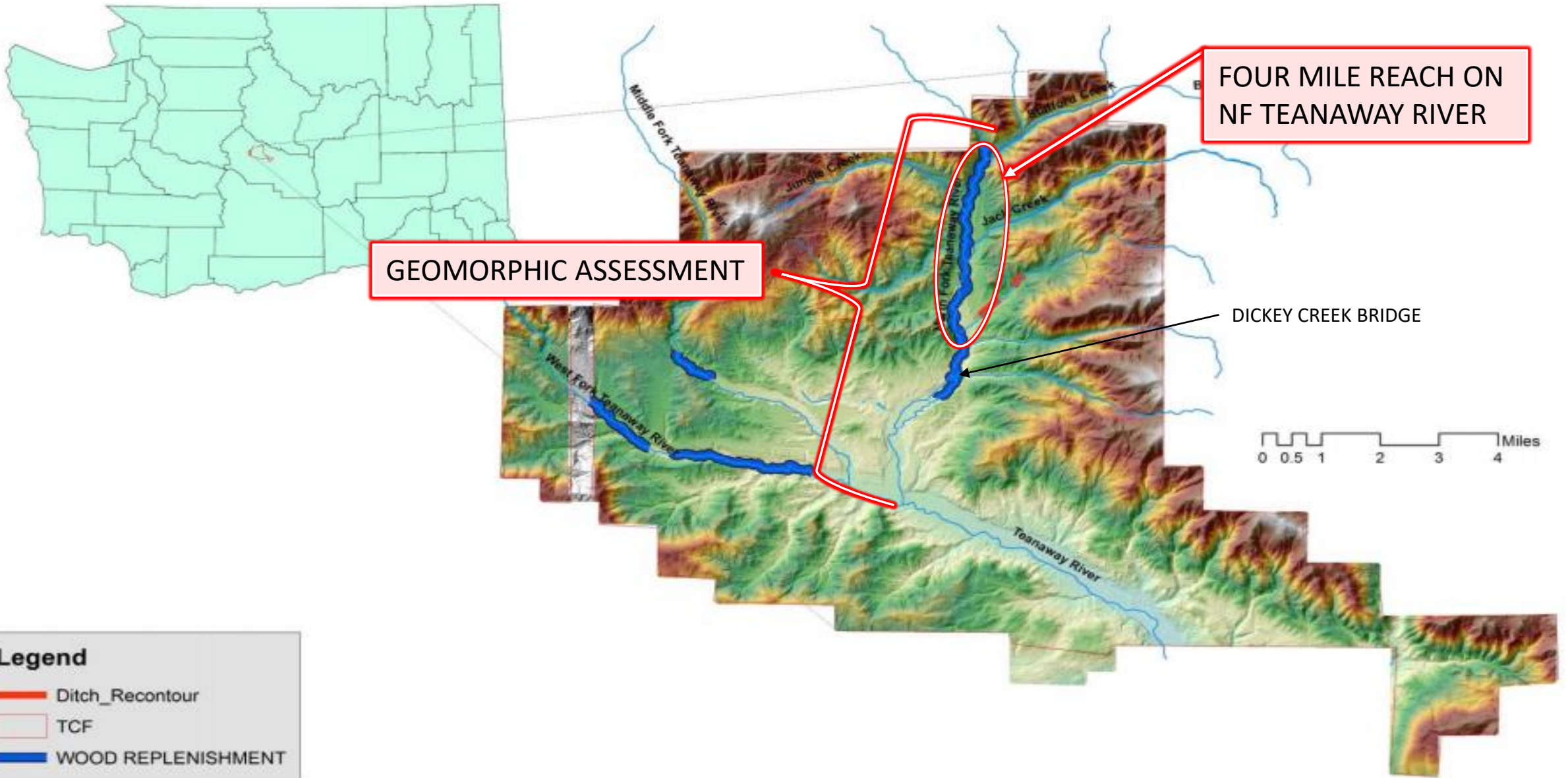
0 325 650 1,300 1,950 2,600



# 2D HYDRAULIC MODELING



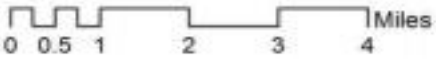




GEOMORPHIC ASSESSMENT

FOUR MILE REACH ON NF TEANAWAY RIVER

DICKEY CREEK BRIDGE



**Legend**

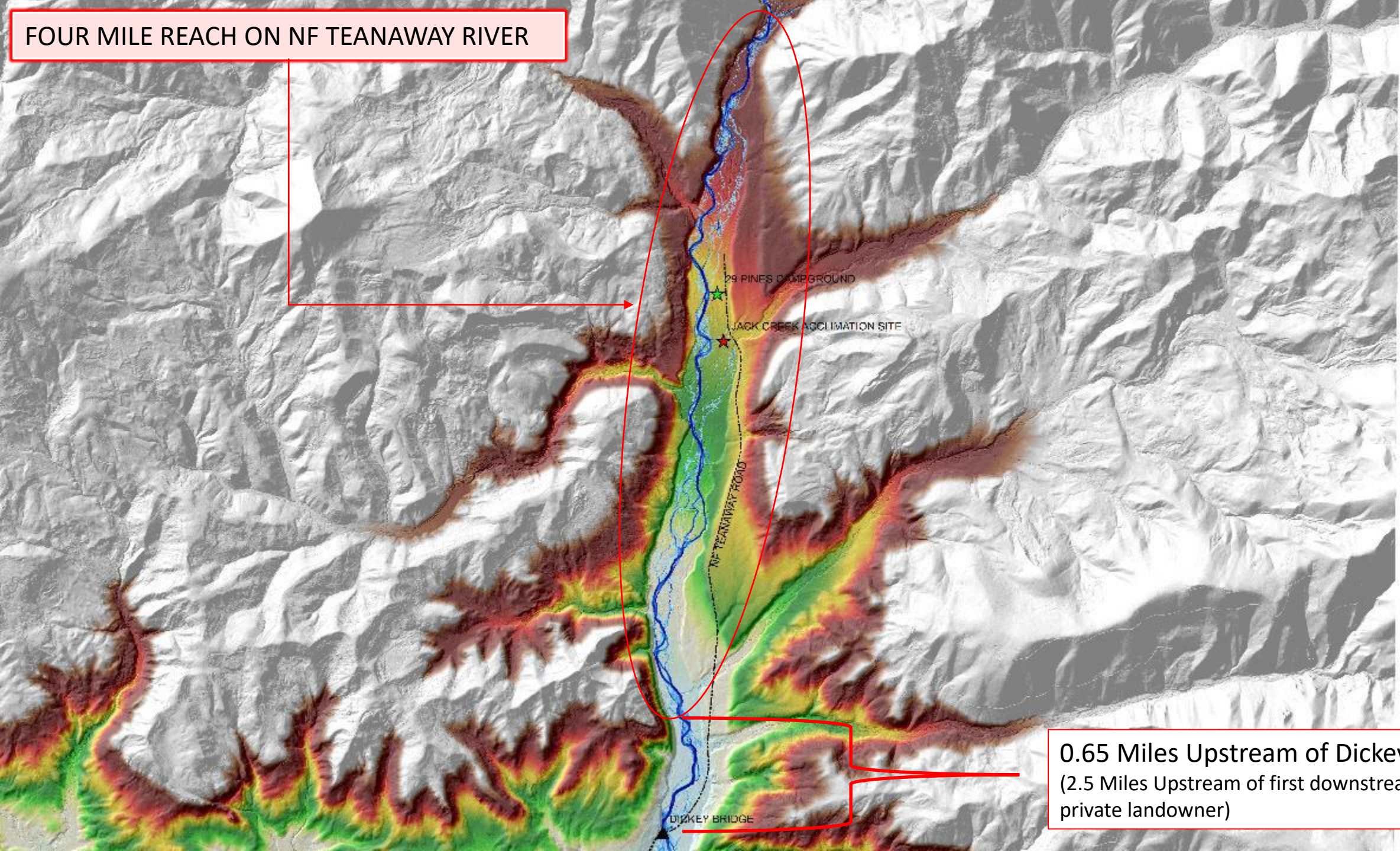
- Ditch\_Recontour
- TCF
- WOOD REPLENISHMENT



**TCF Floodplain Restoration Vicinity Map**

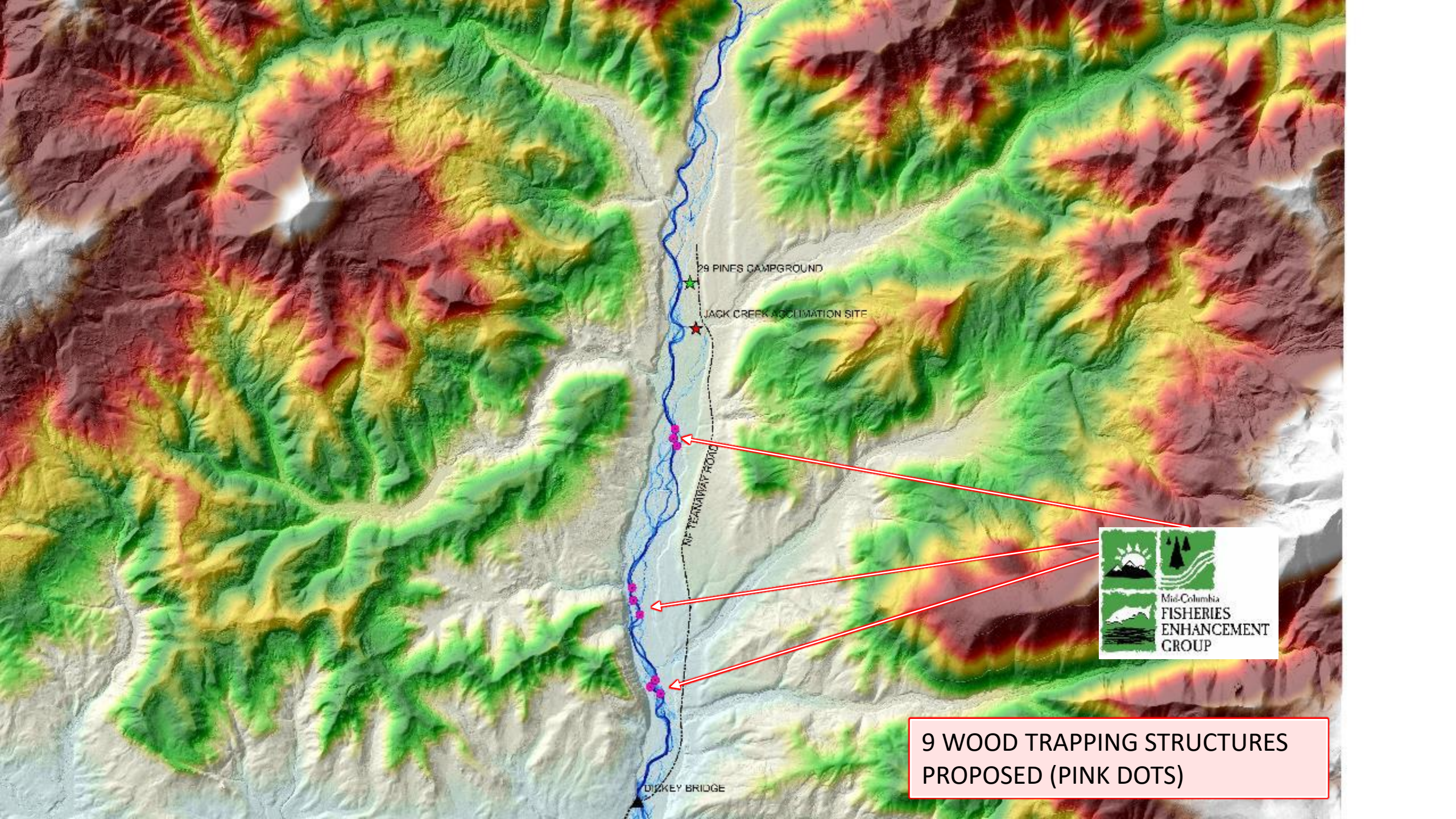


**FOUR MILE REACH ON NF TEANAWAY RIVER**



**0.65 Miles Upstream of Dickey Creek  
(2.5 Miles Upstream of first downstream  
private landowner)**





29 PINES CAMPGROUND

JACK CREEK ACCLIMATION SITE

RIF TEANAWAY ROAD

DIKEY BRIDGE



9 WOOD TRAPPING STRUCTURES PROPOSED (PINK DOTS)





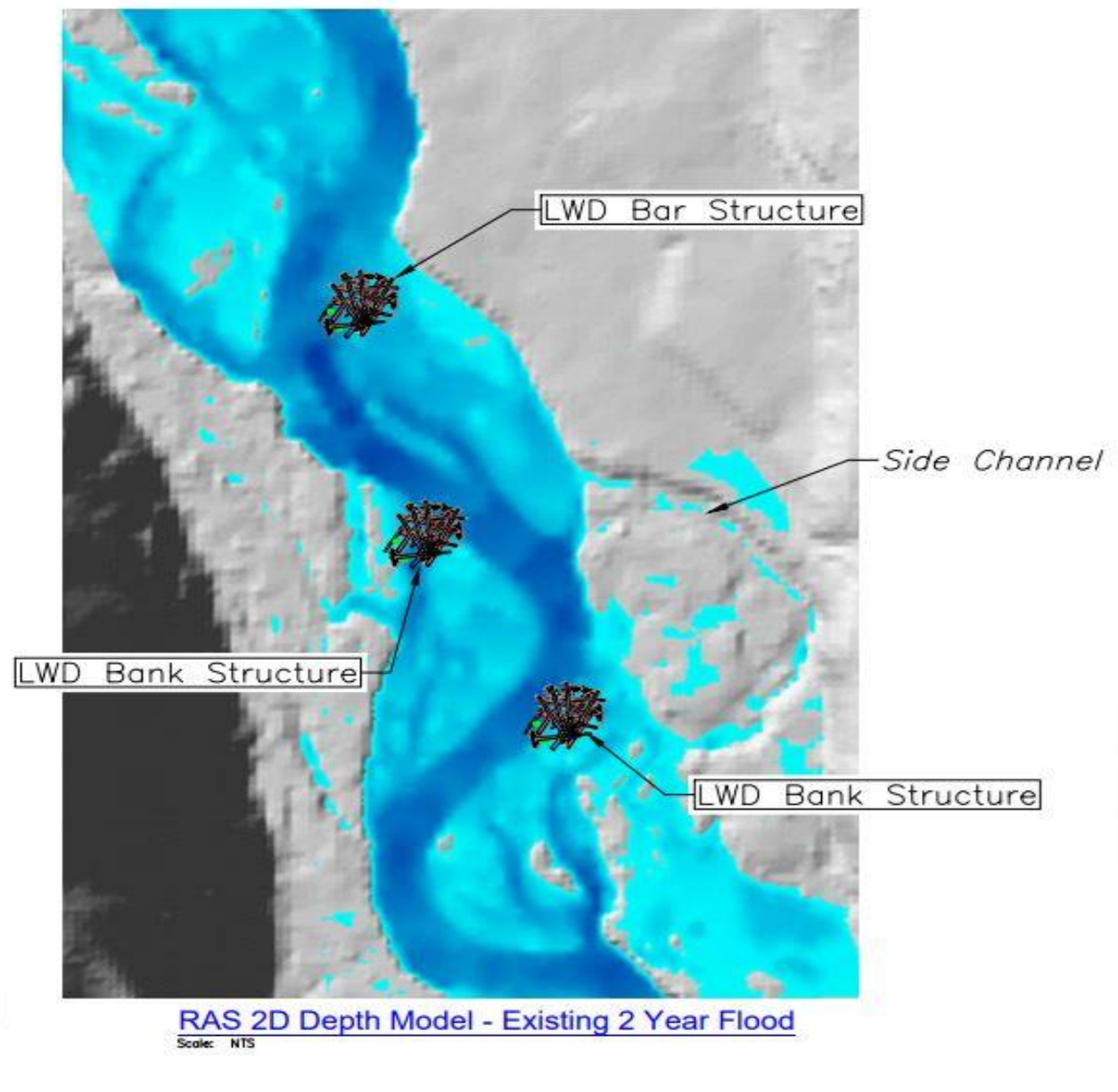
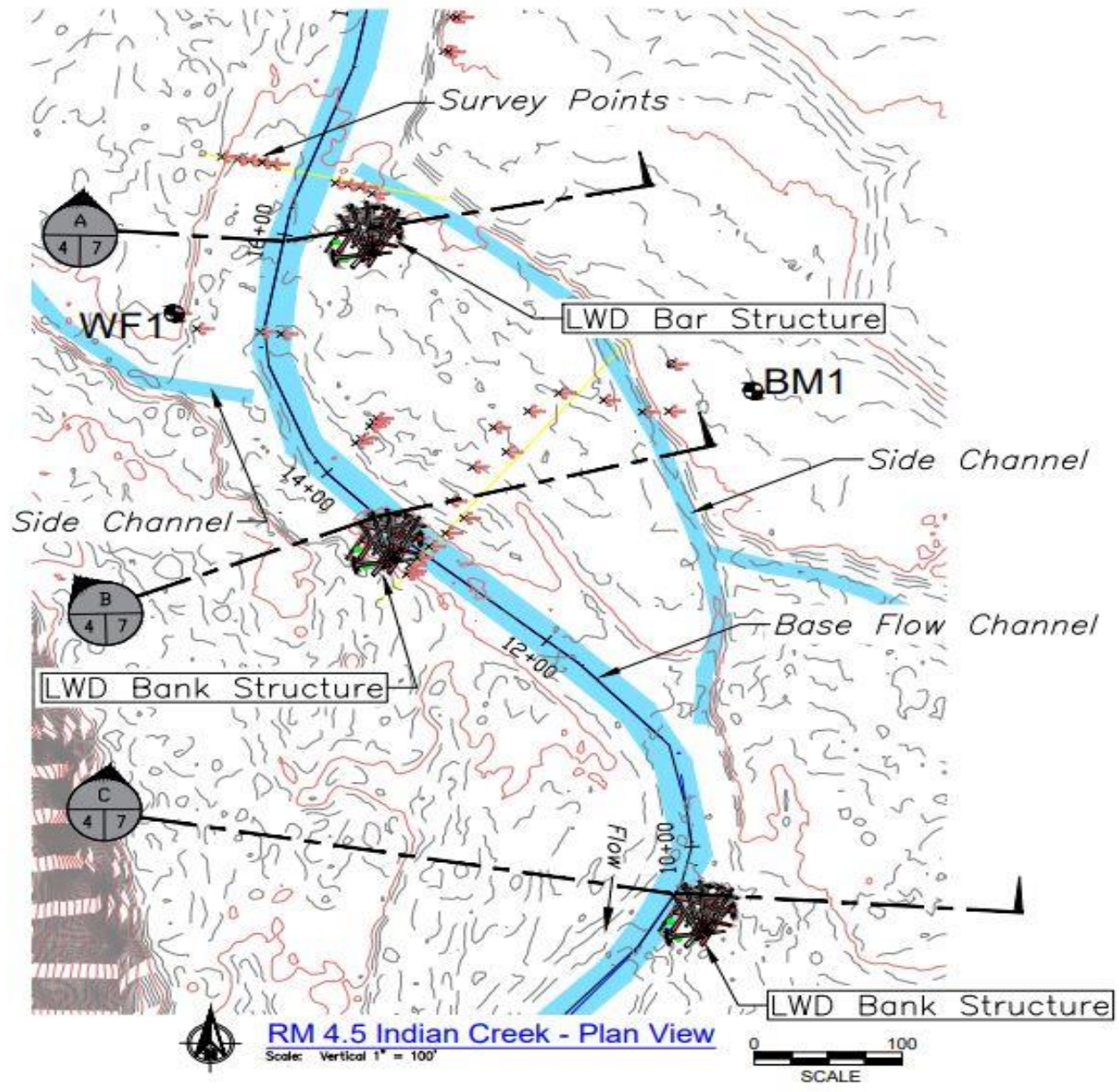


# INDIAN-MIDDLE CREEK SITE



IMAGE DATE:  
6/6/19





# North Fork Teanaway LWD Trapping

REV	DATE	BY	APPD	DESCRIPTION

SCALE VERIFICATION

1" = 100'

DESIGN BY:  
Waterfall Engineering

DRAWN BY:

DATE:  
2/13/2019

RM 4.5 Indian Creek

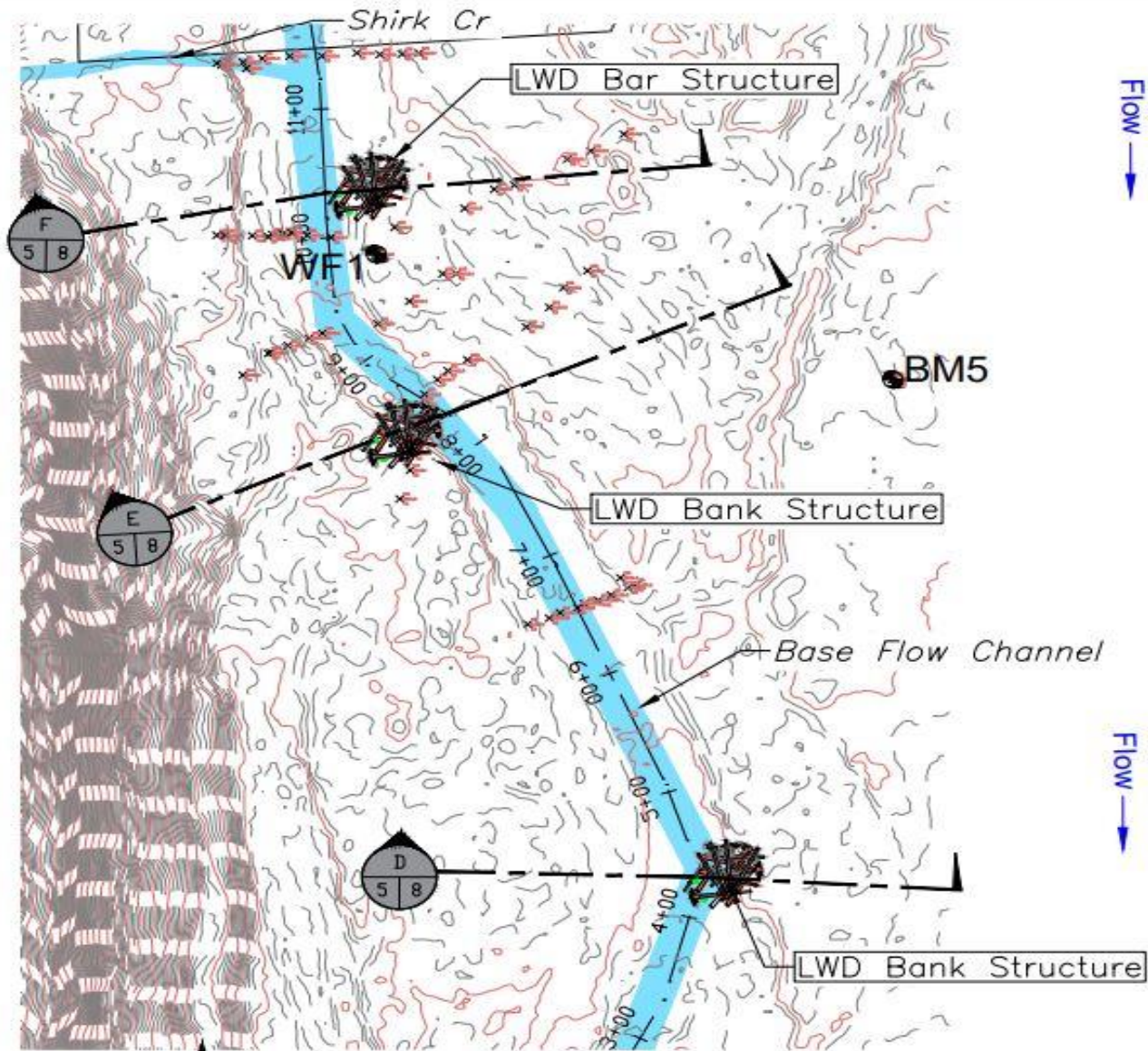


# SHIRK CREEK SITE



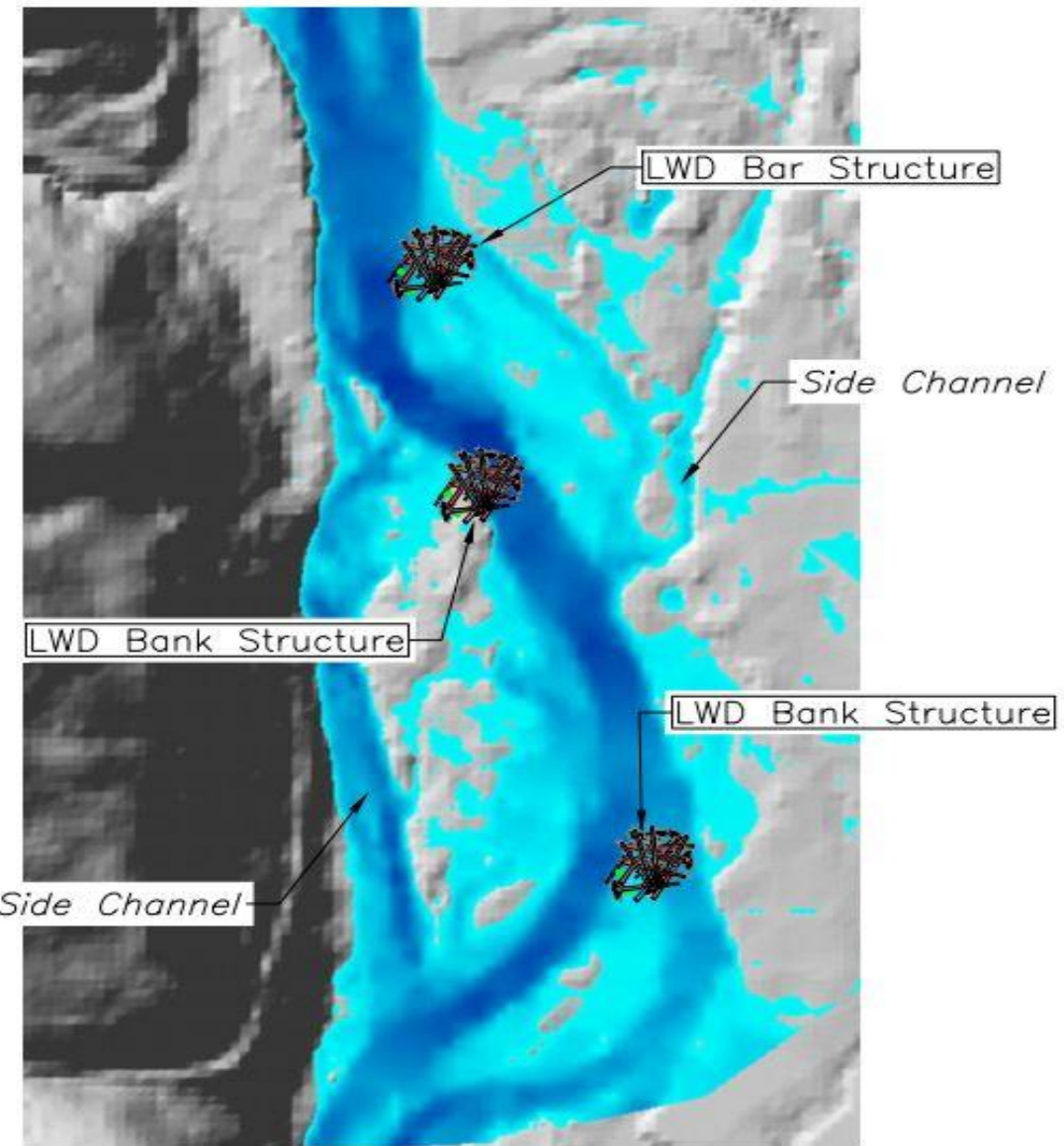
IMAGE DATE:  
6/6/19





RM 5.2 Shirk Creek - Plan View

Scale: Vertical 1" = 100'



RAS 2D Depth Model - Existing 2 Year Flood

Scale: NTS



# North Fork Teanaway LWD Trapping

REV	DATE	BY	APPD	DESCRIPTION

SCALE VERIFICATION

1" = 100'

DESIGN BY:  
Waterfall Engineering

DRAWN BY:

DATE:  
2/13/2019

RM 5.2 Shirk Creek

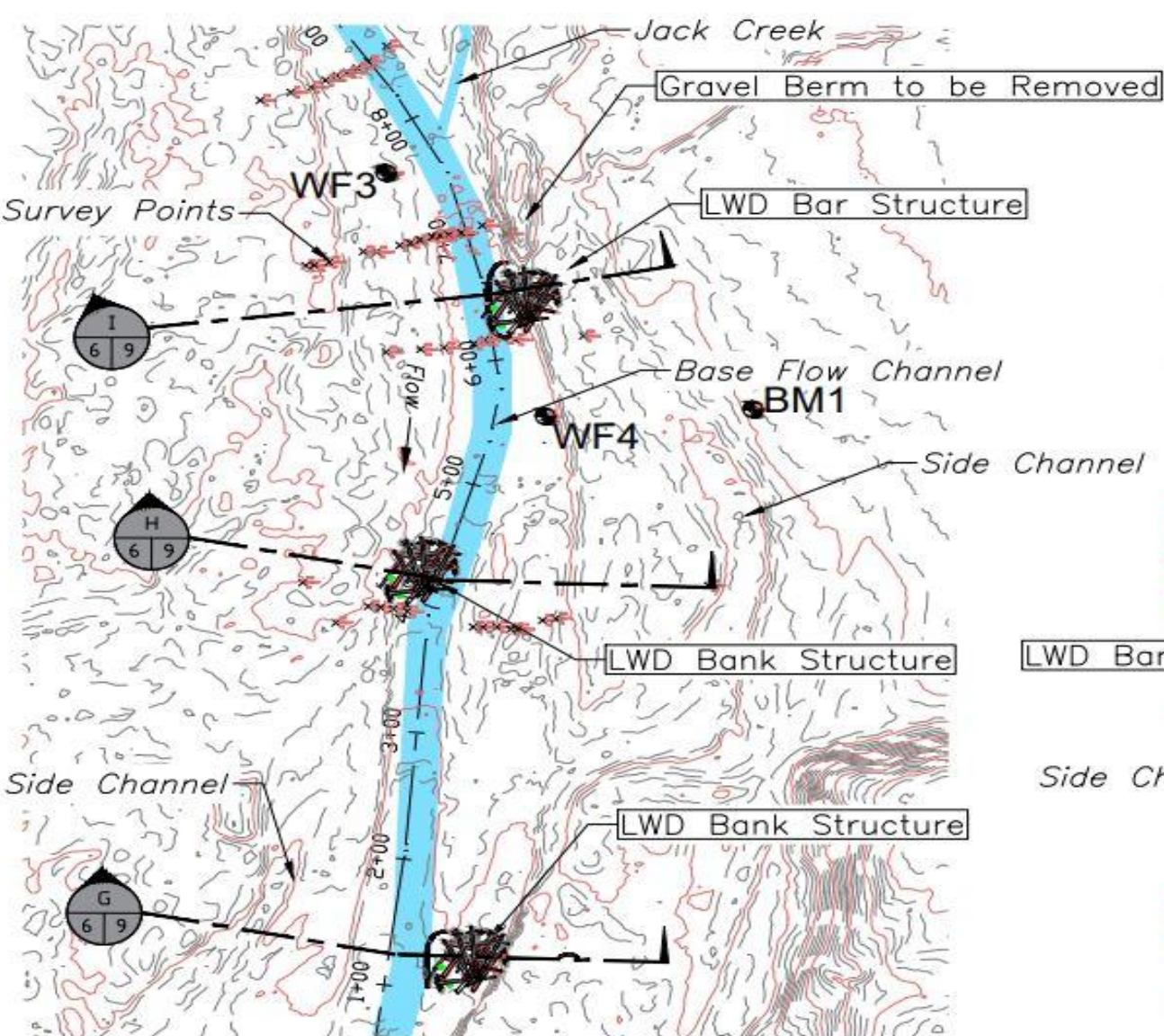


# JACK CREEK SITE

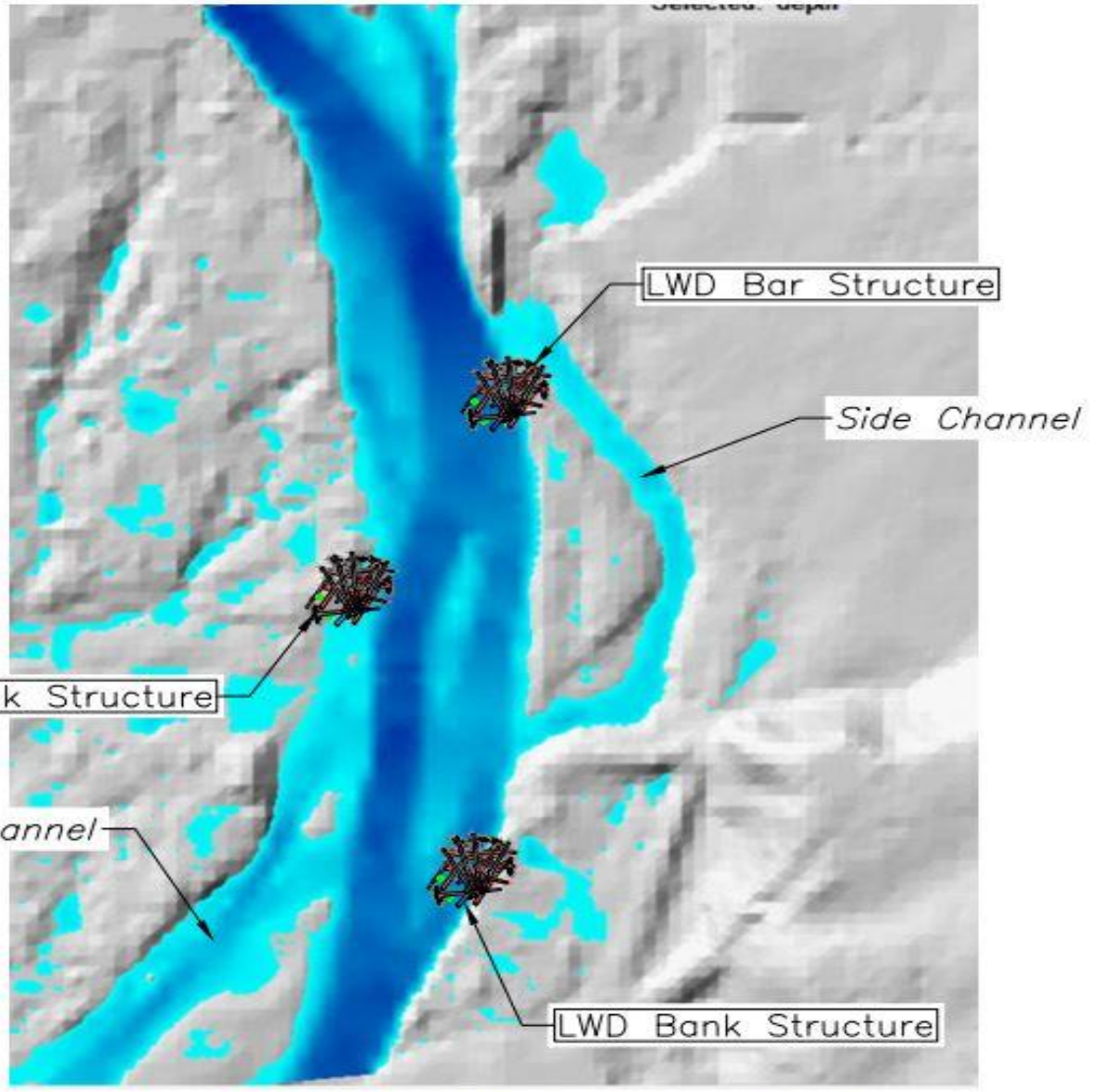


IMAGE DATE:  
6/6/19





**RM 6.3 Jack Creek - Plan View**  
 Scale: Vertical 1" = 100'



**RAS 2D Depth Model - Existing 2 Year Flood**  
 Scale: NTS



# North Fork Teanaway LWD Trapping

REV	DATE	BY	APPD	DESCRIPTION

**SCALE VERIFICATION**

IF NOT ONE INCH ON THIS SHEET, RESCALE ACCORDINGLY.

DESIGN BY:  
Waterfall Engineering

DRAWN BY:

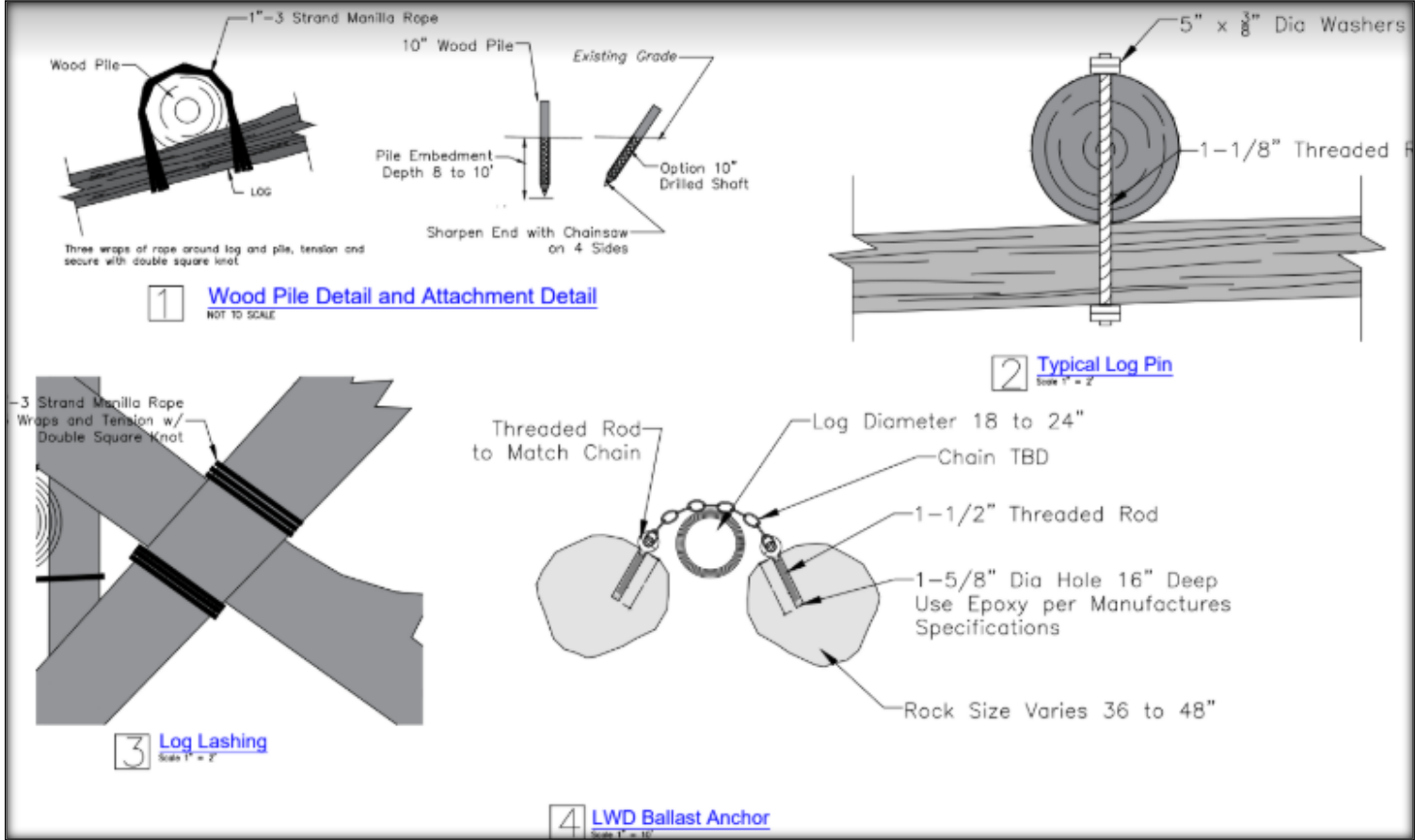
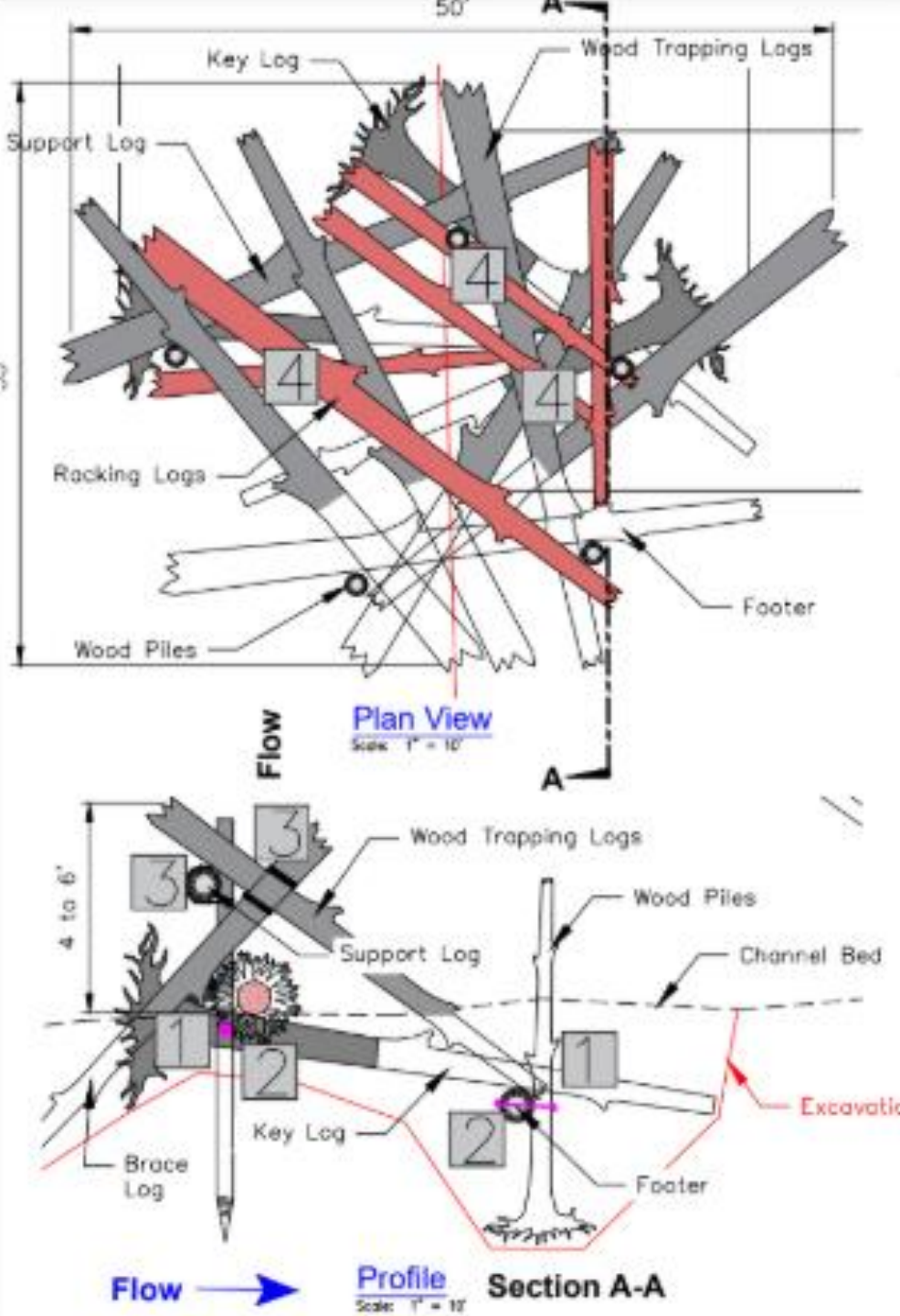
DATE:  
1/3/2019

RM 6.3 Jack Creek

6 OF 13 SHEET



# Wood Trapping Structures

















33 WOOD STATIC  
STRUCTURES PROPOSED  
(GREEN DOTS)



29 PINES CAMPGROUND

JACK CREEK ACCLIMATION SITE

WYANWATY ROAD

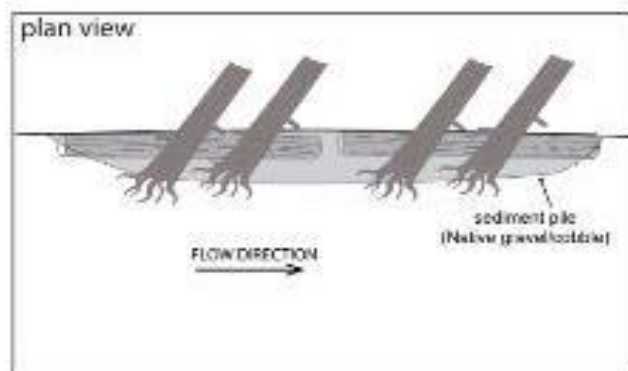
DIKKEY BRIDGE



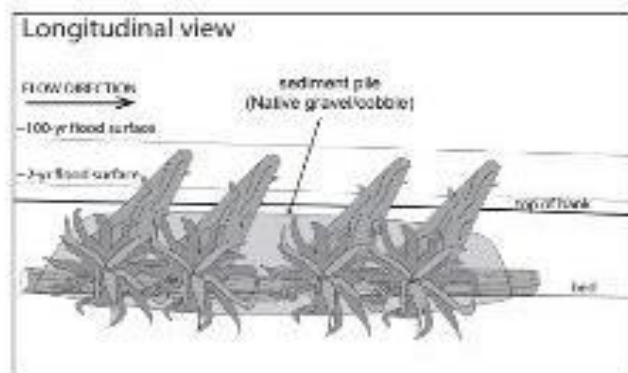
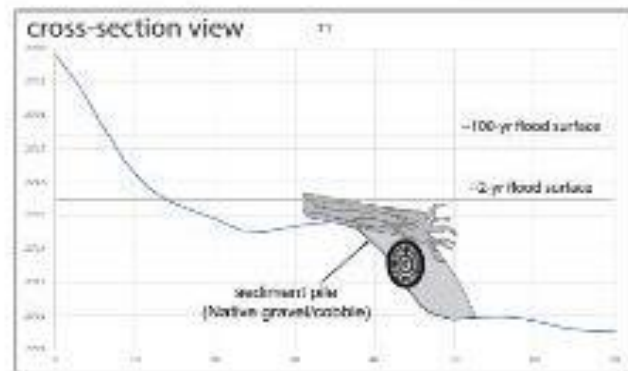
9 WOOD TRAPPING STRUCTURES  
PROPOSED (PINK DOTS)



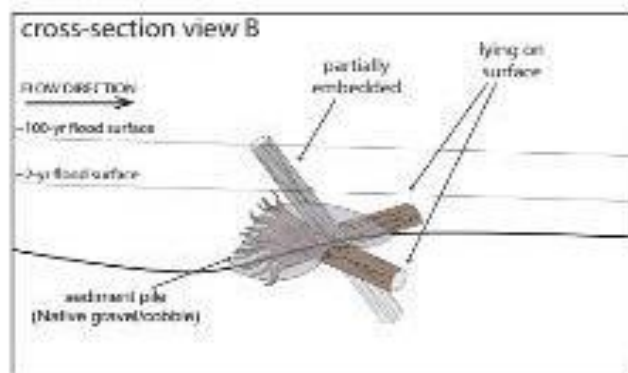
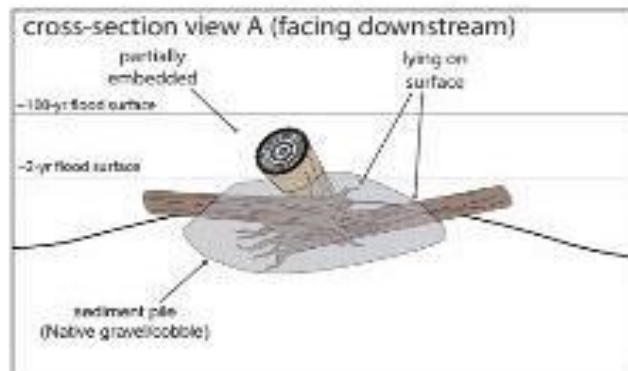
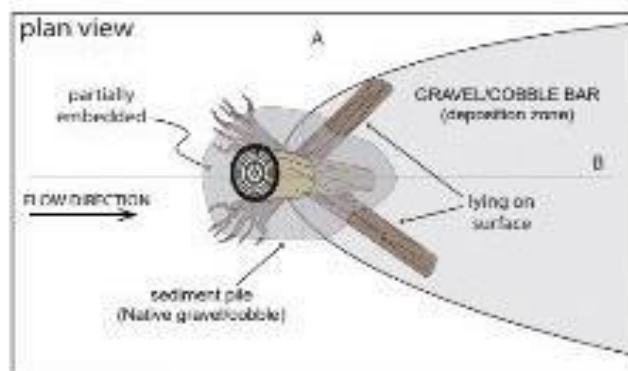
**TYPE 1 LOGJAM TYPICAL  
(FLOW DEFLECTOR)**



**DRAWINGS ARE NOT TO SCALE**



**TYPE 2 LOGJAM TYPICAL  
(FLOW SPLITTER)**



**GENERAL INSTRUCTIONS:**

**FLOW DEFLECTOR:**

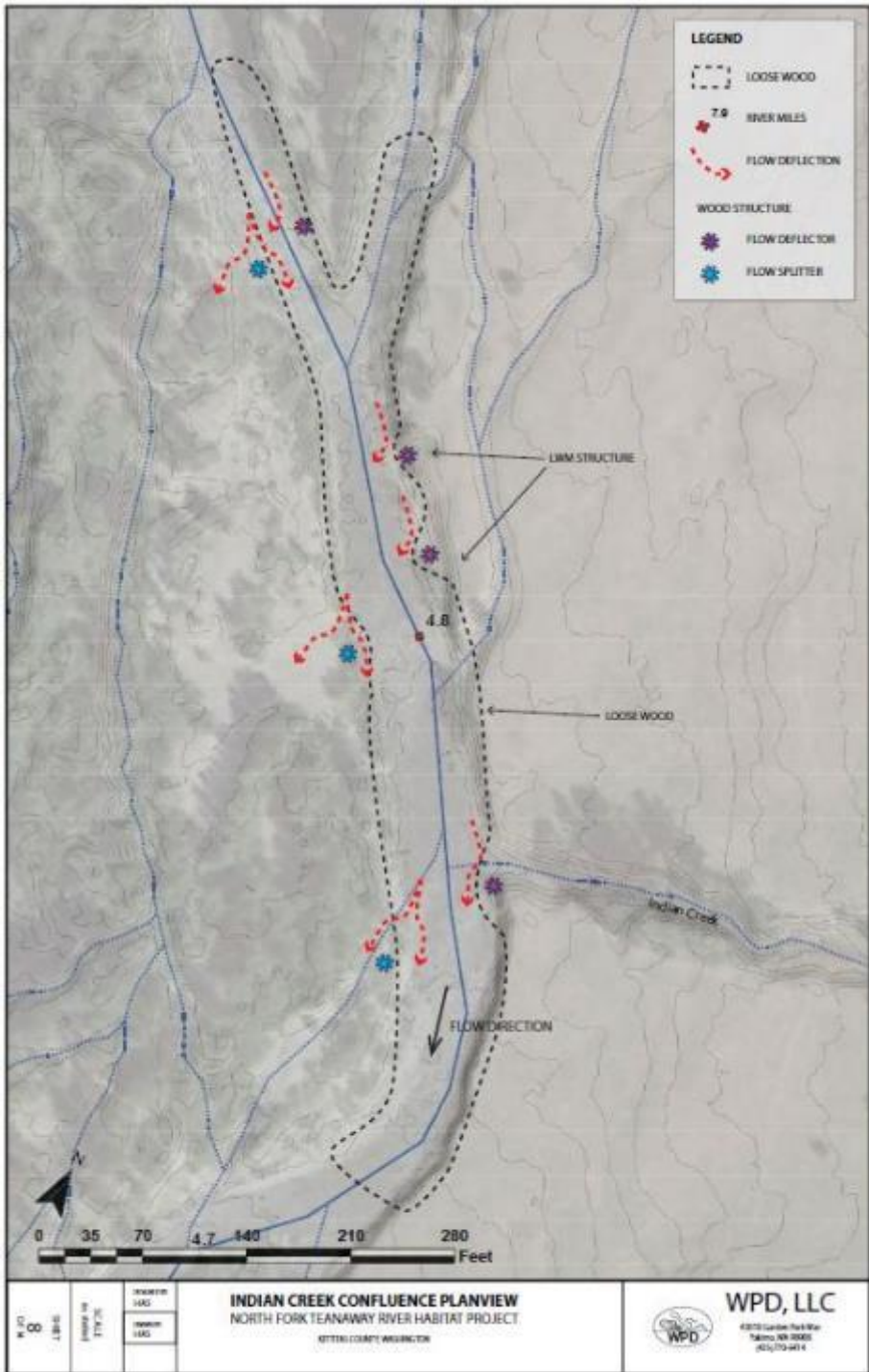
- 1) MINIMIZE EARTH-MOVING IN ALL CASES.
- 2) ALL EXCAVATION WILL BE DONE UNDER THE SUPERVISION OF SITE SUPERVISOR AS DESIGNATED BY YAKAMA NATION.
- 3) PRESERVE TOPSOIL AND REPLACE ON DISTURBED, OR BARE SURFACES AFTER CONSTRUCTION IS COMPLETED.
- 4) PLACE LOGS AGAINST THE STREAM BANK.
- 5) IF EXCAVATION IS NEEDED, EXCAVATE SLOT TO PLACE TOP LAYER OF WOOD.
- 6) PLACE SLASH AND SEDIMENT FROM SPLASH DAM AS TO FILL EMPTY SPACES. PLACE ADDITIONAL SEDIMENT FROM SPLASH DAM AS DIRECTED BY FIELD SUPERVISOR.
- 7) REPLACE SIDE CASTED TOPSOIL ON DISTURBED SURFACES.

**FLOW SPLITTER:**

- 1) EXCAVATE A TRENCH TO PLACE "KEY" LOG SLOPING DOWN-STREAM AT A 1:1 2:1 SLOPE.
- 2) PLACE "KEY" LOG AT 30°-45° ANGLE UPSTREAM
- 3) REPLACE EXCAVATED MATERIAL AND COMPACT TO SECURE "KEY" LOG.
- 4) PLACE "SWEEPER" LOGS AS DIRECTED BY FIELD SUPERVISOR. ORIENTATION, SIZE, AND FIT WILL BE FIELD FITTED BASED ON MATERIALS AND LOCAL CHANNEL GEOMETRY. INTERLOCK ROOTWADS.
- 5) PLACE SEDIMENT PILE AS DIRECTED BY FIELD SUPERVISOR.



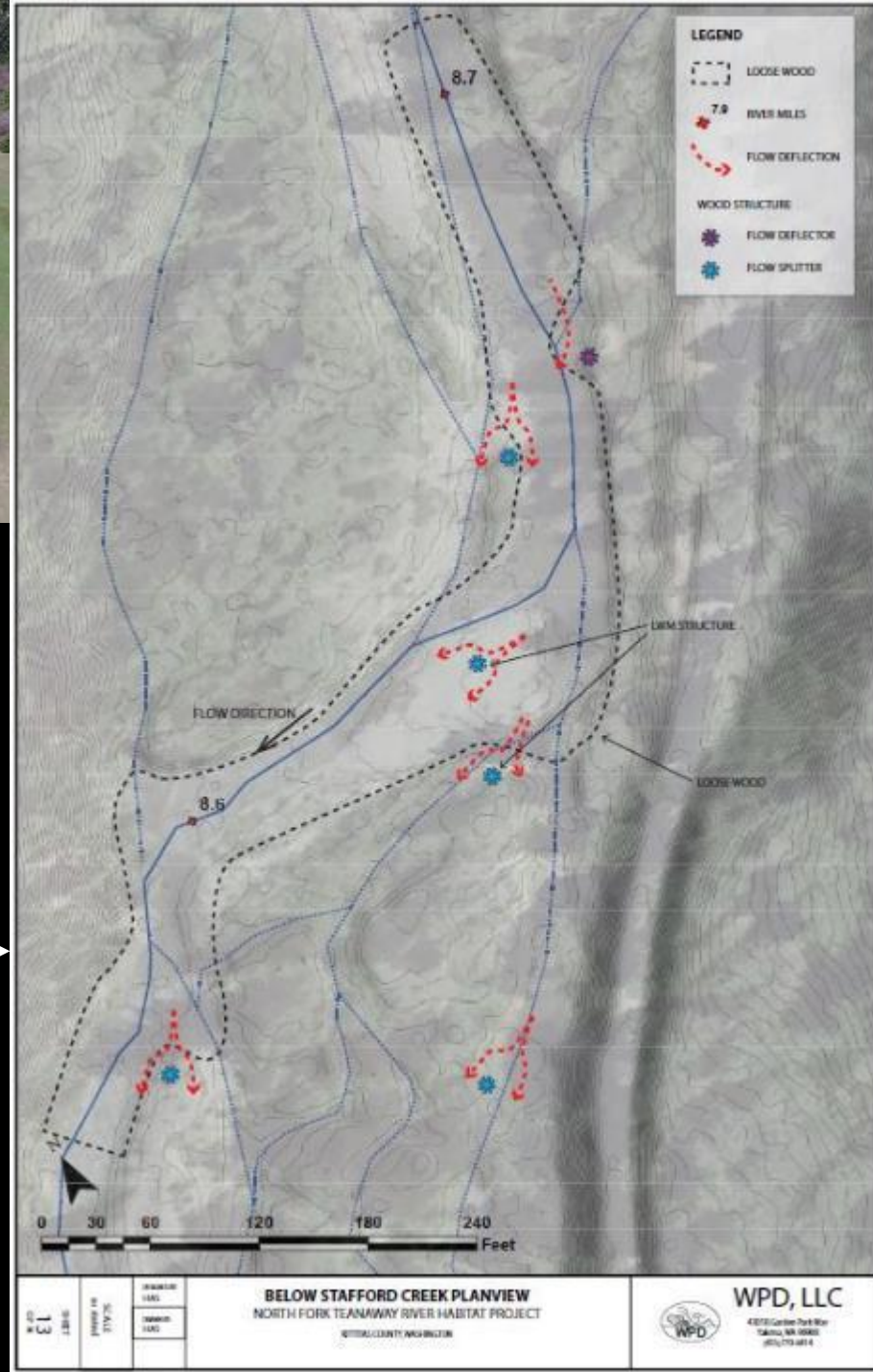




Indian Confluence Area



Stafford Confluence Area





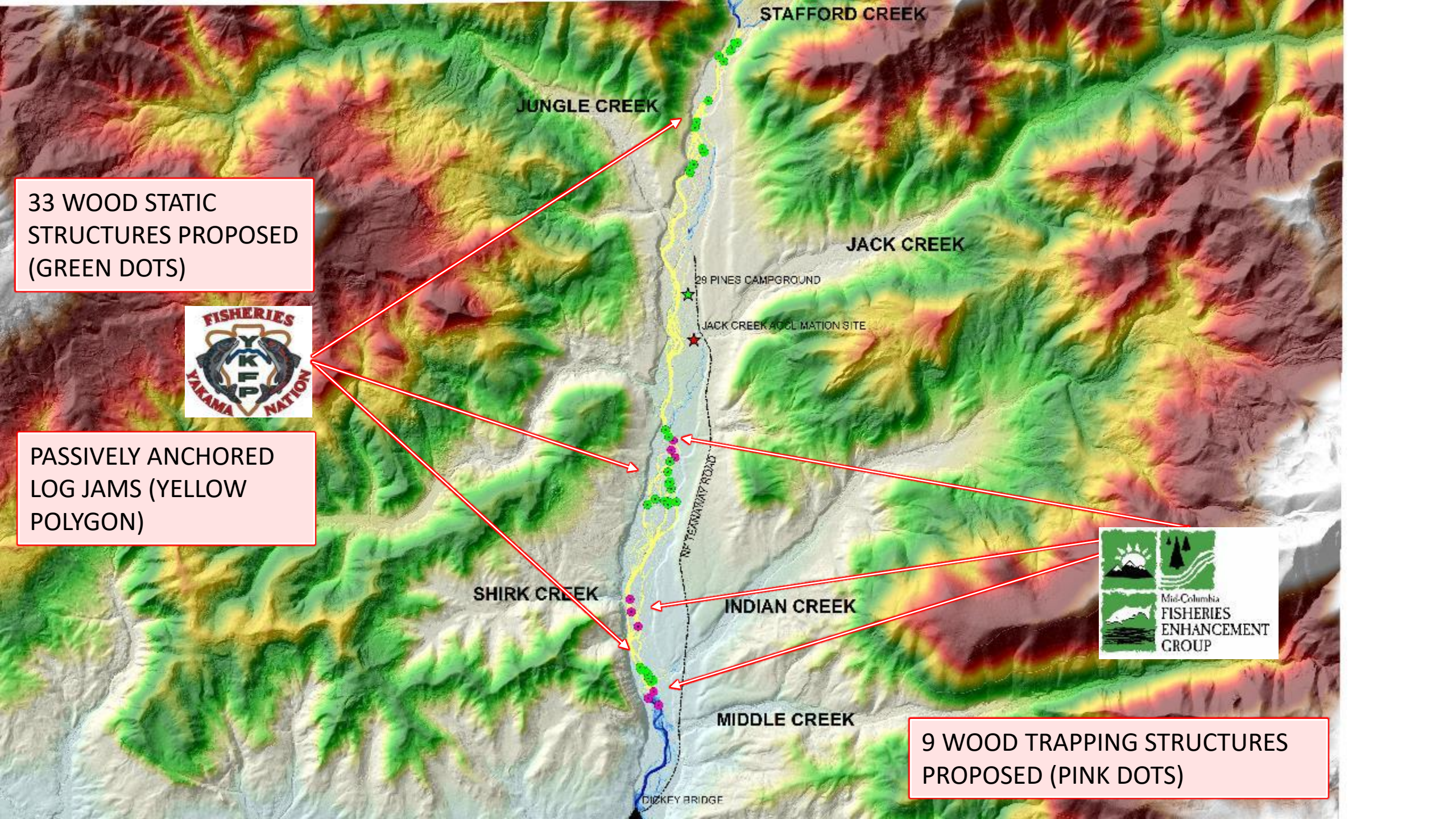
33 WOOD STATIC STRUCTURES PROPOSED (GREEN DOTS)



PASSIVELY ANCHORED LOG JAMS (YELLOW POLYGON)



9 WOOD TRAPPING STRUCTURES PROPOSED (PINK DOTS)



JUNGLE CREEK

STAFFORD CREEK

JACK CREEK

29 PINES CAMPGROUND

JACK CREEK AGGL. MATION SITE

N° TERNUTARY ROAD

SHIRK CREEK

INDIAN CREEK

MIDDLE CREEK

DIZKEY BRIDGE



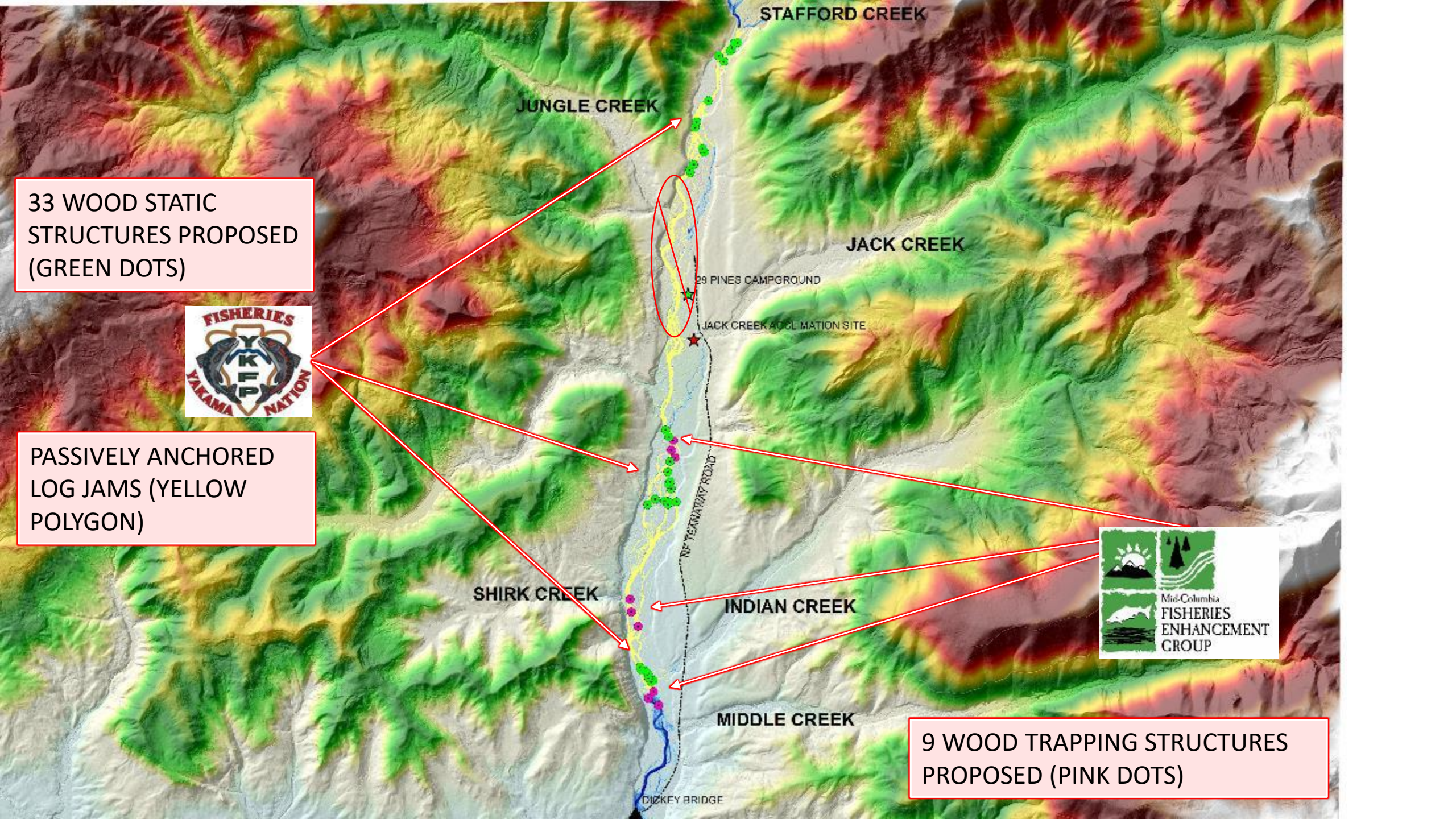
33 WOOD STATIC STRUCTURES PROPOSED (GREEN DOTS)



PASSIVELY ANCHORED LOG JAMS (YELLOW POLYGON)

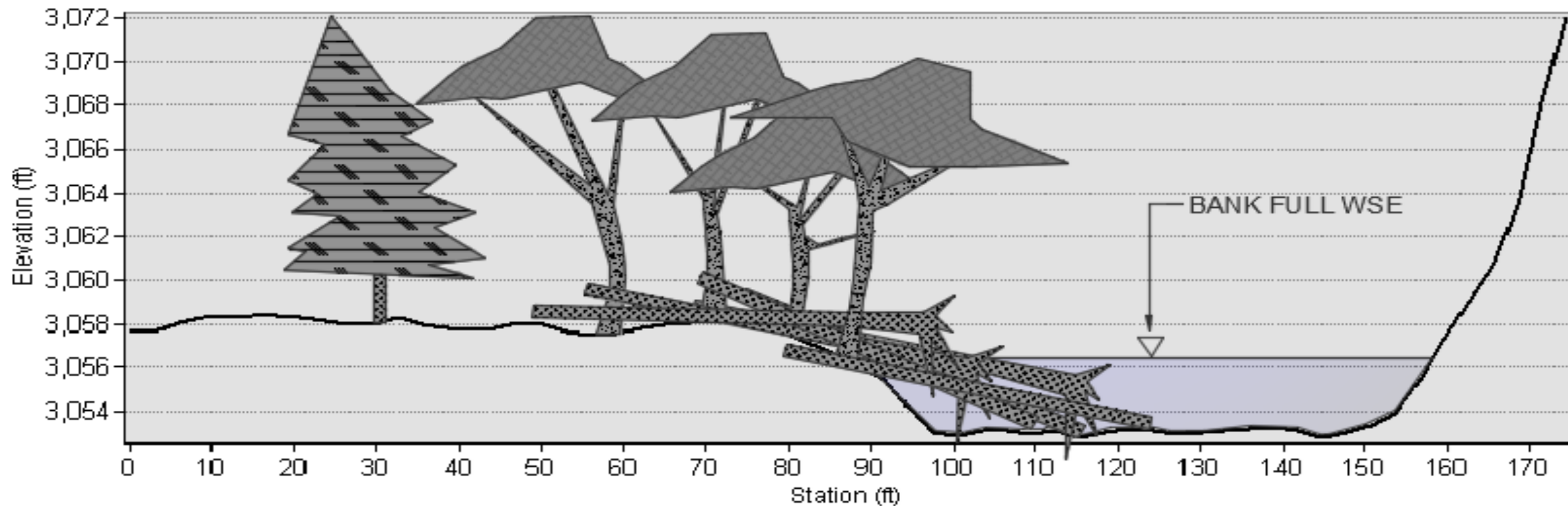


9 WOOD TRAPPING STRUCTURES PROPOSED (PINK DOTS)

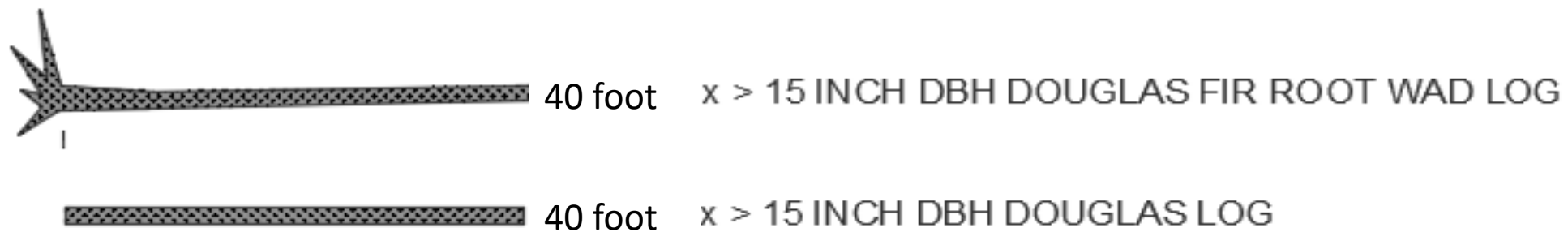




### Wood Section Concept



*Lost Meadow*





Placed wood example: Little Naches River  
- Logs Placed with Helicopter 2018





Placed wood example: Lower Swauk Creek  
- Logs Placed with Helicopter 2018







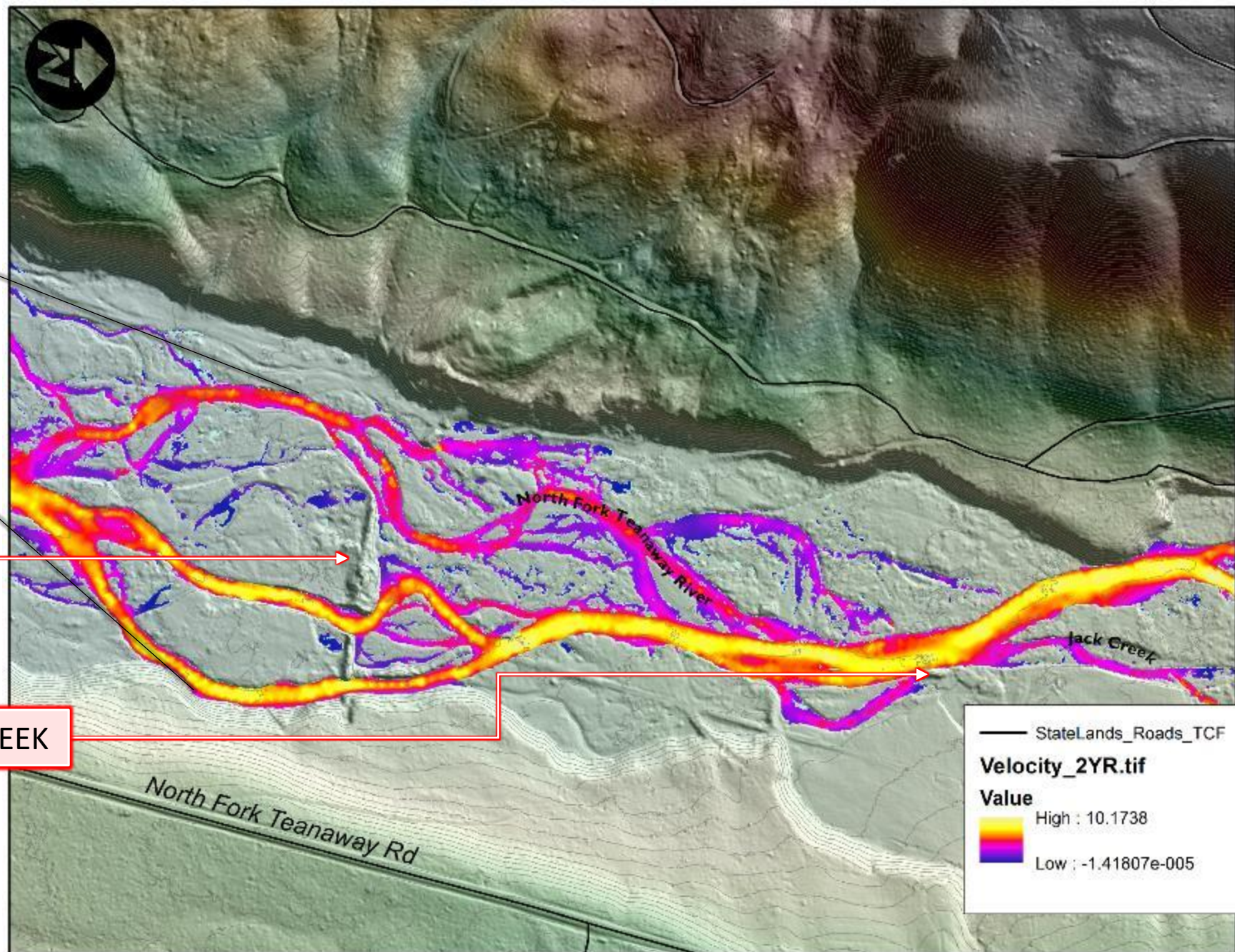
Place wood example: Little Naches River  
- Logs Placed with Helicopter 2018





Placed wood example: Lower Swauk Creek  
- Logs Placed with Helicopter 2018





PUSH UP DAM AND LEVEE AT JACK CREEK





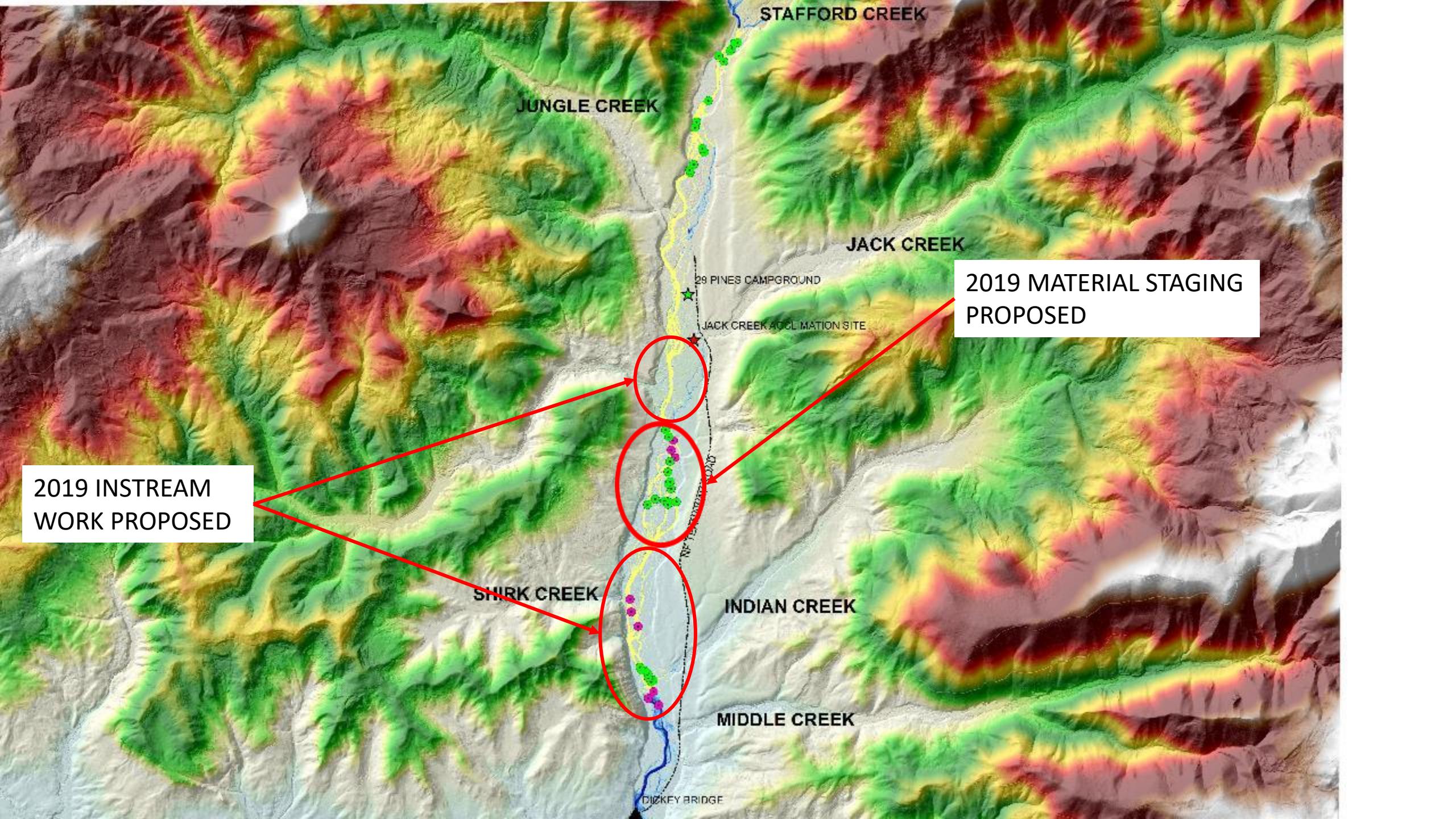
Jack Creek Confluence Area





Levee





STAFFORD CREEK

JUNGLE CREEK

JACK CREEK

2019 MATERIAL STAGING PROPOSED

2019 INSTREAM WORK PROPOSED

29 PINES CAMPGROUND

JACK CREEK ADAPTATION SITE

SHIRK CREEK

INDIAN CREEK

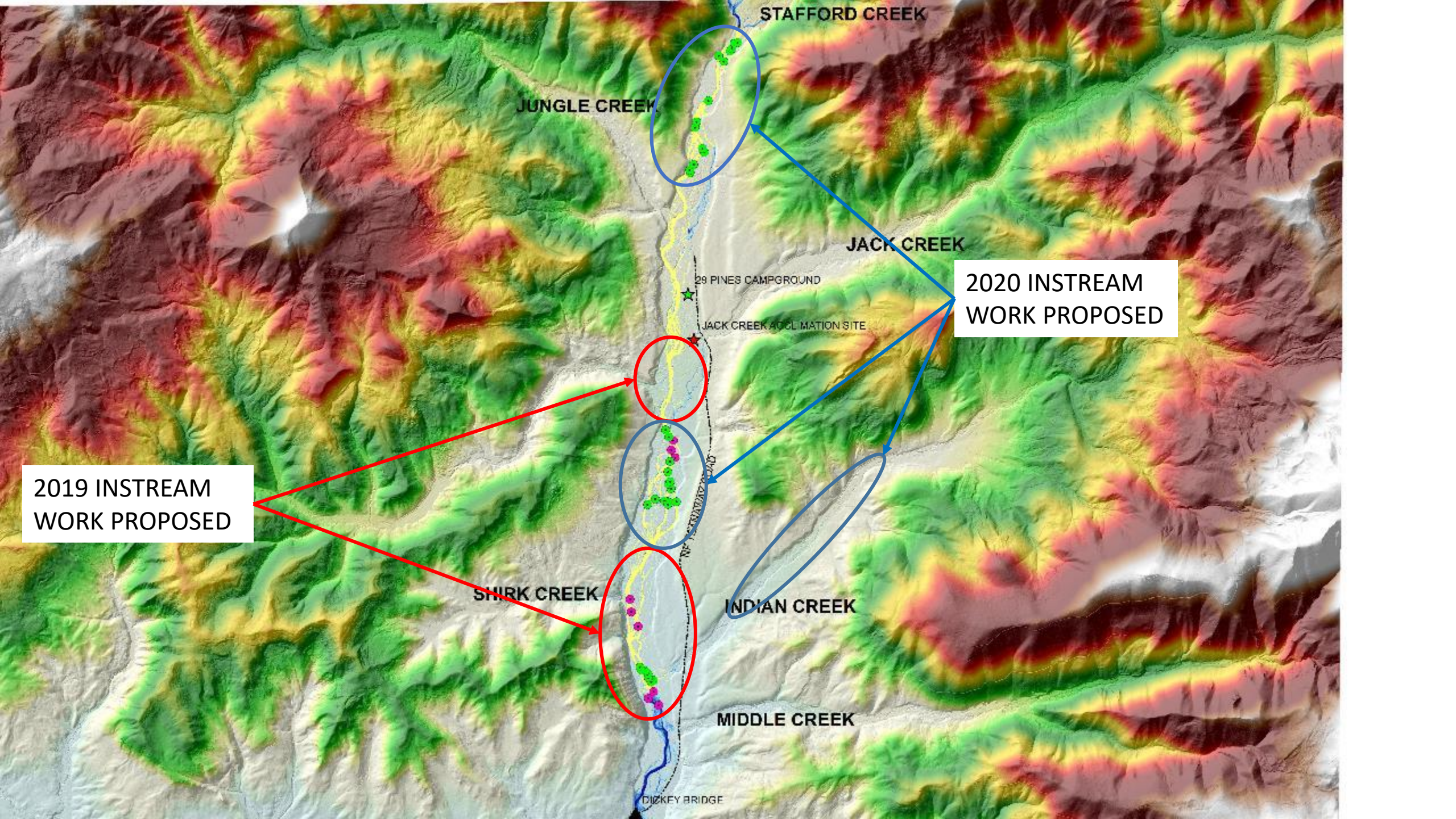
MIDDLE CREEK

DICKEY BRIDGE









STAFFORD CREEK

JUNGLE CREEK

JACK CREEK

29 PINES CAMPGROUND

JACK CREEK ADAPTATION SITE

2020 INSTREAM  
WORK PROPOSED

2019 INSTREAM  
WORK PROPOSED

SHIRK CREEK

INDIAN CREEK

MIDDLE CREEK

DIZKEY BRIDGE



# SAFETY: Downstream Landowners

- 2.5 miles upstream of the nearest downstream private landowner.
- Piles and anchors on wood trapping structures
- Wood trapping structures reduce the risk of wood being transported downstream and racking up at bridges or near the downstream properties
- Project implementation will be overseen by a qualified restoration professional to ensure proper installation.





# SAFETY: RECREATION

The structures will be located at sites that were highly visible from upstream to allow boaters or inner tubers time to avoid the structures or land safely on the banks.

Scoping signs about the project will be posted at recreational access points along the river; information about the project will also be shared with local law enforcement officials.



**NO WORK PROPOSED HERE!**



# Monitoring: Dan Scott, PhD University of WA

- Funded for 2 years by the National Stream Aquatic Ecology Center to develop a tool for restoration practitioners to monitor wood projects cheaply. Expects 10 yrs of monitoring.
- Extensive photo monitoring both ground based and with drone.
- Will perform annual physical measurements of each log jam.
- Determining how wood stability/jam characteristics, & hydrology impacts stream morphology.







- Technical Work Group Meeting
- Teanaway Advisory Committee,
- Restoration with Wood Panel
- Social media advertising
- Public meeting last night
- Signs at campgrounds ASAP

Outreach



