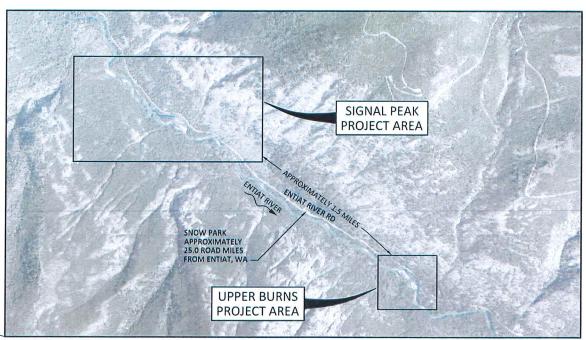
# BELLINGHAM WASHINGTON LEVERET SPOKANE WENATCHEE SEATTLE . IDAHO (1-90) **OREGON** PORTLAND LOCATION MAP STATE OF WASHINGTON CHELAN ARDENVOIR PROJECT SITE APPROXIMATELY 25 MILES FROM 97 ALT ENTIAT PRELIMINARY **VICINITY MAP** GJ, DM YAKAMA NATION FISHERIES **ENTIAT UPPER STILLWATERS** 6/29/15

# ENTIAT RIVER UPPER STILLWATERS HABITAT ENHANCEMENT PRELIMINARY DESIGN CHELAN COUNTY, WASHINGTON JUNE 29, 2015



#### SHEET INDEX

# PROJECT SITE MAP



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HABITAT ENHANCEMENT PROJECT

# SITE LOCATION:

SIGNAL PEAK COORDINATES: LATITUDE 47°54'57.94" N LONGITUDE 120°30'02.34" W

**UPPER BURNS COORDINATES:** LATITUDE 47°54'17.85" N LONGITUDE 120°28'29.20" W

WATERBODY: ENTIAT RIVER



TRIBUTARY OF: COLUMBIA RIVER

501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 inter-fluve

COVER, SHEET INDEX AND VICINITY MAP

SHEET

1 OF 12

THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID SITE MEETING.

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

#### WDFW IN-WATER WORK PERIODS

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

#### **EXISTING DATA**

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK AND TOTAL STATION IN OCTOBER 2014.

HORIZONTAL DATUM: NAD83 VERTICAL DATUM: NAVD88

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (4.1.0).

GIS DATA INCLUDING: AERIAL PHOTOGRAPHY, LIDAR, FISH USE, LAND OWNERSHIP, AND TRANSPORTATION ROUTES OBTAINED FROM VARIOUS AGENCIES.

#### SOILS

NO SUBSURFACE SOILS INVESTIGATIONS HAVE BEEN COMPLETED TO DATE.

CONTRACTOR SHALL CONDUCT OWN INVESTIGATIONS IF ADDITIONAL DATA IS REQUIRED AT NO ADDITIONAL COST.

#### UTILITIES

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

THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

#### CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF 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 ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF 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 FOR LEGAL DISPOSAL.

#### CONSTRUCTION ACCESS/TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, AND STOCKPILE PLAN TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO MOBILIZATION.

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

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

ALL SAPLINGS AND TREES TO BE TRANSPLANTED OR REMOVED SHALL BE CLEARLY MARKED AND APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE.

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

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

CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMUZE WIND BLOWN DUST FROM THE SITE.

ALL DISTURBED AREAS INCLUDING ROADS, DRIVEWAYS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AND RE-VEGETATED PER PLANS BY WILDLANDS.

#### CONSTRUCTION ACCESS/TRAFFIC CONTROL CONTINUED

AT PROJECT COMPLETION, PAVEMENT SHALL BE CLEANED PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. CLEANING SHALL BE INCIDENTAL TO MOBILIZATION/DEMOBILIZATION.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST.

#### **EROSION CONTROL**

CONTRACTOR SHALL BE SOLELY RESPONSIBLE AT OWN EXPENSE FOR PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES.

#### **EROSION/SEDIMENTATION CONTROL PLAN**

THE EROSION AND SEDIMENT CONTROL (ESC) PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING EROSION CONTROL MEASURES TO COMPLY WITH APPLICABLE REGULATIONS.

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

- A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- 3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- C. ESC FACILITIES AS APPROXIMATELY SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
- G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

### INSPECTION AND MAINTENANCE

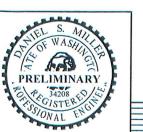
ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ESC FACILITIES SHALL BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

#### CONTRACTOR'S ESC RECORD

WEEKLY REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS SHALL BE PREPARED AND RETAINED ON SITE BY THE CONTRACTOR. IN ADDITION, A RECORD OF THE FOLLOWING DATES SHALL BE INCLUDED IN THE REPORTS:

- WHEN MAJOR GRADING ACTIVITIES OCCUR.
- DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS.
- WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A
  PORTION OF THE SITE
- 4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.
- ESC RECORDS SHALL BE MADE AVAILABLE TO THE OWNER AND OWNER'S REPRESENTATIVE ON REQUEST AND SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.





EXPIRES:

YAKAMA NATION FISHERIES ENTIAT UPPER STILLWATERS HABITAT ENHANCEMENT PROJECT



SHEET

#### STABILIZE SOILS AND PROTECT SLOPES

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN THREE DAYS OF GRADING. FROM OCTOBER 1 THROUGH APRIL 30, ALL EXPOSED SOILS MUST BE PROTECTED WITHIN 2 DAYS OF GRADING. SOILS SHALL BE STABILIZED BEFORE A WORK SHUTDOWN, HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. SOIL STOCK PILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. HYDROSEED ALL DISTURBED AREAS AS SOON AS PRACTICAL NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES.

DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. REDUCE SLOPE VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS. STORMWATER FROM OFF SITE SHOULD BE HANDLED SEPARATELY FROM STORMWATER GENERATED ON SITE

#### AFTER FINAL SITE STABILIZATION

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BEST MANAGEMENT PRACTICES (BPMs) ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR INCORPORATED INTO FINISHED GRADING. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED

#### RIVER DIVERSION

DIVERSION MAY BYPASS THE RIVER AROUND SMALLER WORK AREAS AT CONTRACTOR'S DISCRETION IF IN COMPLIANCE WITH ENVIRONMENTAL PERMITS AND REGULATIONS.

DEWATERING OF IN-CHANNEL WORK AREA(S) SHALL OCCUR CONCURRENT WITH FISH RESCUE. CONTRACTOR SHALL COORDINATE WITH THE YAKAMA NATION FISHERIES FOR FISH RESCUE. CONTRACTOR SHALL PROVIDE YAKAMA FISHERIES AMPLE TIME TO SCHEDULE FISH RESCUE, IF DIVERSION FAILS DUE TO CONTRACTOR NEGLIGENCE, FISH RESCUE SHALL BE REPEATED BY YAKAMA FISHERIES CREWS AT CONTRACTOR'S EXPENSE.

IF ADDITIONAL PUMPING IS REQUIRED TO DEWATER DURING CONSTRUCTION, PUMPED DISCHARGE SHALL RELEASE SEDIMENT-LADEN WATER AT AN UPLAND DISCHARGE LOCATION IN A MANNER THAT DOES NOT CAUSE EROSION, CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS. (SEE CONSTRUCTION DEWATERING).

OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION

#### CONSTRUCTION DEWATERING

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF TURBID OR SEDIMENT-LADEN WATER IN ORDER TO PREVENT CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS. SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO SHEET FLOW THROUGH EXISTING VEGETATION BEFORE INFILTRATING INTO THE GROUND. IF THIS METHOD IS NOT SUFFICIENT TO PREVENT RETURN OF TURBID WATER TO SURFACE WATERS OF THE WENATCHEE RIVER AND FLOODPLAIN. A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST.

CONTRACTOR SHALL PROVIDE VISOUEEN OR GEOTEXTILE LINER OR PLYWOOD OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

#### FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE SUPERVISED BY A YAKAMA NATION 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 FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED INTO NEARBY SIMILAR WETLAND OR WENATCHEE RIVER SURFACE WATER.

#### TREE SALVAGE

ALL TREES AND SLASH REMOVED FOR CONSTRUCTION SHALL TEMPORARILY BE STOCKPILED WITHIN LIMITS OF DISTURBANCE, STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT

ANY REMOVED VEGETATION GREATER THAN 6 INCHES DIAMETER AND 15 FEET LONG SHOULD BE INCORPORATED INTO LOG STRUCTURES OR LOG FLOODPLAIN ROUGHNESS, SEE SHEET 9. CONTRACTOR IS RESPONSIBLE FOR REMOVING SMALLER CLEARING AND GRUBBING DEBRIS FROM THE SITE AND DISPOSING AT A LEGAL LOCATION AT THE END OF THE PROJECT UNLESS DIRECTED BY THE OWNER'S REPRESENTATIVE.

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

#### LIVE TREES

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

KEEP OUT OF DRIP LINE OF EXISTING TREES TO REMAIN

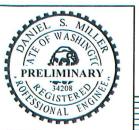
#### **ABBREVIATIONS:**

| APPROX | APPROXIMATE              |
|--------|--------------------------|
| DBH    | DIAMETER AT BREAST HEIGH |
| E      | EAST                     |
| N      | NORTH                    |
| NTS    | NOT TO SCALE             |
| RD     | ROAD                     |
| RM     | RIVER MILE               |
| S      | SOUTH                    |
| TBD    | TO BE DETERMINED         |
| TYP    | TYPICAL                  |
| W      | WEST                     |
|        |                          |

ESTIMATED MATERIAL VOLUMES ARE APPROXIMATE IN-PLACE QUANTITY AND NOT OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL

| Location Item                         | Quantity | Units    |
|---------------------------------------|----------|----------|
| Signal Peak                           |          |          |
| Side channel                          |          |          |
| excavation                            | 395      | су       |
| logs with rootwads                    | 16       | ea       |
| logs without rootwads                 | 12       | ea       |
| piles                                 | 18       | ea       |
| Side channel inlet jam                |          |          |
| excavation                            | 650      | cy       |
| fill                                  | 550      | cy       |
| logs with rootwads                    | 30       | ea       |
| logs without rootwads                 | 15       | ea       |
| piles                                 | 14       | ea       |
| Site A - riprap enhancement & jams    |          |          |
| excavation                            | 0        | су       |
| riprap enhancement logs with boulders | 55       | ea       |
| logs with rootwads                    | 14       | ea       |
| logs without rootwads                 | 6        | ea       |
| bumper log units                      | 3        | ea       |
| boulders                              | 34       | ea       |
| piles                                 | 12       | ea       |
| Site A - island log jam               |          |          |
| excavation                            | 325      | су       |
| fill                                  | 300      | cy       |
| logs with rootwads                    | 7        | ea       |
| logs without rootwads                 | 3        | ea       |
| piles                                 | 8        | ea       |
| Site B - riprap enhancement           |          |          |
| excavation                            | 0        | су       |
| riprap enhancement logs with boulders | 36       | ea       |
| bumper log units                      | 4        | ea       |
| piles                                 | 0        | ea       |
| Upper Burns                           |          |          |
| Riprap enhancement                    |          |          |
| excavation                            | 0        | cy       |
| riprap enhancement logs with boulders | 27       | ea       |
| bumper log units                      | 3        | ea       |
| piles                                 | 0        | ea       |
| Margin wood (3 structures)            | J        |          |
| excavation                            | 560      | CV       |
| logs with rootwads                    | 12       | cy<br>ea |
| logs with rootwads                    | 9        |          |
|                                       |          | ea       |
| piles                                 | 12       | ea       |

Quantity Units





FACTORED FOR EXPANSION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL, MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS

> YAKAMA NATION FISHERIES **ENTIAT UPPER STILLWATERS** HABITAT ENHANCEMENT PROJECT

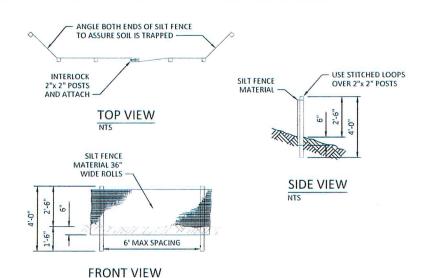


Location Item

GENERAL NOTES, ESTIMATED QUANTITIES TABLE AND ABBREVIATIONS LIST

GJ, DM

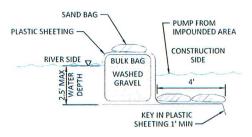
GJ, DM



#### SILT FENCES GENERAL NOTES:

- 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.
- 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.
- STANDARD OR HEAVY DUTY SILT FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCHES X 2 INCHES POST INSTALLATION.
- 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.





#### - SAND BAG PUMP FROM RIVER SIDE V WASHED IMPOUNDED AREA CONSTRUCTION GRAVEL WASHED WASHED GRAVEL GRAVEL KEY IN PLASTIC SHEETING 1' MIN

# TEMPORARY COFFERDAM SECTION IN WATER DEPTHS LESS THAN 2.5'

#### **BULK BAG GENERAL NOTES:**

- 1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED GRAVEL, 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.
- 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.
- 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.
- THE TERMINAL ENDS OF BULK BAG COFFERDAM, WHERE IT CONNECTS TO CHANNEL BANK OR HIGH GROUND, SHALL BE SEALED WITH PLASTIC SHEETING AND STANDARD

## TEMPORARY COFFERDAM SECTION IN WATER DEPTHS GREATER THAN 2.5'

PLASTIC SHEETING .

- 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.
- BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. WASHED GRAVEL SHALL BE REMOVED FROM SITE UNLESS OTHERWISE DIRECTED BY OWNER.
- MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED GRAVEL 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.



TYPICAL DETAIL - BULK BAG COFFERDAM



YAKAMA NATION FISHERIES

**ENTIAT UPPER STILLWATERS** 

HABITAT ENHANCEMENT PROJECT



SHEET

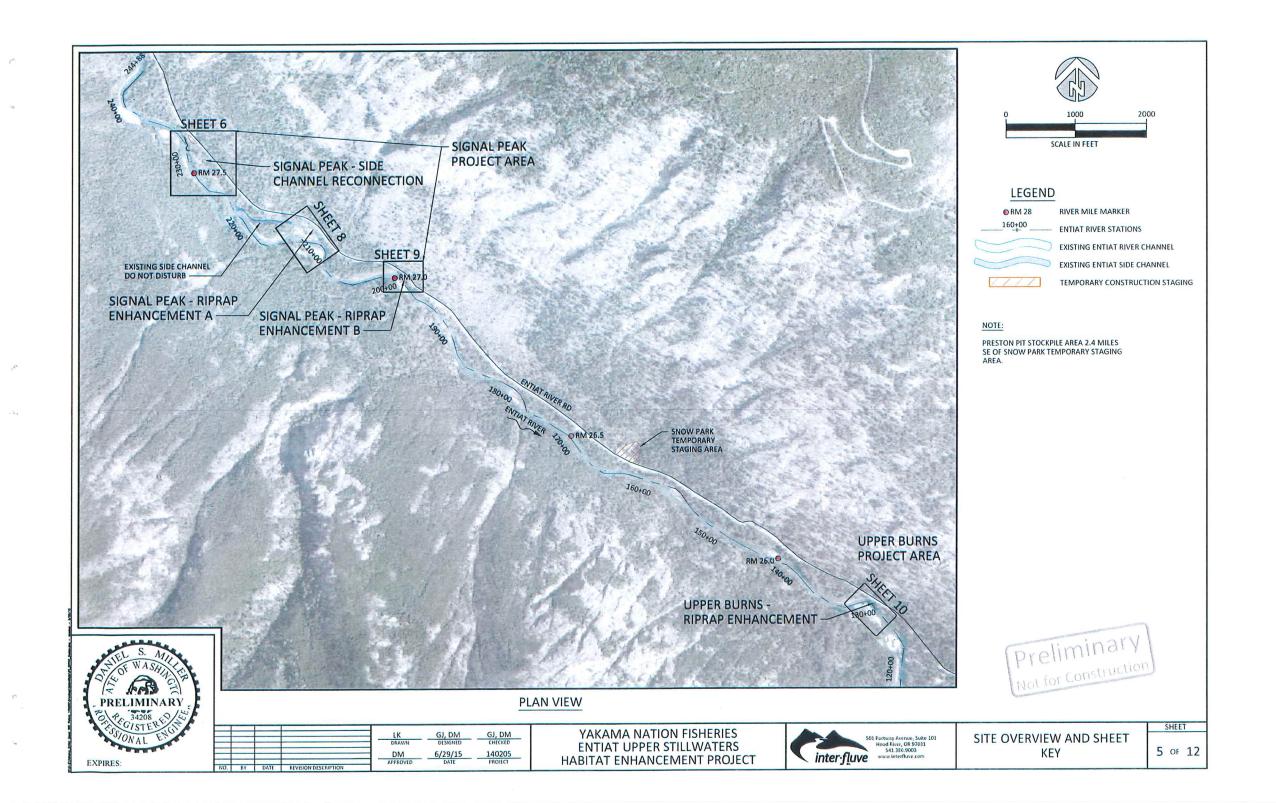
**EROSION CONTROL AND** COFFERDAM DETAILS

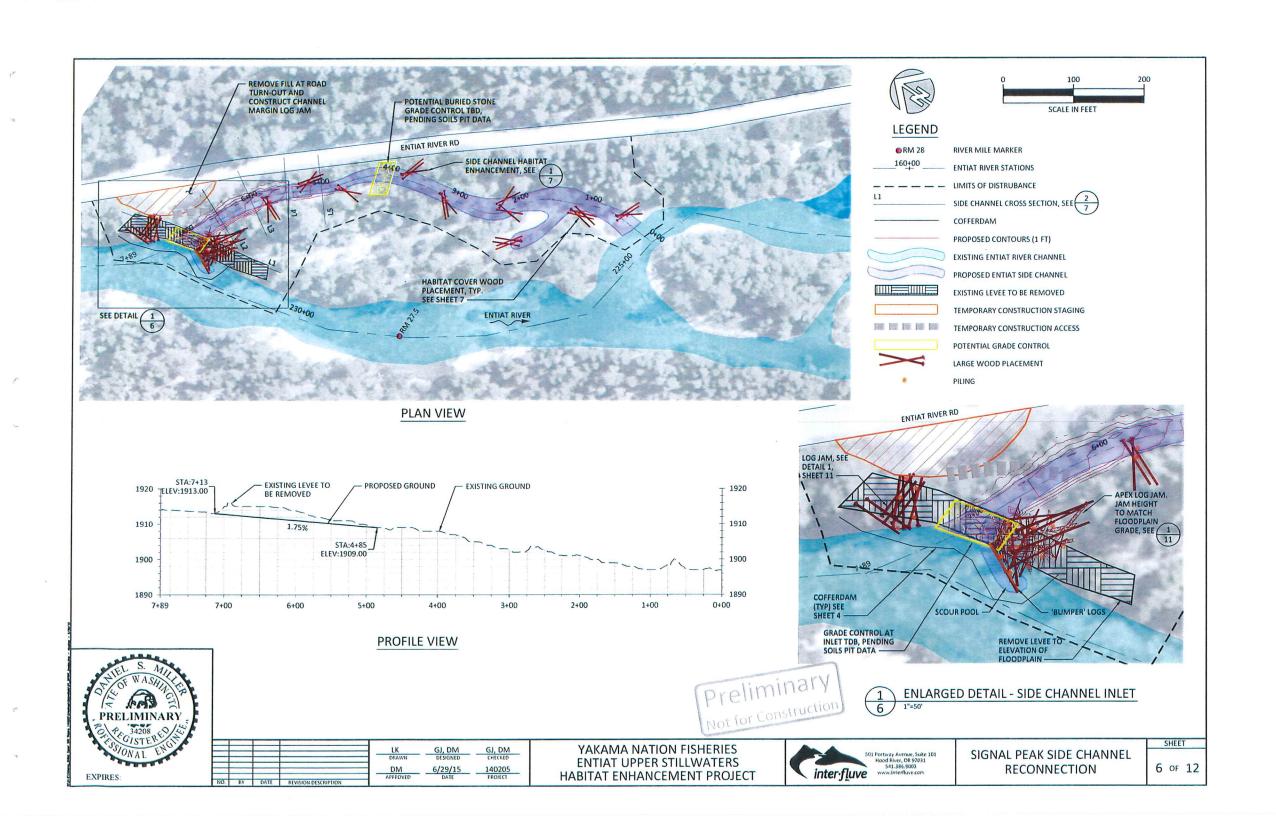
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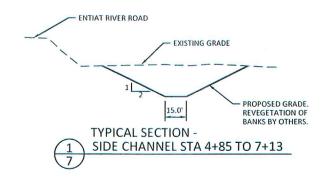
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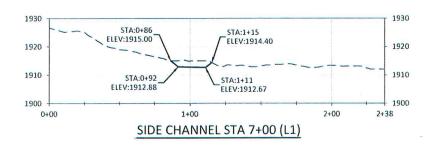
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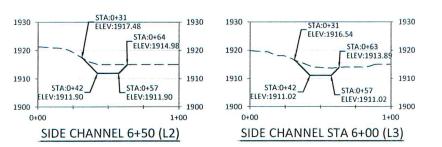


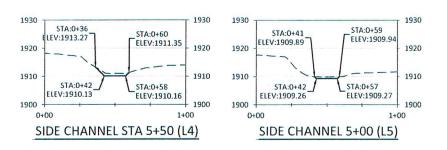


|       | SIDE CHANNEL CROSS SECTIONS                           |                              |                              |  |  |  |  |
|-------|---|------------------------------|------------------------------|--|--|--|--|
| LINE# | DIRECTION<br>(LEFT TO RIGHT<br>LOOKING<br>DOWNSTREAM) | START POINT                  | END POINT                    |  |  |  |  |
| l1    | S12° 28' 03.54"E                                      | N=335645.11,<br>E=1720678.77 | N=335412.73,<br>E=1720730.15 |  |  |  |  |
| L2    | S25° 13' 40.50"W                                      | N=335569.29,<br>E=1720766.82 | N=335478.83,<br>E=1720724.19 |  |  |  |  |
| L3    | S32° 14' 57.30"W                                      | N=335542.38,<br>E=1720815.96 | N=335457.81,<br>E=1720762.60 |  |  |  |  |
| L4    | S52° 21' 36.55"W                                      | N=335499.45,<br>E=1720867.73 | N=335438.38,<br>E=1720788.54 |  |  |  |  |
| L5    | S50° 06' 08.39"W                                      | N=335461.93,<br>E=1720897.70 | N=335397.78,<br>E=1720820.98 |  |  |  |  |









SIDE CHANNEL CROSS SECTIONS



EXPIRES:

GJ, DM 6/29/15 DATE

YAKAMA NATION FISHERIES **ENTIAT UPPER STILLWATERS** HABITAT ENHANCEMENT PROJECT



SIGNAL PEAK SIDE CHANNEL TYPICAL DETAIL AND SECTIONS

LEGEND

NOTE:

- - - EXISTING GRADE

SECTION ORIENTATION IS LEFT TO RIGHT LOOKING DOWNSTREAM

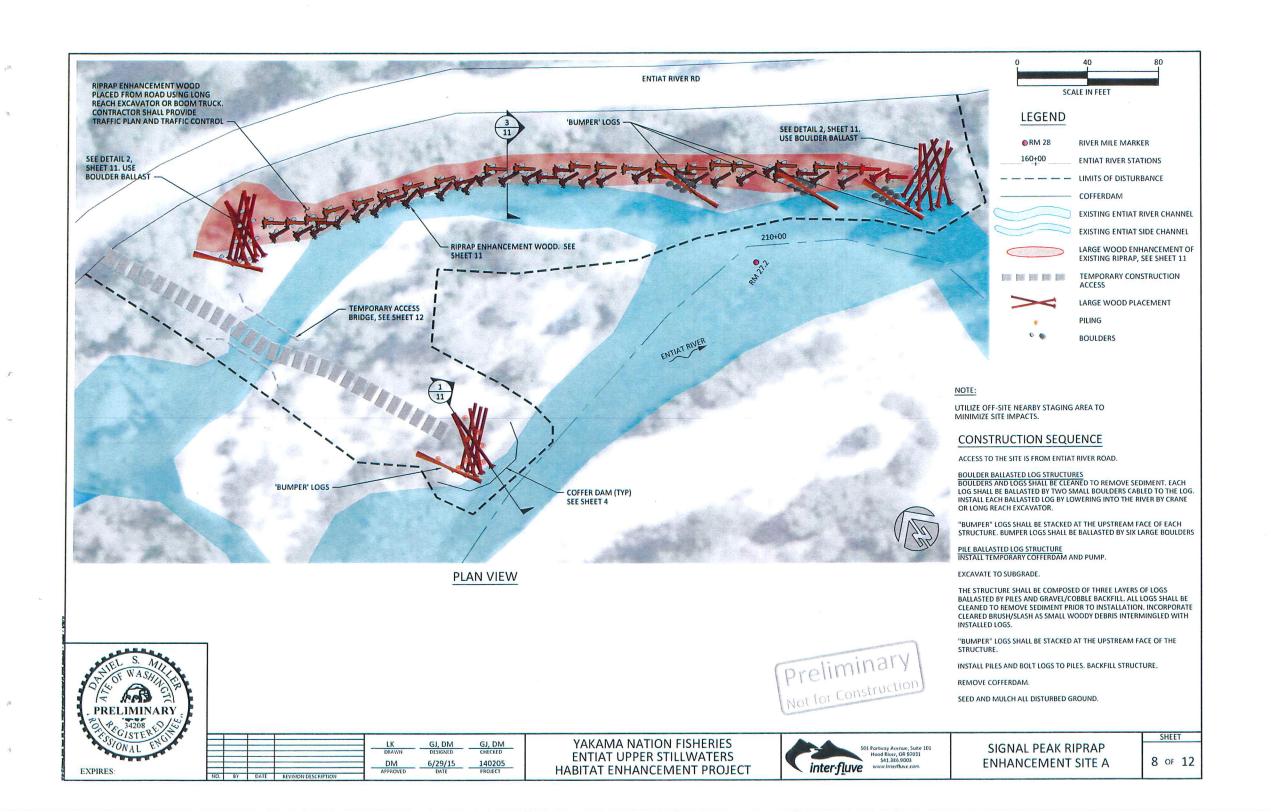
SCALE: 1" = 50'

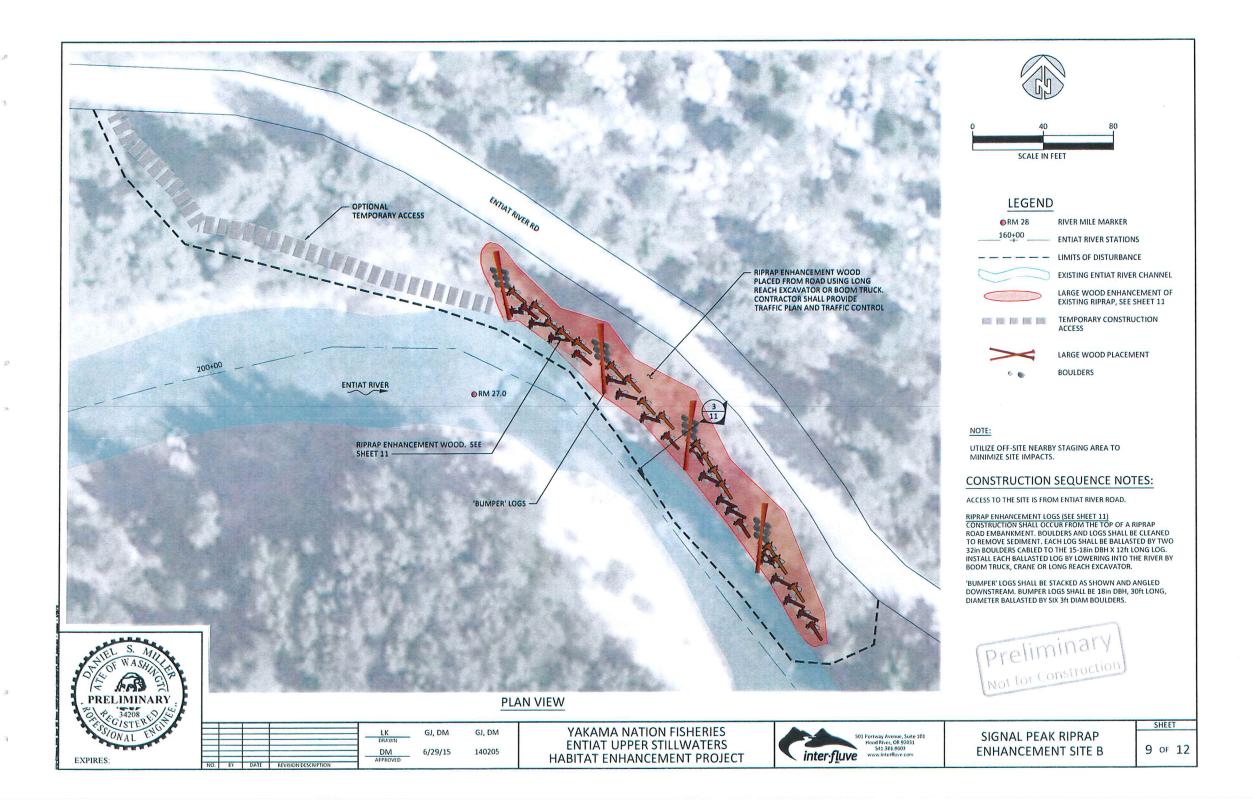
PROPOSED GRADE

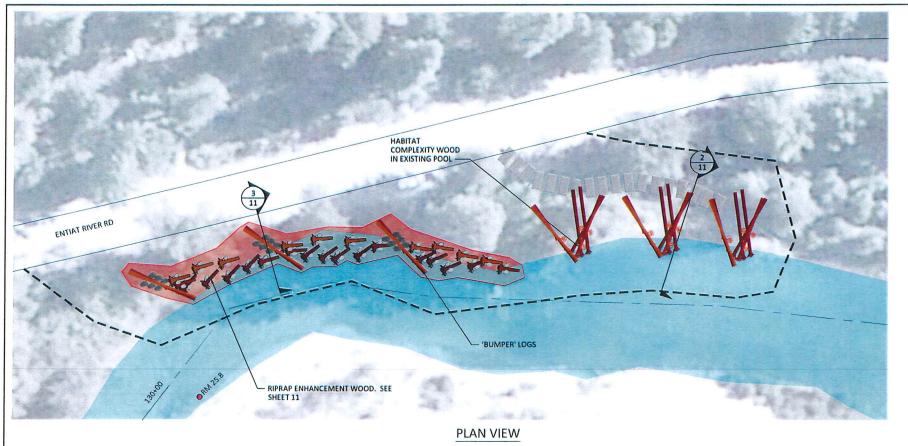
SHEET 7 of 12

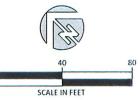
Preliminary
Not for Construction

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









#### LEGEND

RM 28 RIVER MILE MARKER

160+00 ENTIAT RIVER STATIONS

LIMITS OF DISTURBANCE

EXISTING ENTIAT RIVER CHANNEL

LARGE WOOD ENHANCEMENT OF EXISTING RIPRAP, SEE SHEET 9

TEMPORARY CONSTRUCTION ACCESS

LARGE WOOD PLACEMENT

PILING

BOULDERS

NOTE:

UTILIZE OFF-SITE NEARBY STAGING AREA TO MINIMIZE SITE IMPACTS.

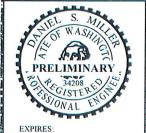
#### CONSTRUCTION SEQUENCE NOTES:

ACCESS TO THE SITE IS FROM ENTIAT RIVER ROAD.

RIPRAP ENHANCEMENT LOGS (SEE SHEET 11)
CONSTRUCTION SHALL OCCUR FROM THE TOP OF A RIPRAP
ROAD EMBANKMENT. BOULDERS AND LOGS SHALL BE CLEANED
TO REMOVE SEDIMENT. EACH LOG SHALL BE BALLASTED BY TWO
32in BOULDERS CABLED TO THE 15-18in DBH X 12ft LONG LOG.
INSTALL EACH BALLASTED LOG BY LOWERING INTO THE RIVER BY
BOOM TRUCK, CRANE OR LONG REACH EXCAVATOR.

'BUMPER' LOGS SHALL BE STACKED AS SHOWN AND ANGLED DOWNSTREAM. BUMPER LOGS SHALL BE 18in DBH, 30ft LONG, DIAMETER BALLASTED BY SIX 3ft DIAM BOULDERS.



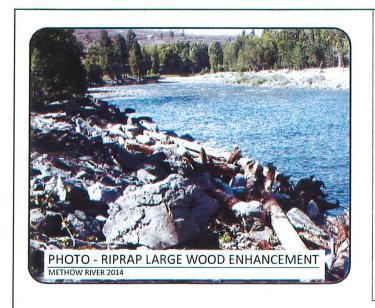


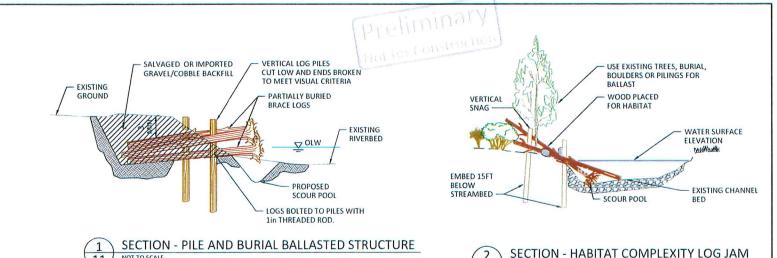
YAKAMA NATION FISHERIES ENTIAT UPPER STILLWATERS HABITAT ENHANCEMENT PROJECT

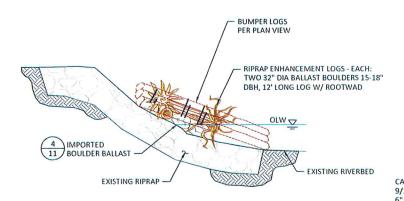


UPPER BURNS RIPRAP ENHANCEMENT AND LOG JAMS SHEET

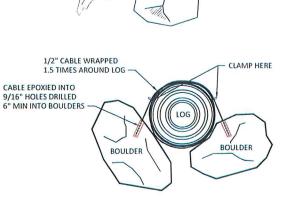
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SECTION - RIPRAP LARGE WOOD ENHANCEMENT



4 BOULDER BALLAST DETAIL

DESCRIPTIO

32" EQUIVALENT DIAMETER BOULDER

15-18" DBH, 12'

LONG CONIFER

THIS WORK CONSISTS OF INSTALLING LOGS WITH ROOT WADS INTO ANCHORED LOG STRUCTURES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE OWNERS REPRESENTATIVE.

MATERIALS

ANCHORS FOR THIS WORK WILL CONSIST OF CABLED BOULDERS. BOULDERS SHALL BE NON-FRACTURED BASALT WITH A MINIMUM SPECIFIC GRAVITY OF 2.65.

CABLE SHALL BE 2" GALVANIZED, STEEL CORE WIRE ROPE.

CLAMPS SHALL BE CROSBY CLIPS, G-450, OR APPROVED EQUAL. MINIMUM OF 2 CLAMPS PER ANCHOR POINT.

EPOXY FOR ANCHORING SHALL BE HILTI HIT RE 500 ADHESIVE OR APPROVED EQUAL.

CONSTRUCTION

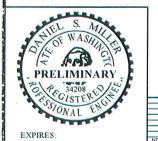
FINAL POSITIONING OF THE ANCHORED LOG STRUCTURES SHALL BE IN THE APPROXIMATE LOCATION AS SHOWN ON THE PLANS AND AS APPROVED IN THE FIELD BY THE OWNERS REPRESENTATIVE.

BALLAST BOULDERS SHALL BE SECURED AS SHOWN ON THE PLANS.

DRILL HOLES IN SOLID ROCK AND AVOID ANY CRACKS OR FRACTURES. HOLES SHALL BE 9/16 INCH IN DIAMETER. HOLES MUST BE DRILLED 6 INCHES, MINIMUM, INTO ROCK. HOLES MUST BE CLEANED OF LOOSE ROCK FRAGMENTS AND POWDER WITH A BRUSH AND WATER. HOLES MUST BE CLEAN OF ALL DUST, DEBRIS, OIL, AND SOAP RESIDUES. THE HOLES MUST FLUSH CLEAR TO INSURE NO MATERIAL EXISTS BETWEEN THE CABLE, EPOXY, AND ROCK SURFACE. INSTALL EPOXY PER MANUFACTURER'S RECOMMENDATIONS.

CABLE SHALL BE WRAPPED 1.5 TIMES AROUND LOG BEFORE ENDS ARE INSERTED INTO THE DRILLED HOLES FILLED WITH FEDXY. WIPE CABLE WITH CLEAN ACETONE SOAKED RAG TO REMOVE OILS AND GREASES PRIOR TO INSERTION INTO EPOXY FILLED HOLE. FILL DRILL HOLES ENOUGH TO ENSURE COMPLETE COVERAGE WITH EPOXY. INSERT CABLE INTO HOLE SO THAT END OF CABLE HITS THE BOTTOM OF THE HOLE. EXCESS EPOXY SHOULD COME OUT OF THE TOP OF THE HOLE AS CABLE IS SFATED IN DRILL HOLE.

CLAMPS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION, SPACING AND CLAMP SIZE FOR THE SIZE AND LOAD RATING OF THE CABLE BEING USED.



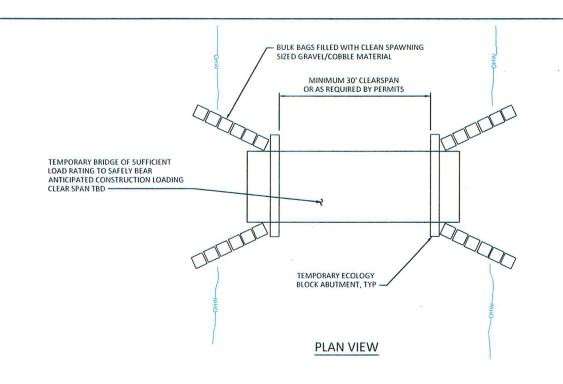
YAKAMA NATION FISHERIES ENTIAT UPPER STILLWATERS HABITAT ENHANCEMENT PROJECT



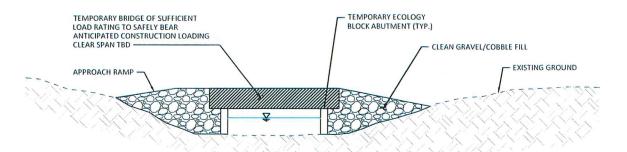
RIPRAP ENHANCEMENT AND LOG JAM DETAILS

SHEET

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TEMPORARY BRIDGE, ECOLOGY BLOCK ABUTMENTS, CLEAN GRAVEL/COBBLE FILL AND BULK BAGS SHALL BE REMOVED AT PROJECT COMPLETION AND SITE RESTORED TO PRE-PROJECT GRADE AND CONDITIONS.



## **SECTION VIEW**







TEMPORARY BRIDGE CROSSING

|     |    |      |                      | I.K      | GJ. DM  | GJ, DM   |  |
|-----|----|------|----------------------|----------|---------|----------|--|
|     |    |      |                      | DRAWN    | 0,000   | 03, 0111 |  |
| _   |    |      |                      | DM       | 6/29/15 | 140205   |  |
| NO. | ВУ | DATE | REVISION DESCRIPTION | APPROVED |         |          |  |

YAKAMA NATION FISHERIES **ENTIAT UPPER STILLWATERS** HABITAT ENHANCEMENT PROJECT



TEMPORARY ACCESS BRIDGE TYPICAL DETAILS

SHEET

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