



Twisp River  
Twisp Ponds Left Bank  
Restoration Engineering Services

**Request for Proposals**  
January 28, 2016

**Columbia River**  
Honor. Protect. Restore.

**OFFICE**

P.O. Box 151  
401 Fort Road  
Toppenish, WA 98948

**PHONE**

(509) 865-5121

**FAX**

(509) 865-6293

**EMAIL**

[smih@yakamafish-nsn.gov](mailto:smih@yakamafish-nsn.gov)

**WEB**

[Yakamafish-nsn.gov](http://Yakamafish-nsn.gov)

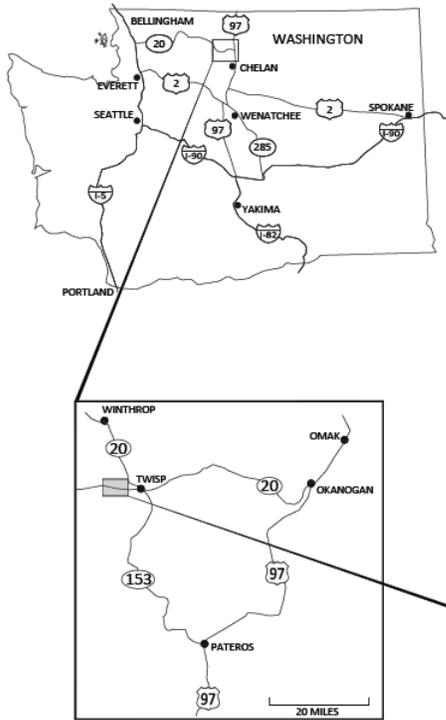
Yakama Nation Fisheries is seeking proposals from qualified engineering firms to award a construction oversight services contract in support of salmon habitat restoration activities taking place in the Twisp River near the Town of Twisp, Washington, in Okanogan County. Based upon the proposals received under this solicitation the Confederated Tribes and Bands of the Yakama Nation will award a contract to the best quality bidder for the Scope of Work described within this RFP. Services rendered under this contract will be performed between the contract start date (to be determined) and December 31, 2016.

**Project Background**

In 2015 Yakama Nation Fisheries contracted with the river restoration design firm Inter-Fluve, Inc. to develop a side channel restoration project, including the final construction drawing set, for the Twisp Ponds Left Bank project area. This RFP will result in a construction oversight contract to ensure a qualified engineer oversees construction implementation of the Twisp Ponds Left Bank Project as designed. Please refer to the attached draft construction planset for reference to the scope of the restoration activities needing oversight in 2016.

Construction is most likely to occur between late July and early September, depending upon permitting constraints and environmental conditions. Permits are still forthcoming for this project.

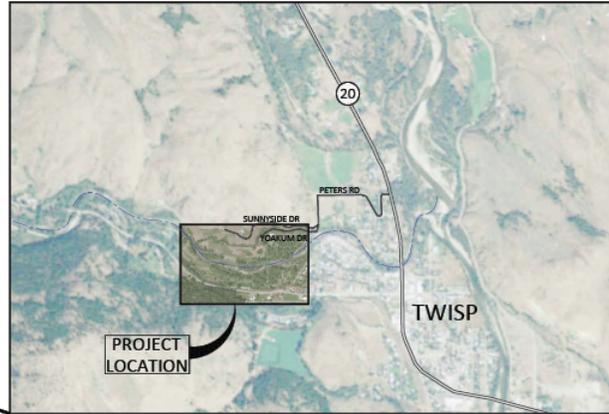
# Project Location



VICINITY MAP

# LOWER TWISP RIVER TWISP PONDS LEFT BANK

OKANOGAN COUNTY, WASHINGTON

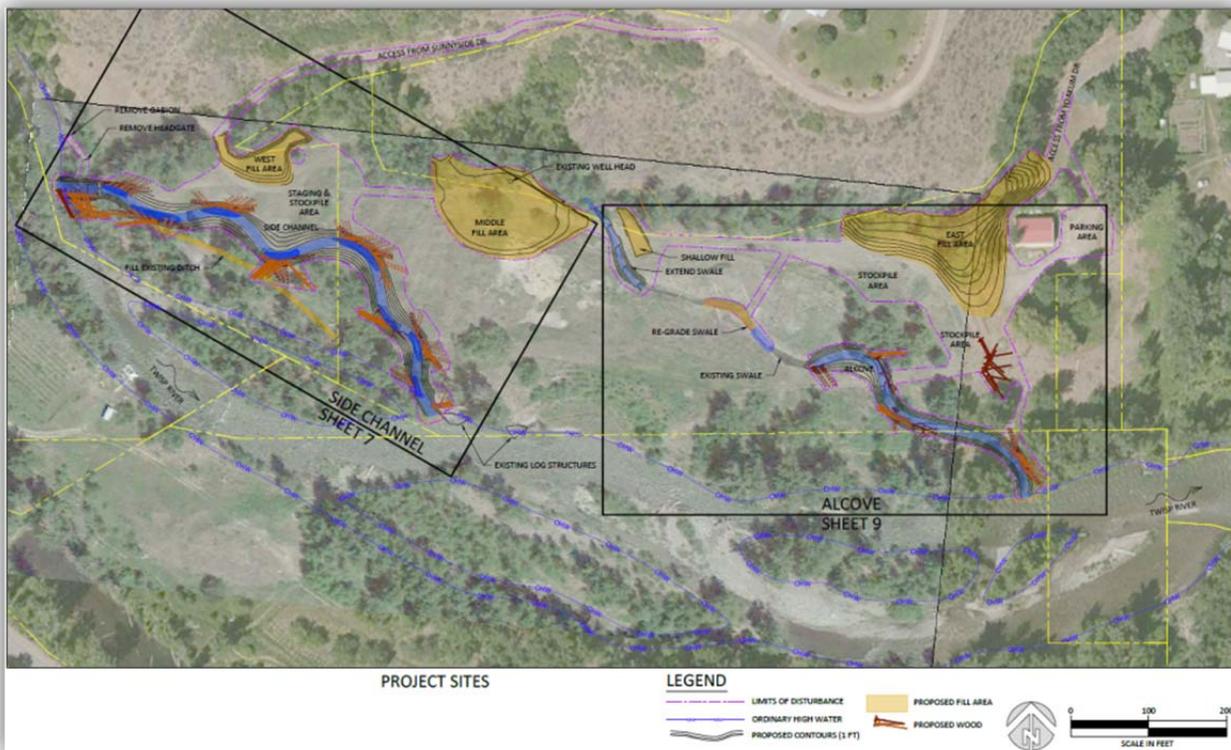


SITE MAP

SECTIONS 11-12, TOWNSHIP 33N, RANGE 21E  
WATERBODY: LOWER TWISP RIVER  
TRIBUTARY OF: METHOW RIVER

COORDINATES:  
LATITUDE: 48° 22' 15.75" N  
LONGITUDE 120° 9' 44.51" W

# Aerial Image of Project Area



PROJECT SITES

LEGEND

- LIMITS OF DISTURBANCE
- ORDINARY HIGH WATER
- PROPOSED CONTOURS (1 FT)
- PROPOSED FILL AREA
- PROPOSED WOOD



## Scope of Work

### *Phase 1 – Construction Management*

#### Task 1 – Assistance during Bidding

This task includes assistance to Yakama Nation staff with preparation of the construction bid package and review of contractor bids. The task includes any necessary pre-bid meetings with contractors at the project site or elsewhere.

#### Task 2 – Engineer's Oversight during Project Construction

This task will complete construction oversight duties for all construction projects related to the restoration designs. Contractor will work closely with selected construction contractors and Yakama Fisheries managers to implement the projects. Inspection and direction of construction activities will occur throughout the project. Any changes or in field adjustments that are required will be under the supervision of Contractor with the approval of Yakama Nation Fisheries staff. This work includes any pre-construction staking and/or identification of survey control.

A daily observation report will be produced by the contractor for all days during construction oversight activities. The report template will be provided to the contractor by the Designated Representative.

### *Phase 2 – Monitoring*

#### Task 3– Produce a Monitoring Plan

Contractor will develop a Monitoring Plan for each project that gets installed under this contract. The Monitoring Plan will document post-construction conditions and will outline future monitoring activities that will be completed. Documentation of post-construction conditions will include a description of the completed project, preparation of as-built drawings, and results of initial post-construction monitoring. This information will serve as a baseline for comparison to future monitoring data. The plan will also identify specific future monitoring activities and schedule; however, actual future monitoring activities will be conducted under a separate scope of work. Monitoring activities to be described in the plan may include photos, notes/sketches, measurements, ocular sediment data, and other activities depending on the project type and objectives. The monitoring schedule will describe the plan for regular scheduled monitoring as well as for monitoring in response to high water events. There will also be a discussion of site conditions that would trigger action items or interventions/adaptive management. The Monitoring Plan will be submitted to Yakama Fisheries staff for review, comment, and feedback. Revisions will be made as necessary to finalize the plan.

## **Bid Directions**

Please note that subcontracting will not be allowed.

Each engineering firm seeking to be eligible for a contract award under this Request for Proposals must submit two hardcopies of their proposal in writing to:

Yakama Nation Fisheries  
Attn: Jackie Olney  
PO Box 151  
401 Fort Road (if using a shipping service)  
Toppenish, WA 98948

Proposals must be received by Close of Business, Wednesday, February 24, 2016. Only hand deliveries and/or mail or parcel delivery service submittals will be accepted. Please clearly state "Twisp Ponds Left Bank Oversight RFP" on the shipping envelope and the cover letter of the proposal. It is recommended that all shipping and/or delivery confirmation receipts are retained past the proposal due date to ensure proof of submission.

Each proposal must include a roster of qualified staff proposed to work under this contract, including resumes. Please also include a detailed cost proposal based upon the Scope of Work provided, a company fee schedule detailing all billing rates, a schedule/timeline proposal for completing the described tasks by December 31, 2016, and certify the cost proposal as being valid for at least 150 days.

### **Project related questions should be directed to:**

Hans Smith, UCHRP Habitat Biologist  
Phone: 509-996-5005  
E-mail: [smih@yakamafish-nsn.gov](mailto:smih@yakamafish-nsn.gov)

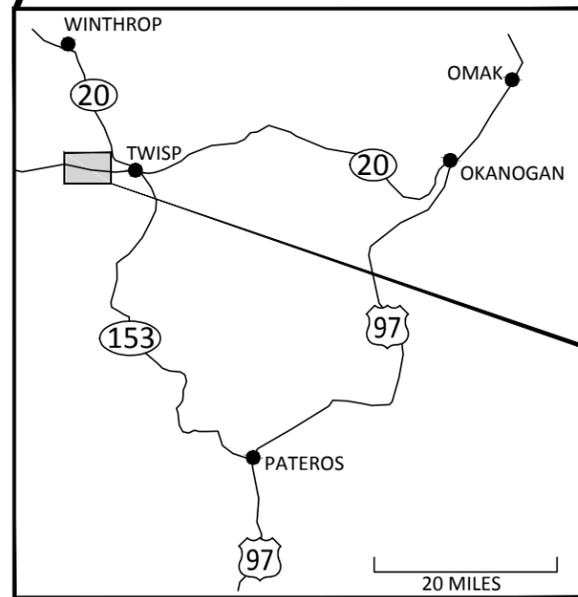
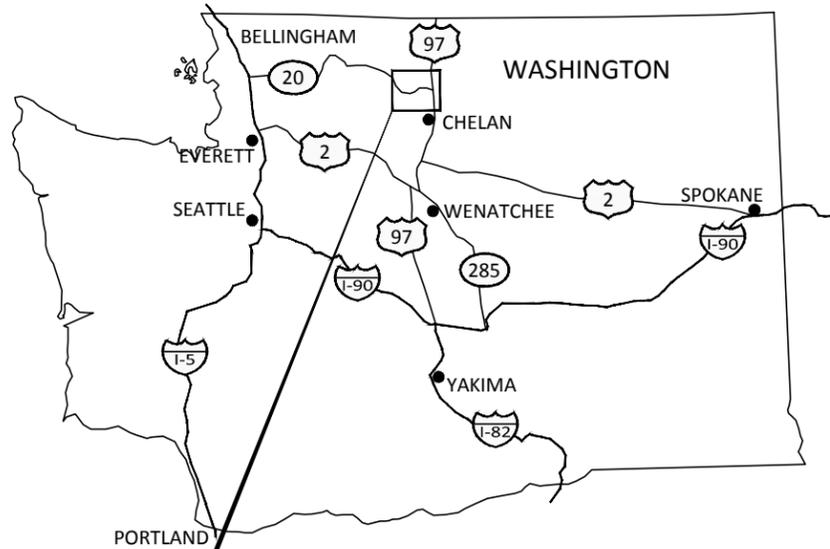
### **Limitations**

The Yakama Nation reserves the right to accept or reject any and all of the proposals received as a result of this request, or to cancel in part or entirely this request if it is in the best interest of the Yakama Nation to do so. This request does not commit the Yakama Nation to pay any costs incurred in the preparation of a proposal.

The contractor shall furnish all supervision, labor, equipment and tools necessary to complete the work as outlined in the Scope of Work.

# LOWER TWISP RIVER TWISP PONDS LEFT BANK

OKANOGAN COUNTY, WASHINGTON

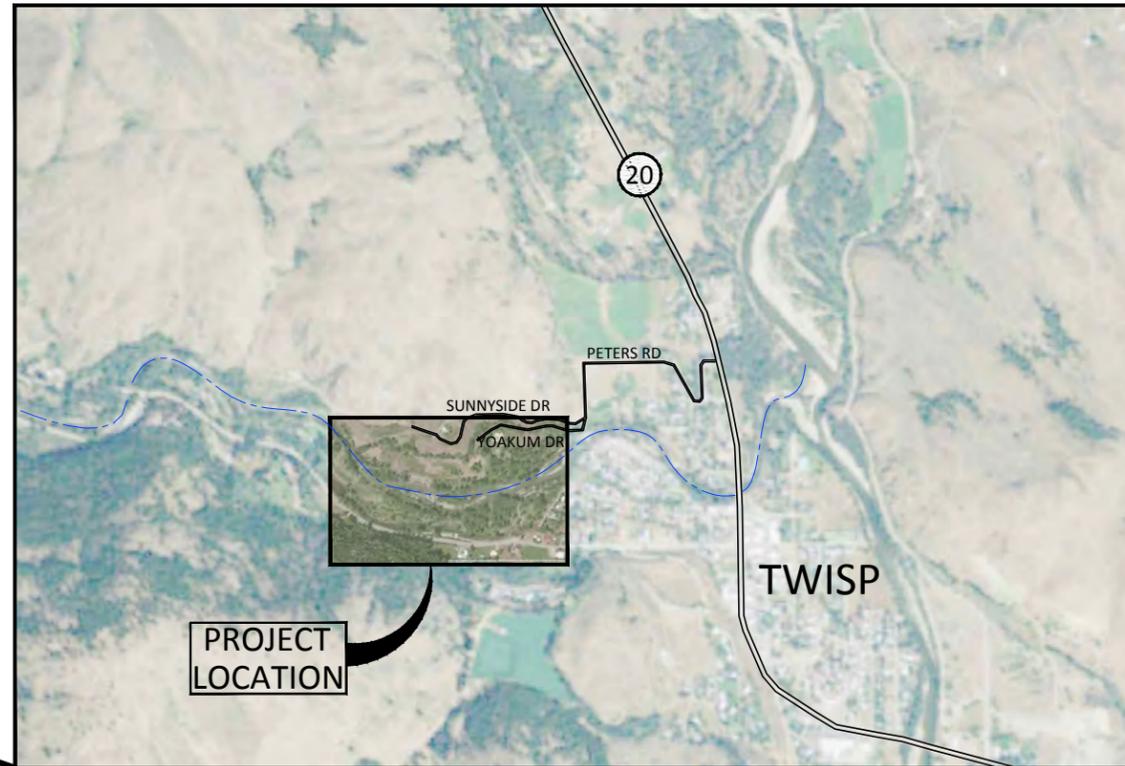


VICINITY MAP

COORDINATES:  
LATITUDE 48° 22' 15.75" N  
LONGITUDE 120° 9' 44.51" W

SECTIONS 11-12, TOWNSHIP 33N, RANGE 21E

WATERBODY: LOWER TWISP RIVER  
TRIBUTARY OF: METHOW RIVER



SITE MAP

## SHEET INDEX

1. COVER SHEET, SHEET INDEX, VICINITY MAPS
2. EXISTING CONDITIONS, PROPERTY OWNERSHIP, ACCESS
3. PROPOSED CONDITIONS, PROJECT SITES OVERVIEW
4. GENERAL NOTES
5. EROSION CONTROL NOTES
6. EROSION CONTROL NOTES
7. SIDE CHANNEL PLAN AND PROFILE
8. SIDE CHANNEL CROSS SECTIONS
9. ALCOVE PLAN AND PROFILE
10. ALCOVE CROSS SECTIONS
11. DETAILS

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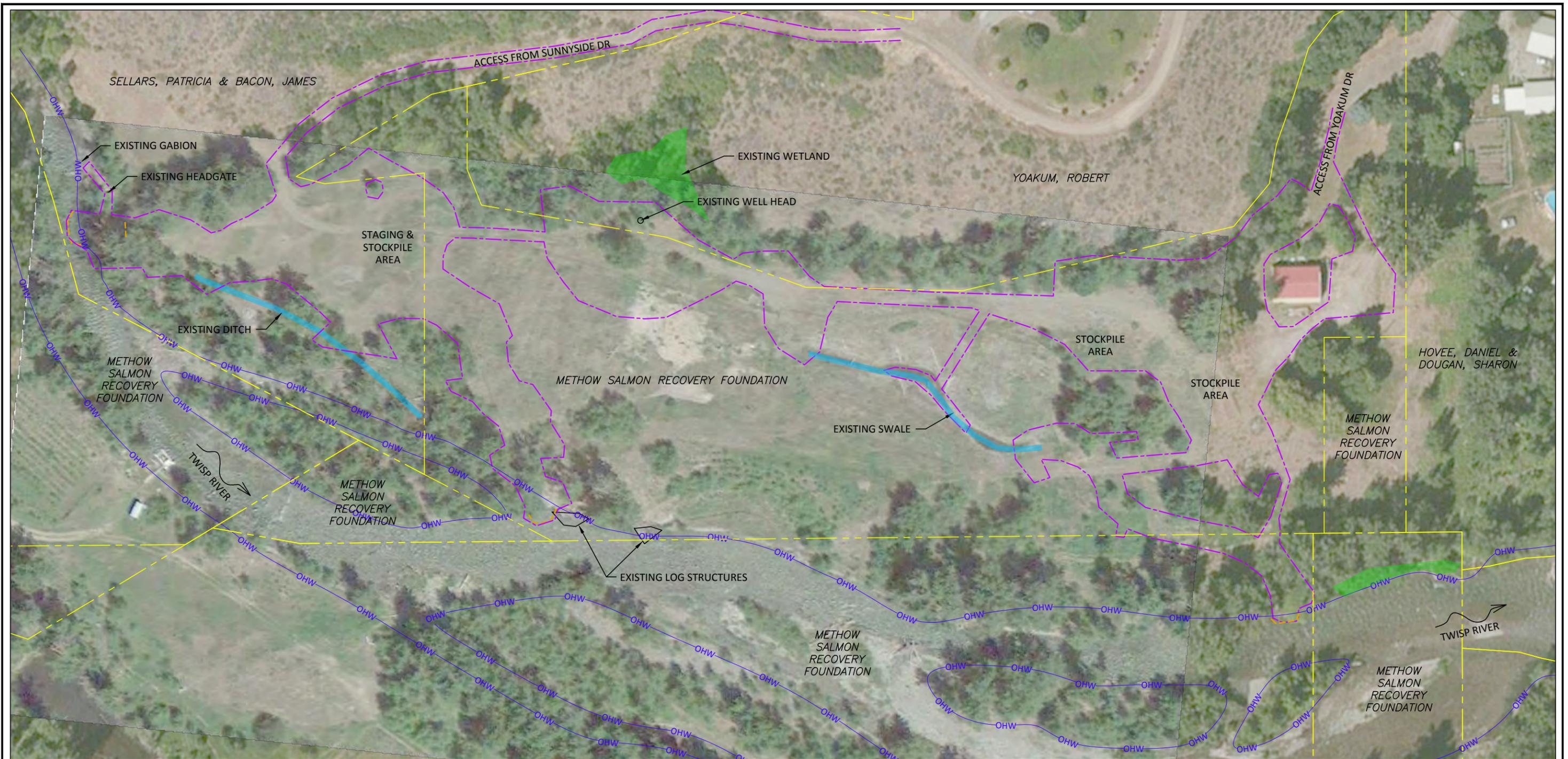
MM DRAWN	MM DESIGNED	MB CHECKED
GJ APPROVED	1/5/16 DATE	TWISP PONDS PROJECT

CONFEDERATED BANDS AND TRIBES OF THE YAKAMA NATION  
LOWER TWISP RIVER  
TWISP PONDS LEFT BANK



501 Portway Avenue, Suite 101  
Hood River, OR 97031  
541.386.9003  
www.interfluve.com

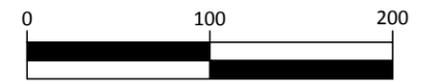
COVER SHEET  
SHEET INDEX  
VICINITY MAPS



EXISTING CONDITIONS

LEGEND

- LIMITS OF DISTURBANCE
- ORDINARY HIGH WATER
- WETLAND
- PROPERTY LINE (OWNER)



SCALE IN FEET

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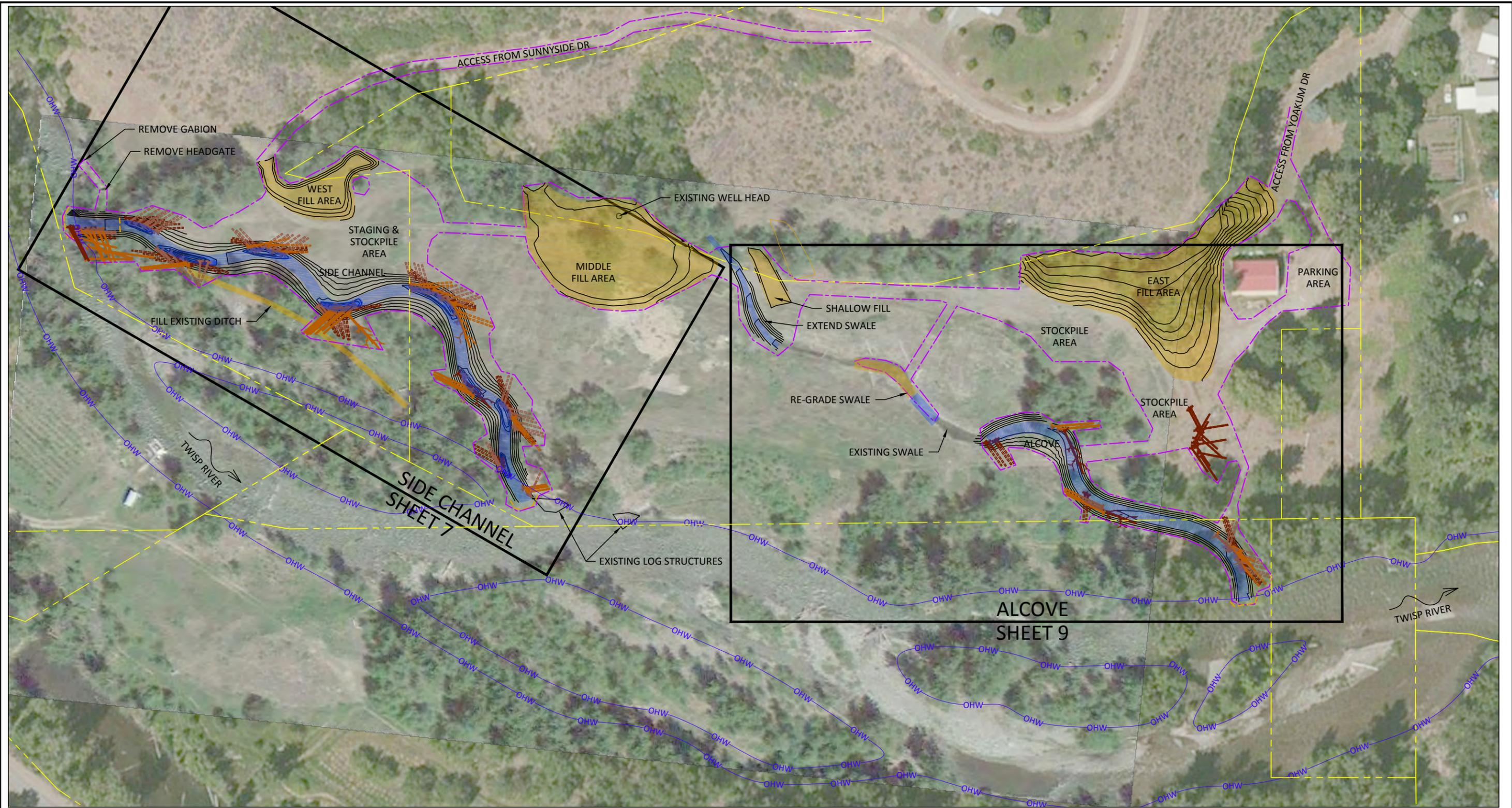
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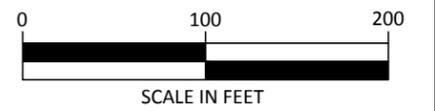
EXISTING CONDITIONS  
 PROPERTY OWNERSHIP  
 SITE ACCESS AND PROJECT LIMITS



**PROJECT SITES**

**LEGEND**

- LIMITS OF DISTURBANCE
- ORDINARY HIGH WATER
- PROPOSED CONTOURS (1 FT)
- PROPOSED FILL AREA
- PROPOSED WOOD



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**PROPOSED CONDITIONS**  
**PROJECT SITES OVERVIEW**

IT IS STRONGLY SUGGESTED THAT THE CONTRACTOR ATTEND A PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER AND OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

IN CASE OF DISCREPANCY, BETWEEN NOTES, LOCAL REGULATIONS, OR OTHER CONTRACT DOCUMENTATION, CONTRACTOR SHALL OBTAIN CLARIFICATION/DIRECTION FROM OWNER.

### EXISTING DATA

TOPOGRAPHIC SURVEY COLLECTED BY INTER-FLUVE, INC. BY RTK GPS AND TOTAL STATION IN OCTOBER AND DECEMBER 2013 AND JULY 2015. REFERENCED TO NAD83 WASHINGTON STATE PLANE, NORTH ZONE US FEET NAVD 88.

PROPERTY BOUNDARIES PROVIDED BY OKANOGAN COUNTY, 2015.

WETLAND BOUNDARIES DISPLAYED IN THIS SET ARE THE RESULT OF A WETLAND ASSESSMENT PERFORMED BY INTER-FLUVE, INC. IN OCTOBER 2013.

THE ORDINARY HIGH WATER (OHW) AND APPROXIMATE LOW WATER LINES DISPLAYED IN THE DESIGN PACKAGE WERE DELINEATED BY INTER-FLUVE STAFF IN 2014 AND 2015, AND ARE BASED UPON ANALYSIS, MODELING AND BEST PROFESSIONAL JUDGEMENT.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (4.1.0). MODEL CALIBRATED USING SURVEYED WATER SURFACE ELEVATIONS AND EXISTING HIGH WATER MARKS.

### SOILS

TWISP RIVER GRAVEL AND FLOODPLAIN SOILS.

### UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES. THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO COST TO THE OWNER.

### WDFW IN-WATER WORK PERIODS

WORK SHALL OCCUR DURING THE PERMITTED IN-WATER WORK PERIOD STATED IN THE HYDRAULIC PROJECT APPROVAL.

### FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE SUPERVISED BY A QUALIFIED FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONID FISHES FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF WATER AND HELD WITHIN NO LONGER THAN 10 MINUTES.

CAPTURED FISHES SHALL BE IMMEDIATELY RELEASED INTO THE RIVER.

### TREE SALVAGE

ALL SAPLING AND TREES TO BE REMOVED FOR ACCESS WILL BE APPROVED AND CLEARLY MARKED BY THE OWNER'S REPRESENTATIVE.

ALL REMOVED VEGETATION SHALL BE INCORPORATED INTO LOG JAM STRUCTURES AS DIRECTED BY THE OWNER'S REPRESENTATIVE. IF EXCESS MATERIAL NEEDS DISPOSAL OUTSIDE OF CHANNEL WORK, IT SHALL BE DISTRIBUTED ON THE FLOODPLAIN AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTS INTACT AND UTILIZED IN THE CHANNEL CONSTRUCTION AS DIRECTED BY OWNER'S REPRESENTATIVE.

### LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE PRESERVED AND UNDISTURBED. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

KEEP OUT OF DRIP LINE OF ALL PRESERVED EXISTING TREES .

### CULTURAL RESOURCES

IF ANY ARCHAEOLOGICAL RESOURCES AND/OR ARTIFACTS ARE ENCOUNTERED DURING CONSTRUCTION ALL CONSTRUCTION ACTIVITY SHALL IMMEDIATELY CEASE AND THE OWNER SHALL BE CONTACTED.

### CONSTRUCTION ACCESS

THE CONTRACTOR IS ADVISED THAT ACCESS TO THE SITE WILL BE BY RURAL ROADS OF LIMITED WIDTH.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING ANY REQUIRED TRAFFIC CONTROL INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.

ALL EQUIPMENT, MATERIALS AND PERSONNEL SHALL REMAIN WITHIN THE LIMITS OF DISTURBANCE.

THE CONTRACTOR SHALL KEEP THE WORK AREAS IN A NEAT AND CLEAN CONDITION FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.

### CONSTRUCTION STAKING

CONTRACTOR SHALL STAKE PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

### CONSTRUCTION MATERIALS

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOTWADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

EXCAVATED MATERIALS SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION WITHIN THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ANY PERMITS AND FEES REQUIRED FOR LEGAL DISPOSAL.

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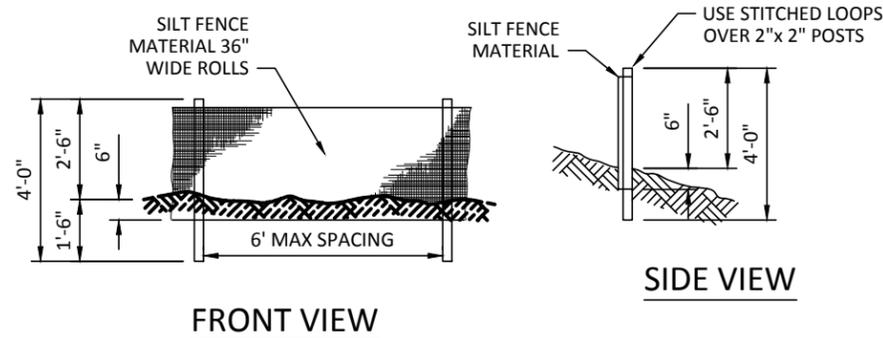
CONFEDERATED BANDS AND TRIBES OF THE YAKAMA NATION  
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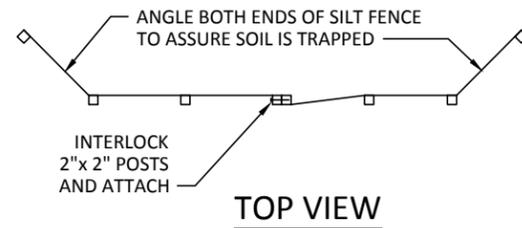
GENERAL NOTES





FRONT VIEW

SIDE VIEW

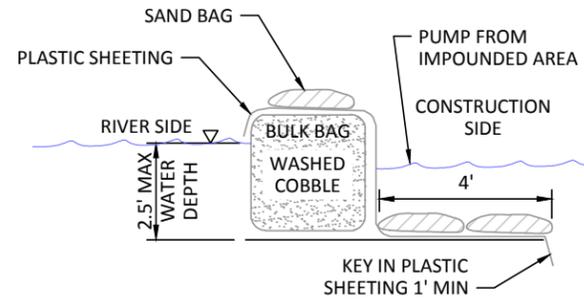


TOP VIEW

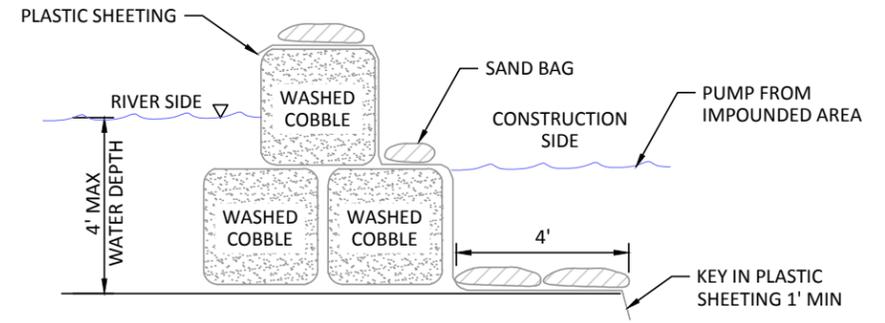
1  
6 TYPICAL DETAIL - SILT FENCE  
NOT TO SCALE

NOTES:

1. THE SILT FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, SILT FENCE SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP AND INTERLOCK TWO POSTS WITH ATTACHED FABRIC AS REQUIRED TO MEET APPLICABLE REGULATIONS.
2. THE SILT FENCE IS TO BE INSTALLED AT LOCATIONS SHOWN ON THE PLAN ALONG THE DOWNHILL PERIMETER OF CONSTRUCTION AREAS. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE SILT FENCE SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM SILT FENCE INSTALLATION SHALL BE BACK-FILLED AND COMPACTED ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY SILT FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCHES X 2 INCHES POST INSTALLATION.
5. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.



SECTION - WATER DEPTHS LESS THAN 2.5'



SECTION - WATER DEPTHS GREATER THAN 2.5'

2  
6 TYPICAL DETAIL - TEMPORARY COFFERDAM  
NOT TO SCALE

BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED COBBLE, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
2. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM.
3. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4- FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS. ALL SANDBAGS SHALL BE FILLED WITH WASHED PEA GRAVEL.
4. THE CONSTRUCTION SIDE EDGE OF PLASTIC SHEETING SHALL BE TOED INTO THE CHANNEL BED MINIMUM 1-FT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
5. THE TERMINAL ENDS OF BULK BAG COFFERDAM, WHERE IT CONNECTS TO CHANNEL BANK OR HIGH GROUND, SHALL BE SEALED WITH PLASTIC SHEETING AND STANDARD SANDBAGS.
6. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
7. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.
8. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BULK BAG FILL (WASHED COBBLE) AND SANDBAG FILL (WASHED PEA GRAVEL) SHALL BE DISPOSED OF ON SITE. BAGS SHALL BE REMOVED FROM THE SITE ONCE CONSTRUCTION IS COMPLETED.
9. MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED COBBLE PLACEMENT, MAINTENANCE AND REMOVAL OF ALL MATERIALS SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.
10. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.

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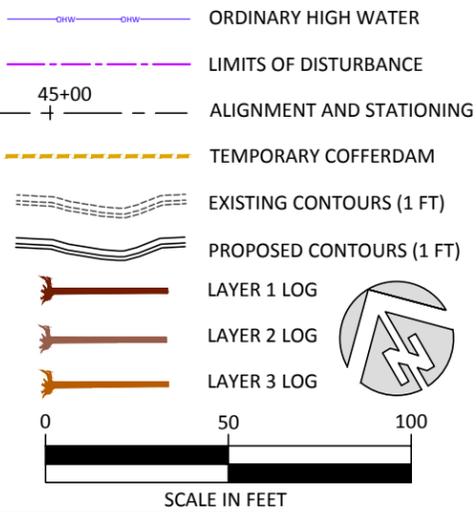
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EROSION CONTROL

# LEGEND

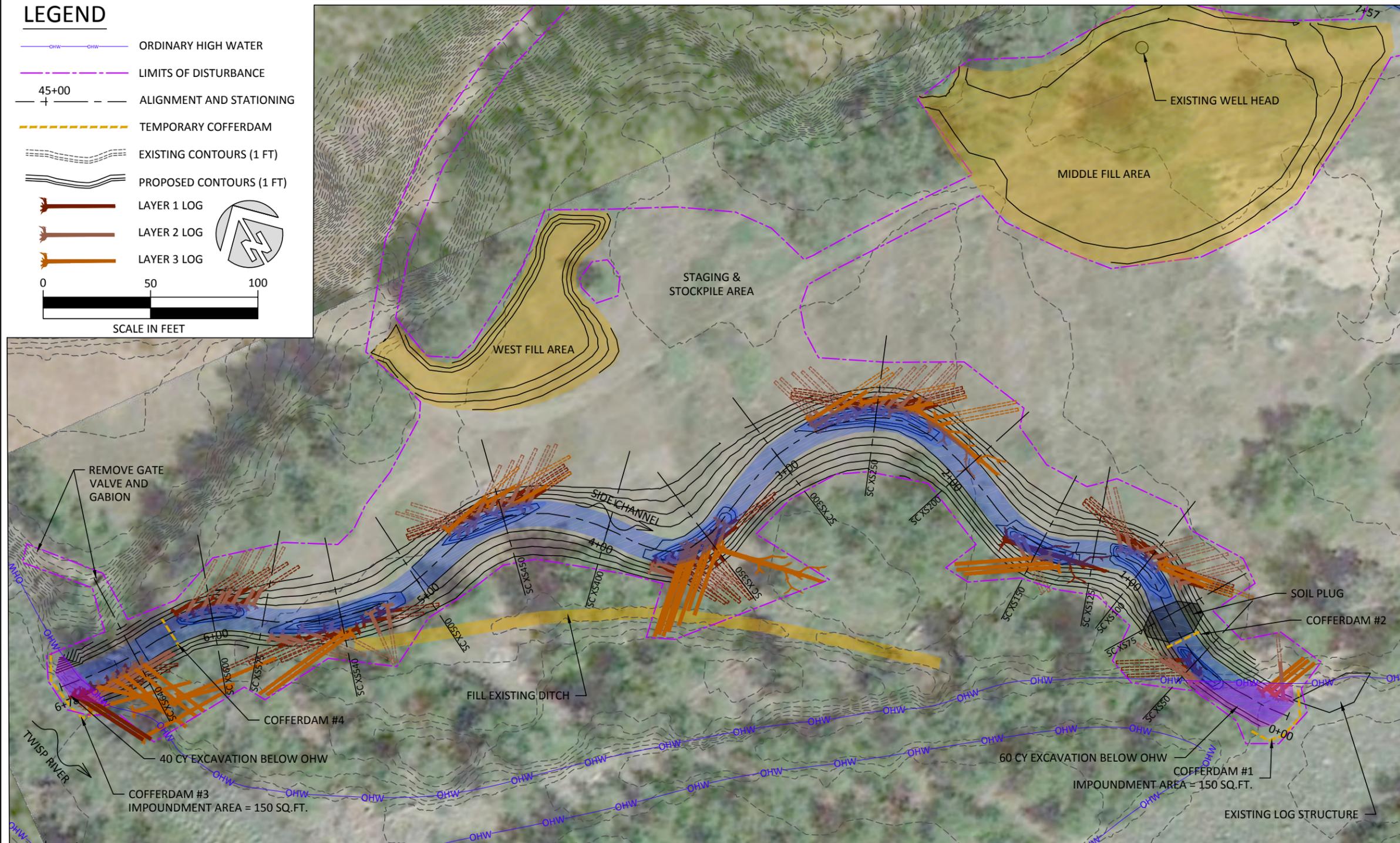


## CONSTRUCTION MATERIALS

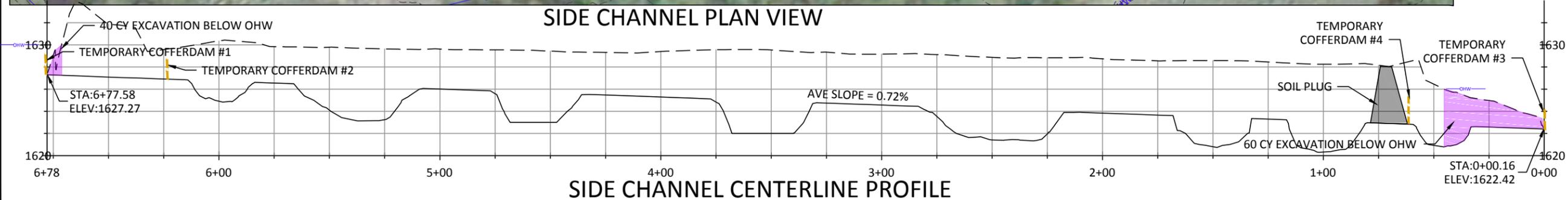
ITEM	QUANTITY
COFFERDAM	110 FEET
LOGS WITH ROOTS	138
SALVAGED TREES	3
SLASH	200 CY
EXCAVATION	2600 CY
WEST FILL	320 CY
MIDDLE FILL	940 CY
DITCH FILL	100 CY

## RECOMMENDED CONSTRUCTION SEQUENCE

1. REMOVE GABION AND HEADGATE.
2. AT SIDE CHANNEL INLET AREA, INSTALL FISH EXCLUSION NET AND COFFERDAM #1.
3. STARTING AT UPSTREAM END, CONSTRUCT SIDE CHANNEL AND LOG STRUCTURES WITHIN OHW, AND CONTINUE CHANNEL CONSTRUCTION FOR A SHORT DISTANCE DOWNSTREAM.
4. INSTALL COFFERDAM #2.
5. REMOVE COFFERDAM #1 (FISH SCREEN REMAINS).
6. INSTALL FISH EXCLUSION NET AND COFFERDAM #3.
7. STARTING AT DOWNSTREAM END, CONSTRUCT SIDE CHANNEL AND LOG STRUCTURES WITHIN OHW, AND CONTINUE CHANNEL CONSTRUCTION FOR A SHORT DISTANCE UPSTREAM.
8. INSTALL COFFERDAM #4.
9. REMOVE COFFERDAM #3 (FISH SCREEN REMAINS).
10. STARTING AT DOWNSTREAM END, CONTINUE CHANNEL CONSTRUCTION UPSTREAM OF COFFERDAM #2. A TEMPORARY SOIL PLUG OF EXISTING GROUND WILL REMAIN IN PLACE AS A WATER BAR. PUMP CONSTRUCTION WATER TO INFILTRATION AREAS.
11. PLACE FILL AT DESIGNATED ON-SITE FILL AREAS. STABILIZE COMPLETED SLOPES.
12. WHEN SIDE CHANNEL IS COMPLETE, REMOVE SOIL PLUG.
13. GRADUALLY REMOVE UPSTREAM COFFERDAM (#4) TO RINSE CHANNEL. PUMP CHANNEL RINSE WATER FROM DOWNSTREAM POOL (STA 1+00) TO INFILTRATION AREAS.
14. WHEN RINSE WATER RUNS CLEAN, REMOVE COFFERDAM #2. COMPLETE REMOVAL OF COFFERDAM #4.
15. REMOVE FISH EXCLUSION.



**SIDE CHANNEL PLAN VIEW**



**SIDE CHANNEL CENTERLINE PROFILE**

NO.	BY	DATE	REVISION DESCRIPTION

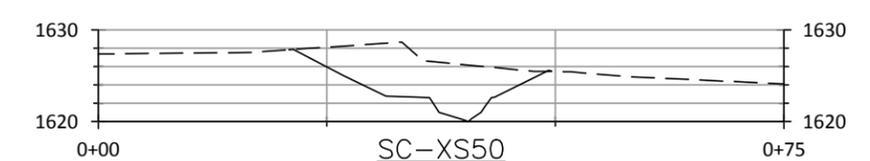
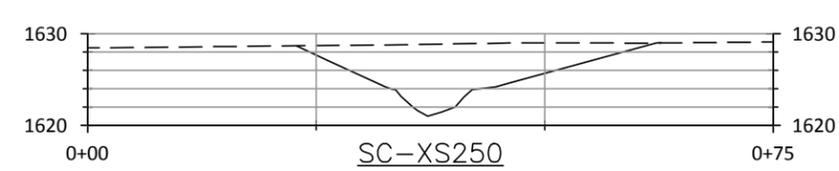
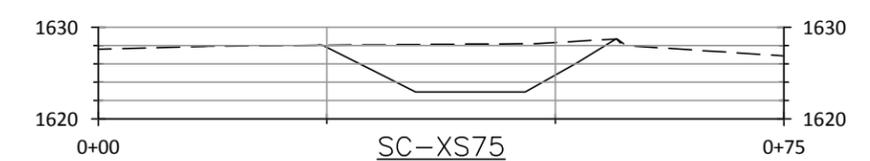
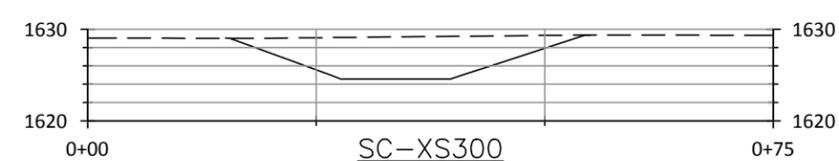
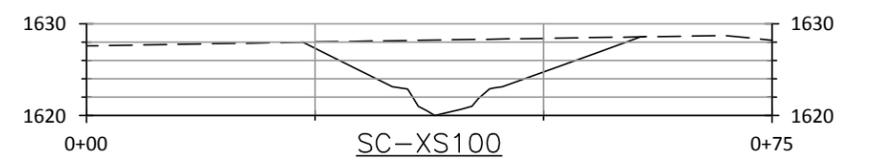
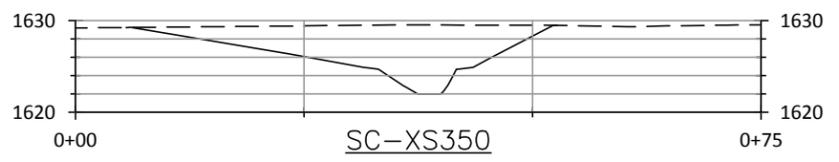
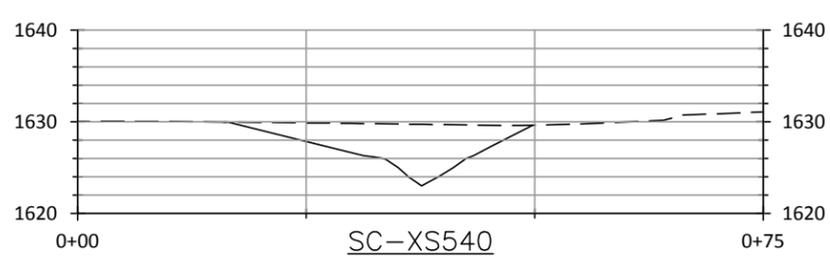
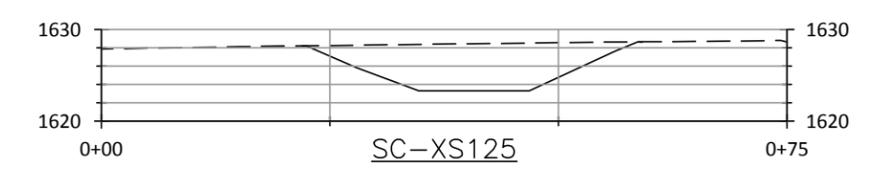
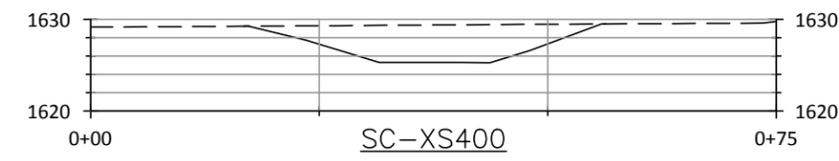
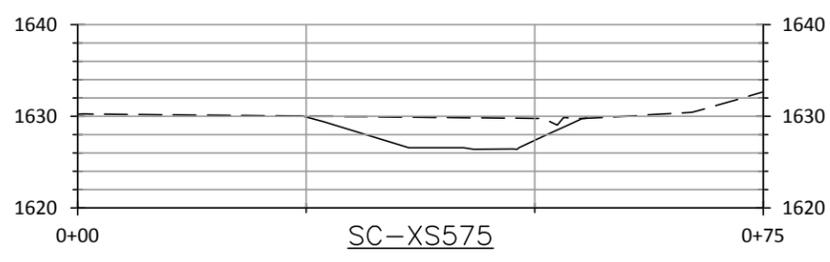
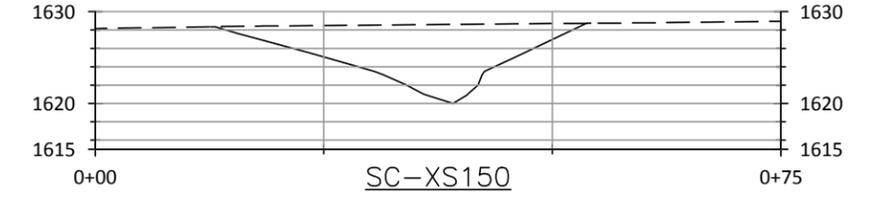
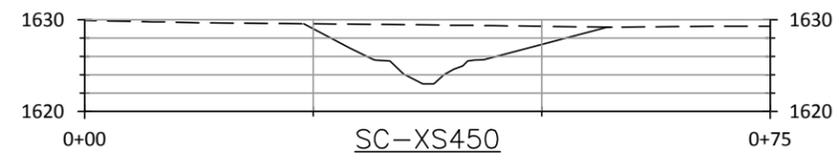
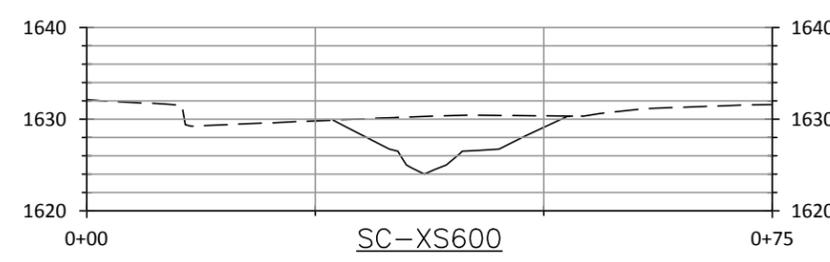
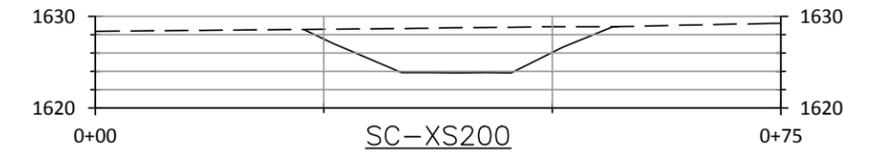
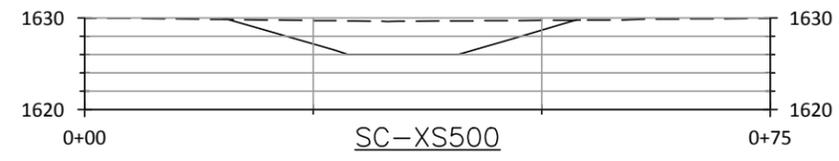
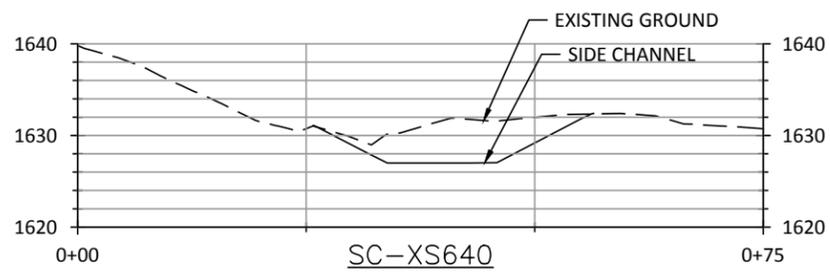
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**SIDE CHANNEL  
 PLAN AND PROFILE**



SECTIONS ARE VIEW LOOKING DOWNSTREAM

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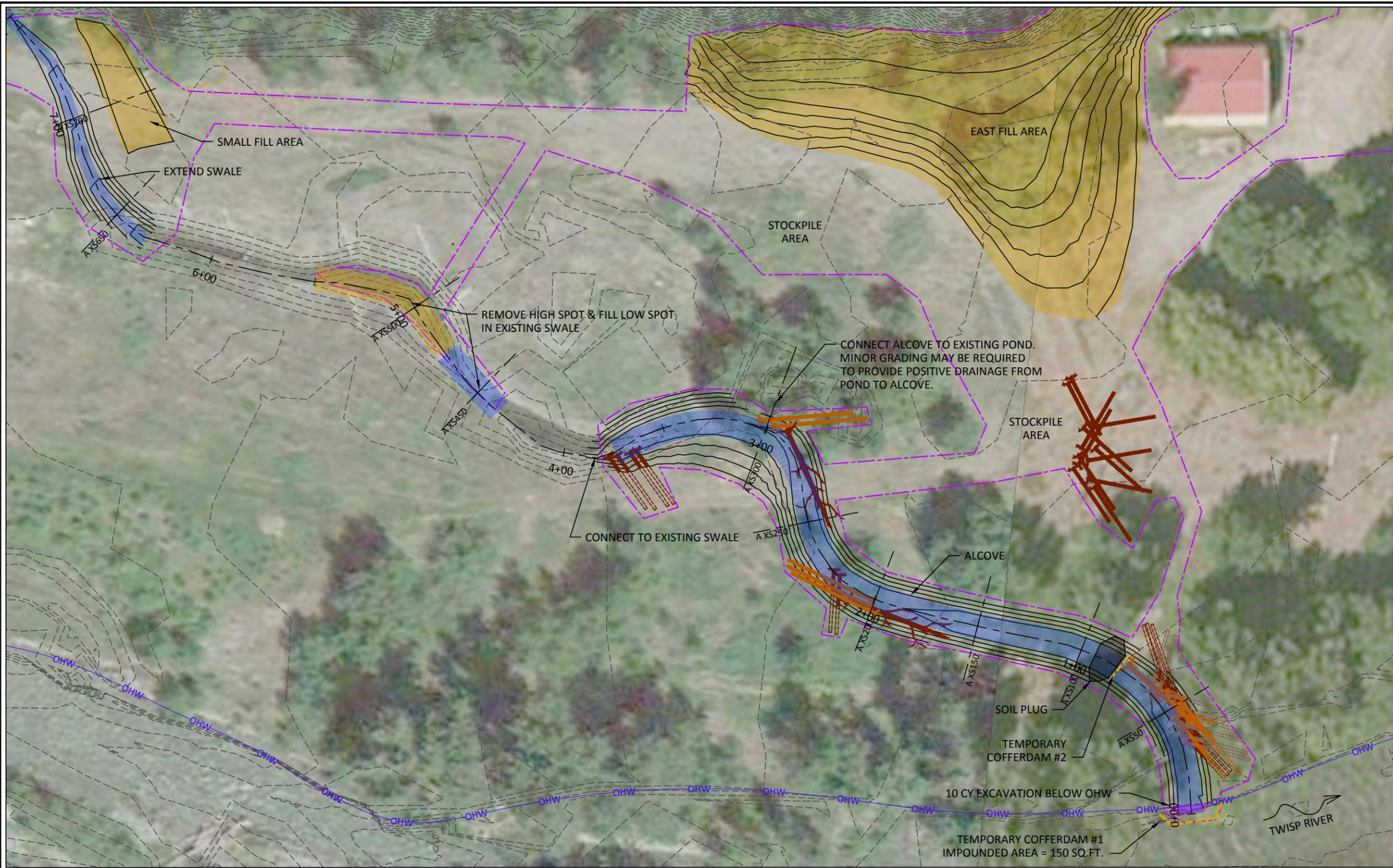
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SIDE CHANNEL  
GRADING SECTIONS



### LEGEND

- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- ALIGNMENT AND STATIONING
- TEMPORARY COFFERDAM
- EXISTING CONTOURS (1 FT)
- PROPOSED CONTOURS (1 FT)
- LAYER 1 LOG
- LAYER 2 LOG
- LAYER 3 LOG

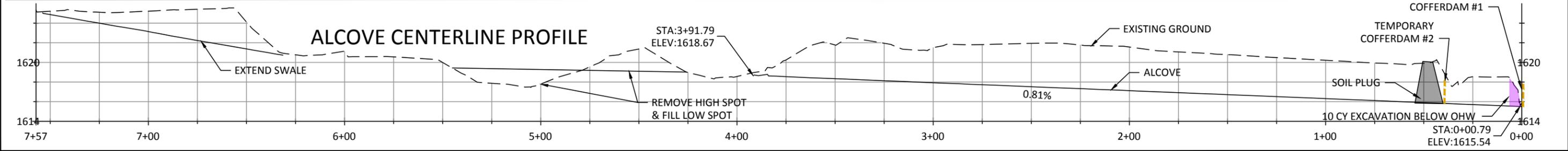
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SCALE IN FEET

## ALCOVE PLAN VIEW

**CONSTRUCTION MATERIALS**

ITEM	QUANTITY
COFFERDAM	55 FEET
LOGS WITH ROOTS	40
SALVAGED TREES	2
SLASH	100 CY
EXCAVATION	1060 CY
EAST FILL	2500 CY

- RECOMMENDED CONSTRUCTION SEQUENCE**
1. INSTALL COFFERDAM #1 AND FISH SCREEN.
  2. STARTING AT DOWNSTREAM END, CONSTRUCT ALCOVE CHANNEL AND LOG STRUCTURES WITHIN OHW, AND CONTINUE CHANNEL CONSTRUCTION FOR A SHORT DISTANCE UPSTREAM.
  3. REMOVE COFFERDAM #1 (FISH SCREEN REMAINS).
  4. CONTINUE CHANNEL CONSTRUCTION UPSTREAM OF COFFERDAM #2. A TEMPORARY SOIL PLUG OF EXISTING GROUND WILL REMAIN IN PLACE AS A WATER BAR. PUMP CONSTRUCTION WATER TO INFILTRATION AREAS.
  5. PLACE FILL AT DESIGNATED ON-SITE FILL AREAS. STABILIZE COMPLETED SLOPES.
  6. WHEN CHANNEL IS COMPLETE, REMOVE SOIL PLUG.
  7. REMOVE COFFERDAM #2.
  8. REMOVE FISH SCREEN.



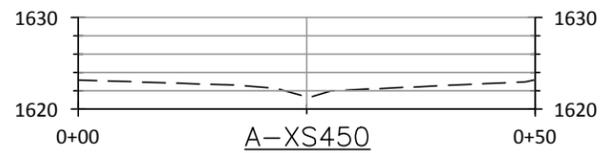
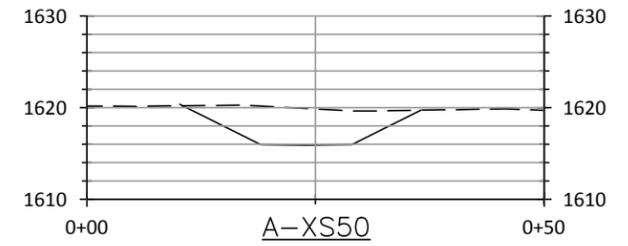
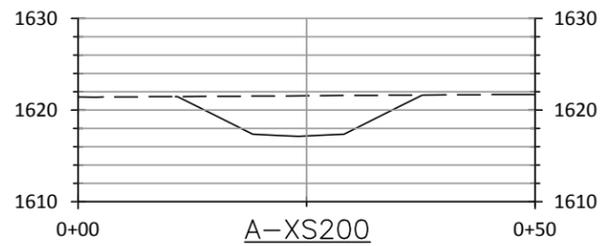
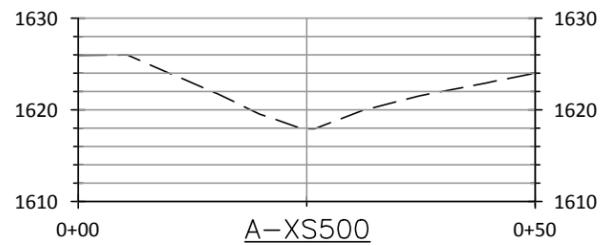
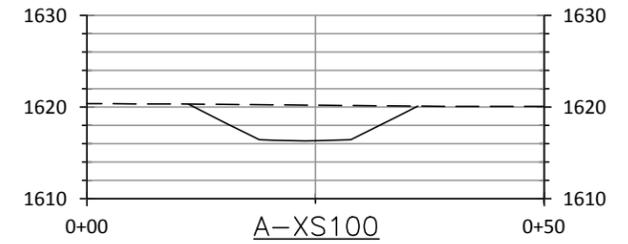
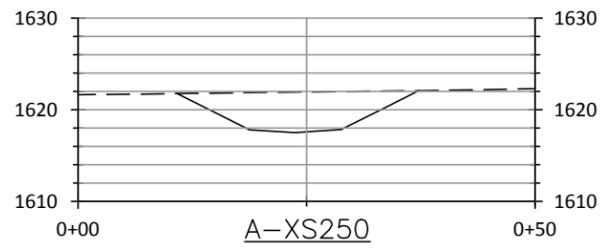
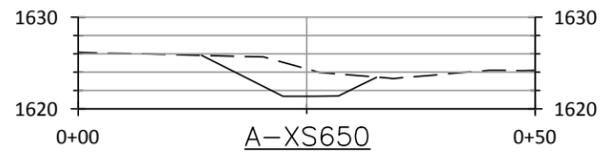
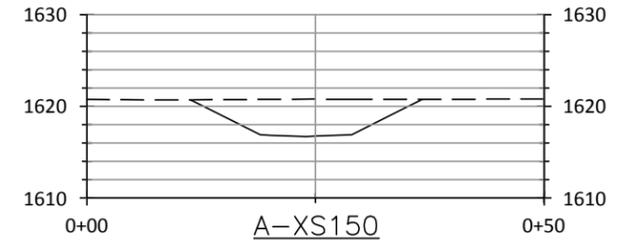
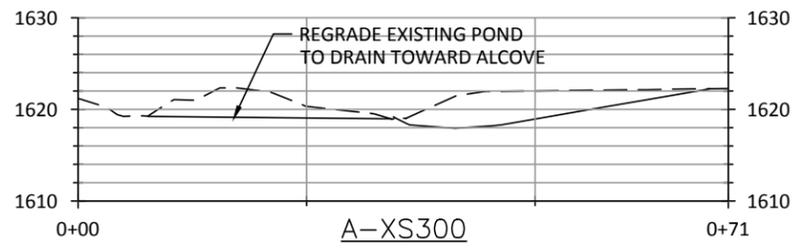
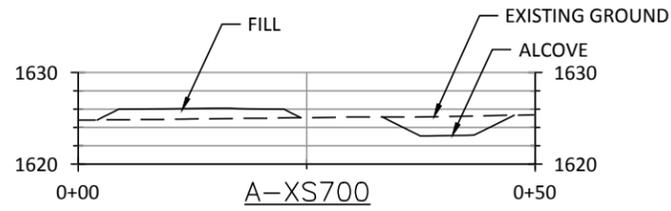
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ALCOVE  
PLAN AND PROFILE



SECTIONS ARE VIEW LOOKING DOWNSTREAM

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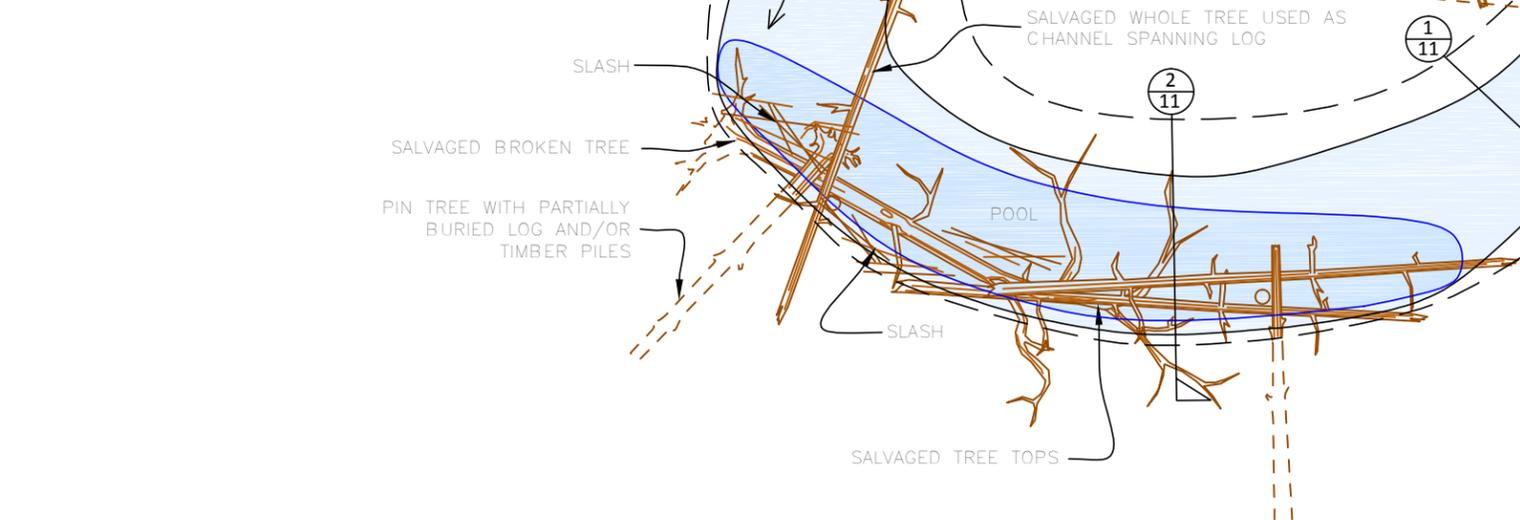
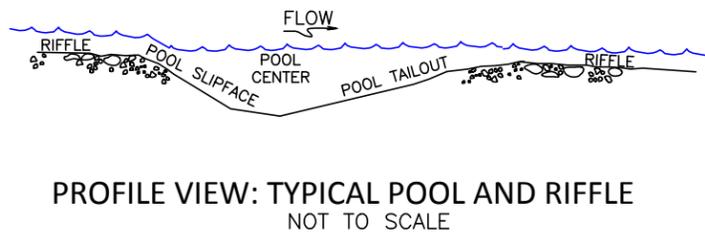
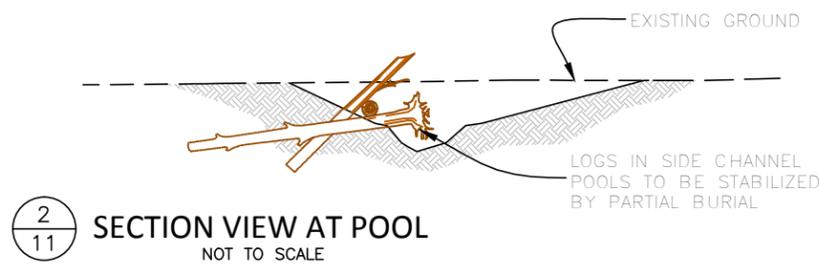
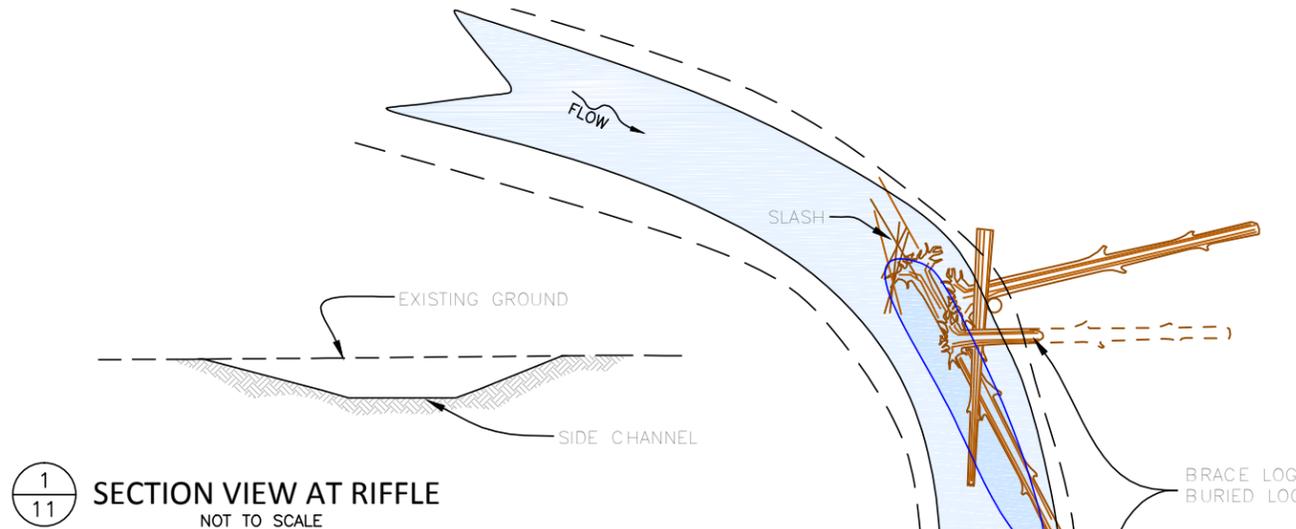
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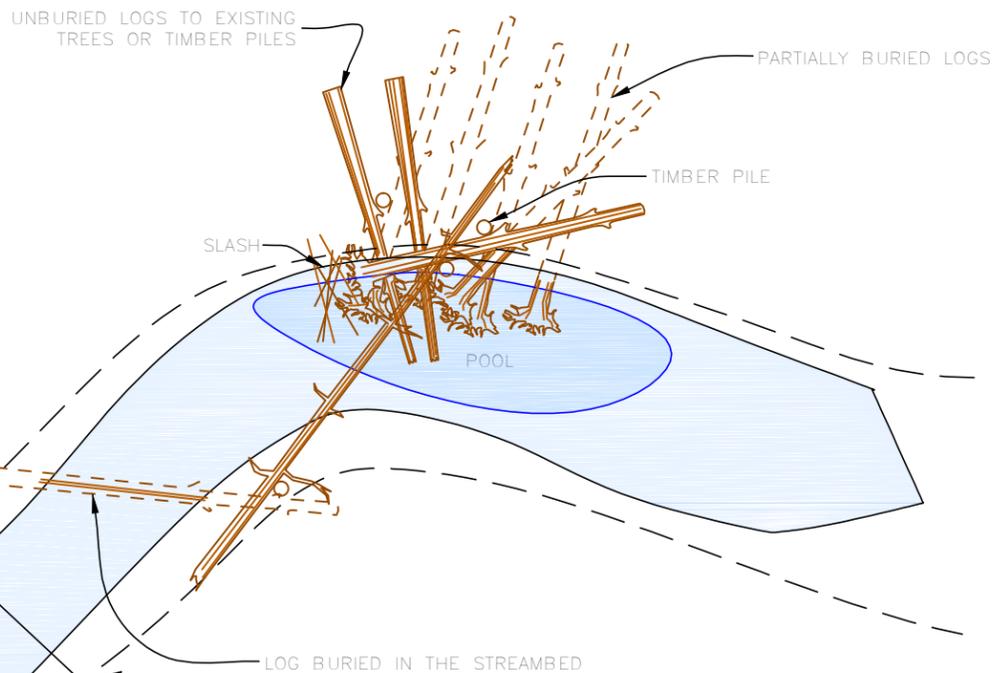
ALCOVE  
 GRADING SECTIONS



**FULLY THREADED ROD (FTR) CONNECTION**  
NOT TO SCALE

**NOTES:**

1. BOLTS SHALL BE MINIMUM 7/8" DIAMETER THREADED ROD. BOLTS SHALL BE GRADE A36 STEEL AND MEET THE REQUIREMENTS OF ASTM F1554. WASHERS SHALL BE SQUARE PLATE, 1/4" x 4" x 4" MIN. NUTS SHALL BE HEAVY HEX. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED.
2. DRILL 1" HOLE THROUGH LOGS.
3. INSERT 7/8" DIA ALL-THREAD REBAR.
4. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS.
5. EXCESS THREADED ROD SHALL BE CUT WITH A MAXIMUM OF 2 INCHES EXTENDING FROM THE TOP OF THE NUT TO THE CUT LOCATION.
6. FILE OR GRIND OFF SHARP EDGES.



**NOTES:**

1. TREES AND SHRUBS WITHIN CLEARING LIMITS SHALL BE SALVAGED AND REUSED AS LOGS AND SLASH IN HABITAT STRUCTURES. TO THE EXTENT PRACTICABLE, PRESERVE BRANCHES AND ROOTS ON TREES REMOVED DURING CLEARING AND GRUBBING.
2. WOOD STRUCTURES SHALL BE STABILIZED. STABILIZATION METHODS INCLUDE PARTIAL BURIAL, BRACING AGAINST STANDING TREES, OR TIMBER PILES. FULLY THREADED ROAD SHALL BE USED TO ATTACH LOGS TO TIMBER PILES.

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DETAILS