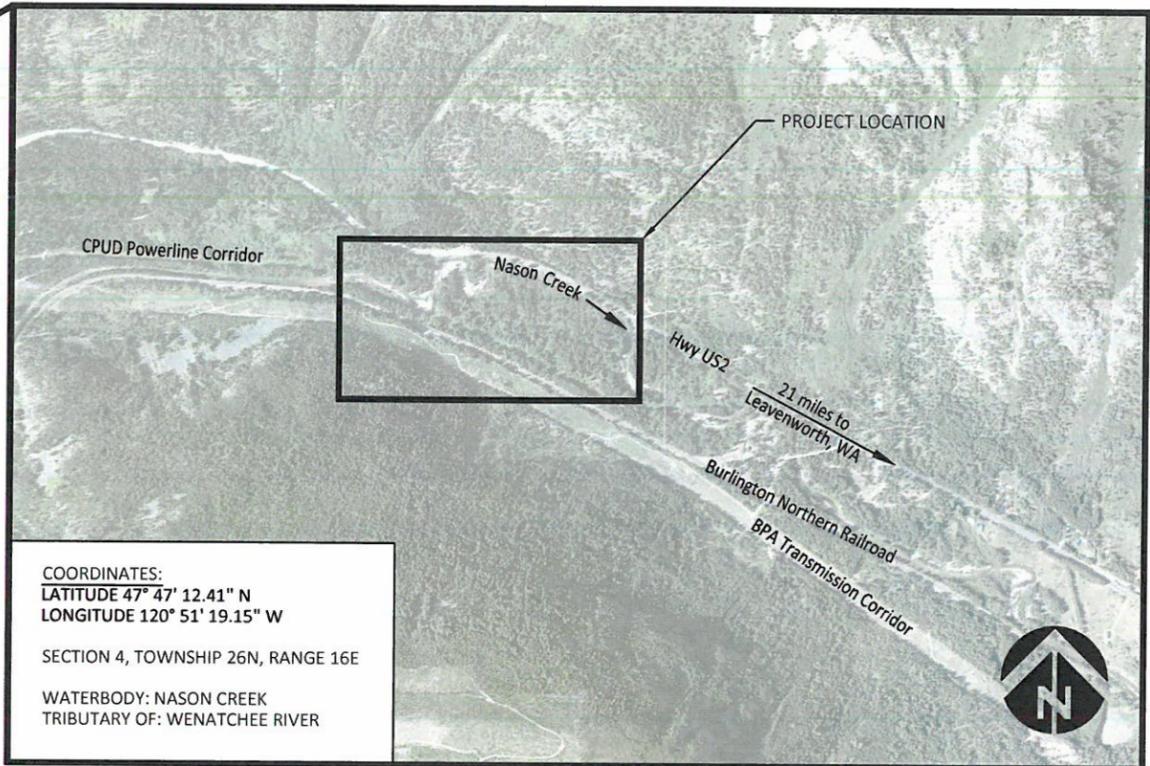


# NASON CREEK UWP FISH HABITAT RESTORATION CHELAN COUNTY, WASHINGTON MARCH 14, 2014



**LOCATION MAP  
STATE OF WASHINGTON**



COORDINATES:  
 LATITUDE 47° 47' 12.41" N  
 LONGITUDE 120° 51' 19.15" W  
 SECTION 4, TOWNSHIP 26N, RANGE 16E  
 WATERBODY: NASON CREEK  
 TRIBUTARY OF: WENATCHEE RIVER

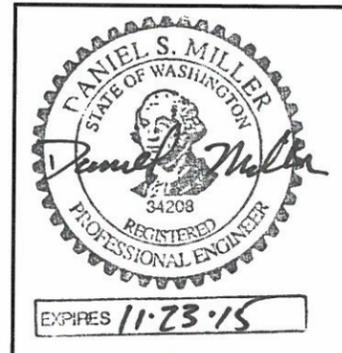
**SITE MAP  
NOT TO SCALE**



**VICINITY MAP  
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NO.	BY	DATE	REVISION DESCRIPTION

DF	GJ,RG,MC,RP,DM	DM,MM
DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

**Confederated Tribes and Bands of the Yakama Nation**  
 Nason Creek - UWP Sub-Reaches 3-4  
 Fish Enhancement Project



501 Portway Ave, Suite 101  
 Hood River, OR 97031  
 541.386.9003  
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**COVER, SHEET INDEX  
AND VICINITY MAP**

SHEET  
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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 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 COLLECTED BY INTER-FLUVE USING RTK AND TOTAL STATION IN SEPTEMBER 2011 AND APRIL 2013; HYDROLOGY INFORMATION PROVIDED BY USBR AND WDOE; HYDRAULIC INFORMATION PROVIDED BY USBR; GIS DATA PROVIDED BY VARIOUS AGENCIES INCLUDING AERIAL PHOTOGRAPHY, LIDAR, FISH USE, SURFACE SOILS INFORMATION, LAND OWNERSHIP, AND TRANSPORTATION ROUTES.

**SOILS**

NO SUBSURFACE SOILS INVESTIGATIONS HAVE BEEN COMPLETED. CONTRACTOR SHALL CONDUCT OWN INVESTIGATIONS.

**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 EFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE EFFECTED 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 TO THE OWNER.

**CONSTRUCTION MATERIALS**

ESTIMATED MATERIAL VOLUMES ARE APPROXIMATE IN-PLACE QUANTITY AND NOT FACTORED FOR EXPANSION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

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 AND DISPOSED OF LEGALLY. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR DISPOSAL.

**CONSTRUCTION ACCESS/TRAFFIC CONTROL**

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

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 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.

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

AT PROJECT COMPLETION, PAVEMENT SHALL BE CLEANED PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION SECTION 5-04.3; AND SPECIFICALLY SUBSECTION 5-04.3(5)A. 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.
- B. 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 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 ROUTES ARE KEPT CLEAN.

**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:

- 1. WHEN MAJOR GRADING ACTIVITIES OCCUR,
- 2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS,
- 3. 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.

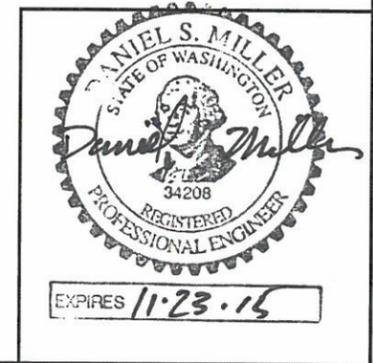
**STABILIZE SOILS AND PROTECT SLOPES**

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, PLASTIC SHEETING, 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 STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. HYDROSEED AS SOON AS PRACTICAL ALL DISTURBED AREAS 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 BMPs 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.



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DRAWN	DESIGNED	CHECKED
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Confederated Tribes and Bands of the Yakama Nation  
 Nason Creek - UWP Sub-Reaches 3-4  
 Fish Enhancement Project



GENERAL NOTES

SHEET  
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**PILES**

ALL VERTICAL PILES SHALL BE INSTALLED USING VIBRASONIC PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION OR HAMMERING SHALL NOT BE ALLOWED.

ACCEPTABLE MINIMUM VIBRASONIC PILE DRIVING EQUIPMENT SHALL INCLUDE: HMC MOVAX SONIC SIDE GRIP VIBRATORY PILE DRIVER - MODEL SP80 OR EQUIVALENT.

PILES SHALL BE MINIMUM 12" DIAMETER AT SCALED END, MAXIMUM 16" DIAMETER AT BUTT END, WITH NO BARK.

**RIGGING**

RIGGING FOR PILE TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.

CHOKERS, CABLES AND SHACKLES SHALL HAVE MINIMUM WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY.

**TESTING**

TESTING OF PILES SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.

EACH PILE TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF PILE AS POSSIBLE.

RECORD THE PILE DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE PILE .

UP TO A TOTAL OF THREE LOADINGS MAY BE REQUIRED AT EACH EMBEDMENT DEPTH.

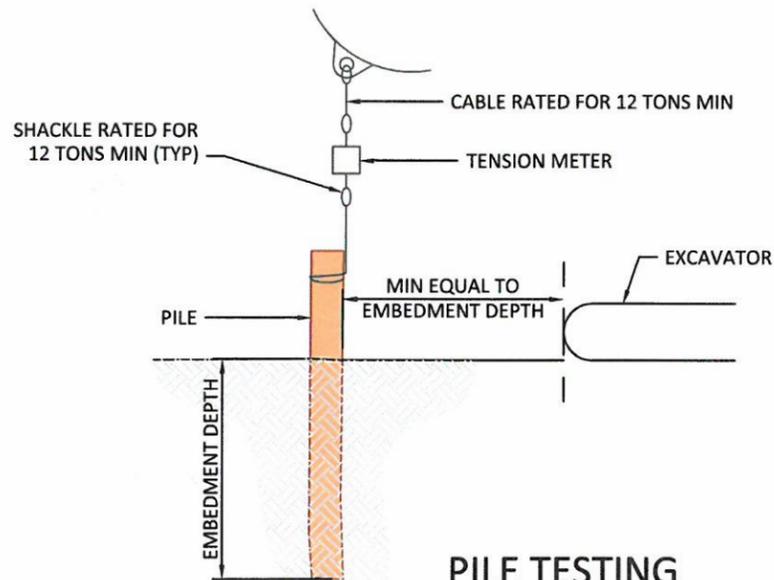
PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE TEST EMBEDMENT DEPTHS MAY INCLUDE 6', 8', 10', AND 12'.

EXCAVATOR CONDUCTING PULL OUT LOADING SHALL BE POSITIONED NO CLOSER THAN EMBEDMENT DEPTH OF PILE IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM PILE NOTED IN THE TEST RECORD. PUT EXCAVATOR ON LOGS TO DISTRIBUTE LOADING TO GROUND.

PULL OUT RESISTANCE READING SHALL BE COMPARED AGAINST EXCAVATOR MAX LIFT OFFSET TABLE.

10% OF PRODUCTION PILINGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHIOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION PILINGS SHALL BE PROOF TESTED.

CONSTRUCTED DRIVEN PILE EMBEDMENT DEPTH SPECIFIED IN THE PLANS MAY BE REDUCED OR INCREASED, PENDING PULL OUT TEST RESULTS, AT NO ADDITIONAL COST.



**PILE TESTING**  
NOT TO SCALE

**RIVER DIVERSION**

DIVERSION MAY BYPASS THE RIVER AROUND SMALLER WORK AREAS AT CONTRACTOR'S DISCRETION.

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.

**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 FISHES SHALL BE IMMEDIATELY RELEASED INTO NASON CREEK.

**CONSTRUCTION DEWATERING**

THE DIVERSION PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING DIVERSION AND DEWATERING MEASURES AS NEEDED. CONTRACTOR SHALL SUBMIT A DIVERSION AND DEWATERING PLAN FOR APPROVAL PRIOR TO IMPLEMENTATION.

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 NASON CREEK, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST.

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

**TREE SALVAGE**

REMOVED VEGETATION SHALL BE INCORPORATED INTO LOG STRUCTURES AT NO ADDITIONAL COST. VEGETATION LARGER THAN 12" DIAMETER AND 15' LENGTH SHALL BE USED AS STRUCTURAL ELEMENTS. SMALLER MATERIAL SHALL BE USED AS SLASH.

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

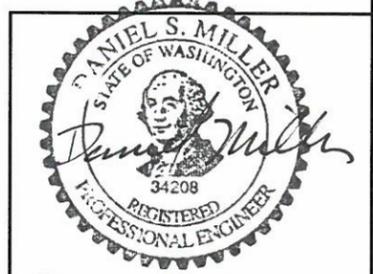
**LIVE TREES**

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.

SUMMARY OF QUANTITIES ESTIMATE			
Location	Item	Qty	Unit
<b>Meander Bend LWM</b>			
	Excavation for jam placement (no material excavated below OHHW)	760	CY
	Large wood (root wads) purchased, delivered, installed	60	EA
	Large wood (no root wads) purchased, delivered, installed	40	EA
	Ballast boulders delivered	72	EA
	Hog fuel (shredded wood mulch), see note 1 below	40	CY
<b>Backwater Channel</b>			
	Excavate to grade	9,000	CY
	Large wood (root wads) purchased, delivered, installed	246	EA
	Large wood (no root wads) purchased, delivered, installed	153	EA
	Hog fuel (shredded wood mulch), see note 1 below	110	CY
<b>Margin Habitat LWM (main channel)</b>			
	Large wood (root wads) purchased, delivered, installed	85	EA
	Large wood (no root wads) purchased, delivered, installed	80	EA
	Ballast boulder delivered (TBD, pending pile testing)	60	EA
	Hog fuel (shredded wood mulch), see note 1 below	50	CY
<b>Access Routes</b>			
	Hog fuel (shredded wood mulch), see note 1 below	70	CY

Note 1: Hog fuel shall be procured from a reputable source, delivered to site, and stockpiled throughout designated area in closely spaced piles with volume distributed evenly for post-construction hand placement by others.



EXPIRES 11-23-15

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NO.	BY	DATE	REVISION DESCRIPTION
1	DM	3/25/2015	HOG FUEL QUANTITY AND DISTRIBUTION

DF	GJ,RG,MC,RP,DM	DM,MM
DRAWN	DESIGNED	CHECKED
DM	3/14/15	12-02-34
APPROVED	DATE	PROJECT

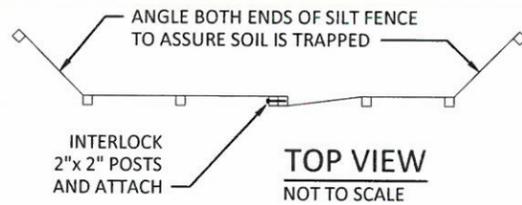
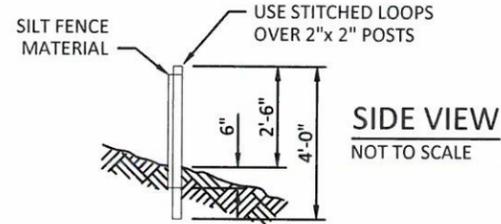
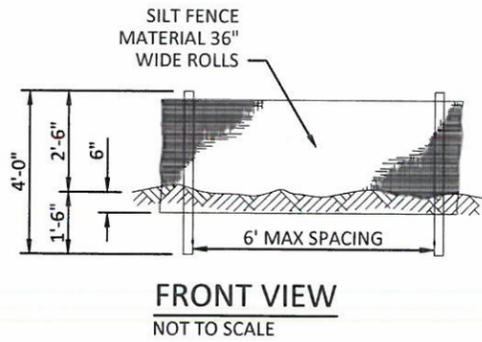
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NOTES, SUMMARY OF  
QUANTITIES, AND PILE TESTING  
SPECIFICATIONS

SHEET  
3 OF 20



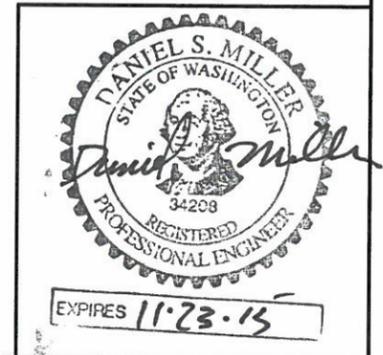
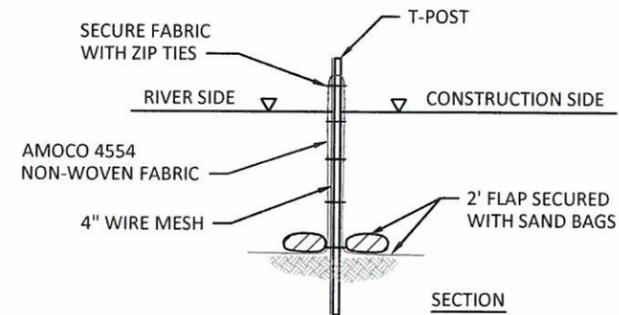
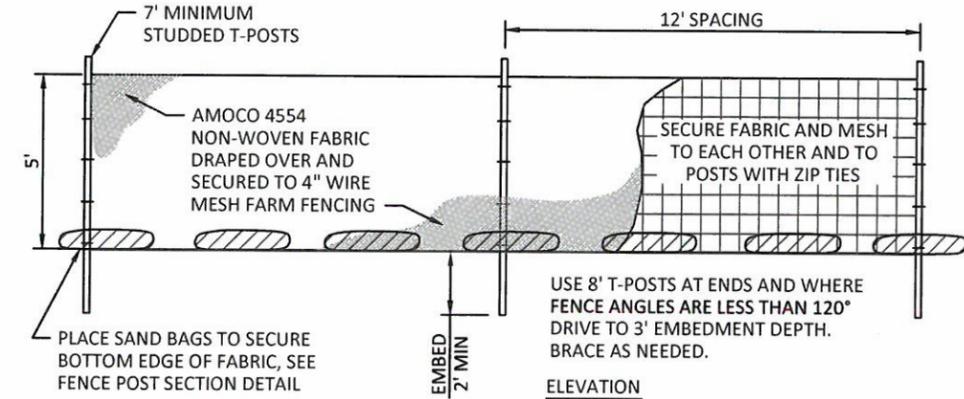
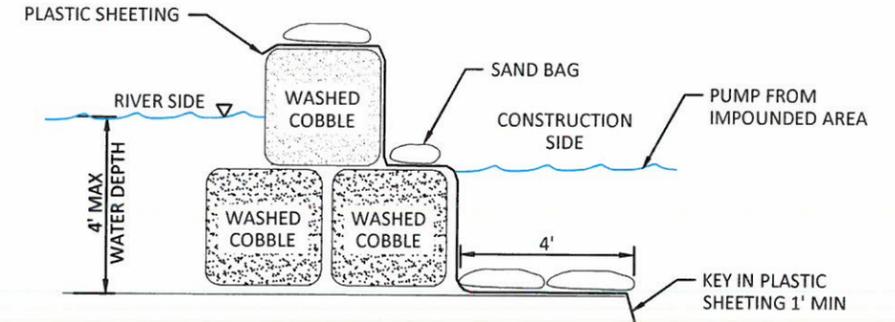
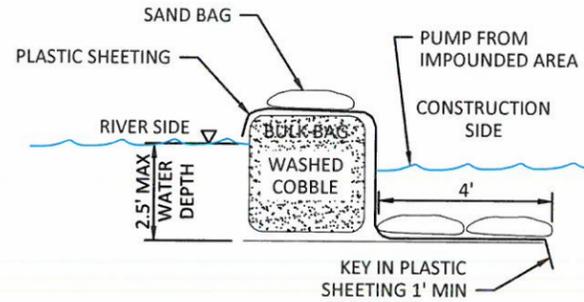
**TYPICAL SILT FENCE DETAIL**  
NOT TO SCALE

**SILT FENCES:**

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.

**BULK BAG NOTES:**

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WDFW APPROVED 3 INCH 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 THE WORK AREA SIDE 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.
4. THE OUTWARD 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 WATERPROOF 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. 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 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.
9. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER OR OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.



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NO.	BY	DATE	REVISION DESCRIPTION

DF	GJ, RG, MC, RP, DM	DM, MM
DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation  
Nason Creek - UWP Sub-Reaches 3-4  
Fish Enhancement Project

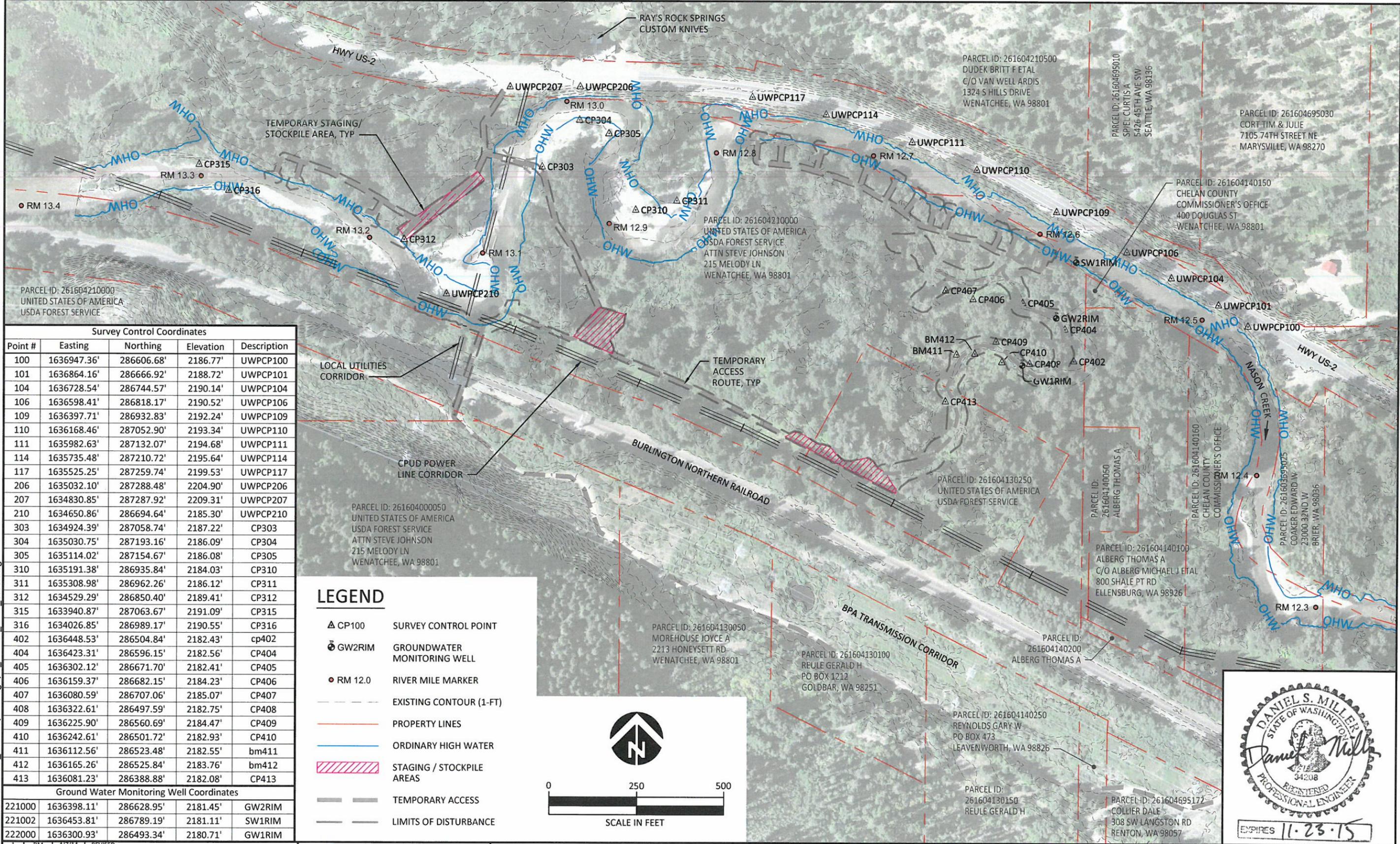


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SILT FENCE, COFFERDAM, AND  
TURBIDITY CURTAIN DETAILS

SHEET

4 OF 20



Survey Control Coordinates

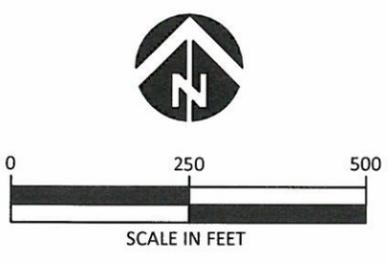
Point #	Easting	Northing	Elevation	Description
100	1636947.36'	286606.68'	2186.77'	UWPCP100
101	1636864.16'	286666.92'	2188.72'	UWPCP101
104	1636728.54'	286744.57'	2190.14'	UWPCP104
106	1636598.41'	286818.17'	2190.52'	UWPCP106
109	1636397.71'	286932.83'	2192.24'	UWPCP109
110	1636168.46'	287052.90'	2193.34'	UWPCP110
111	1635982.63'	287132.07'	2194.68'	UWPCP111
114	1635735.48'	287210.72'	2195.64'	UWPCP114
117	1635525.25'	287259.74'	2199.53'	UWPCP117
206	1635032.10'	287288.48'	2204.90'	UWPCP206
207	1634830.85'	287287.92'	2209.31'	UWPCP207
210	1634650.86'	286694.64'	2185.30'	UWPCP210
303	1634924.39'	287058.74'	2187.22'	CP303
304	1635030.75'	287193.16'	2186.09'	CP304
305	1635114.02'	287154.67'	2186.08'	CP305
310	1635191.38'	286935.84'	2184.03'	CP310
311	1635308.98'	286962.26'	2186.12'	CP311
312	1634529.29'	286850.40'	2189.41'	CP312
315	1633940.87'	287063.67'	2191.09'	CP315
316	1634026.85'	286989.17'	2190.55'	CP316
402	1636448.53'	286504.84'	2182.43'	cp402
404	1636423.31'	286596.15'	2182.56'	CP404
405	1636302.12'	286671.70'	2182.41'	CP405
406	1636159.37'	286682.15'	2184.23'	CP406
407	1636080.59'	286707.06'	2185.07'	CP407
408	1636322.61'	286497.59'	2182.75'	CP408
409	1636225.90'	286560.69'	2184.47'	CP409
410	1636242.61'	286501.72'	2182.93'	CP410
411	1636112.56'	286523.48'	2182.55'	bm411
412	1636165.26'	286525.84'	2183.76'	bm412
413	1636081.23'	286388.88'	2182.08'	CP413

Ground Water Monitoring Well Coordinates

221000	1636398.11'	286628.95'	2181.45'	GW2RIM
221002	1636453.81'	286789.19'	2181.11'	SW1RIM
222000	1636300.93'	286493.34'	2180.71'	GW1RIM

LEGEND

- ▲ CP100 SURVEY CONTROL POINT
- ⊕ GW2RIM GROUNDWATER MONITORING WELL
- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOUR (1-FT)
- — — PROPERTY LINES
- — — ORDINARY HIGH WATER
- ▨ STAGING / STOCKPILE AREAS
- — — TEMPORARY ACCESS
- — — LIMITS OF DISTURBANCE



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NO.	BY	DATE	REVISION DESCRIPTION
1	DM	4/7/14	REVISED

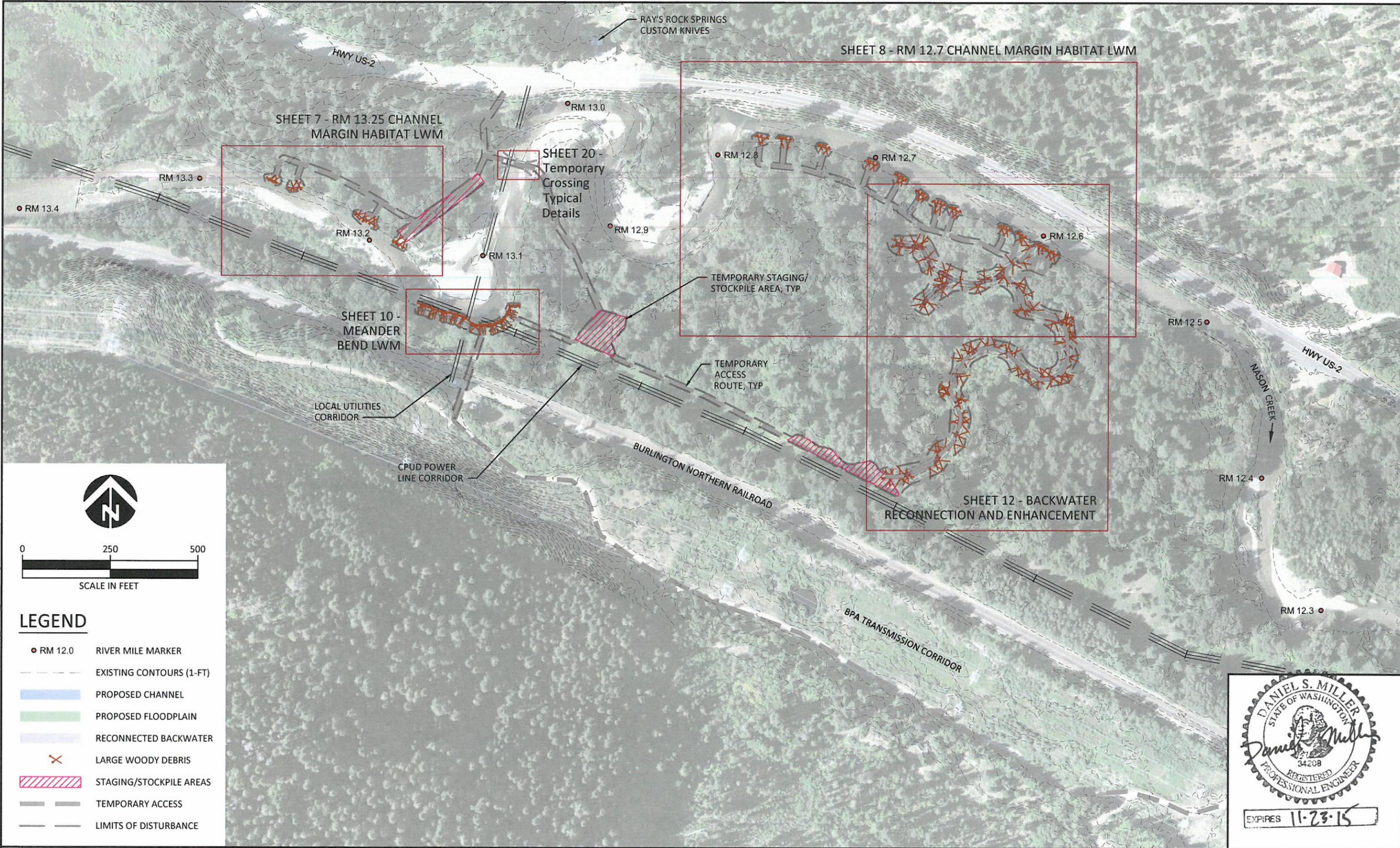
DF	GJ, RG, MC, RP, DM	DM, MM
DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation  
Nason Creek - UWP Sub-Reaches 3-4  
Fish Enhancement Project

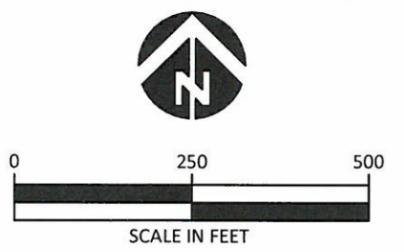
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EXISTING CONDITIONS,  
ACCESS, OWNERSHIP,  
AND CONTROL POINTS

SHEET  
5 OF 20

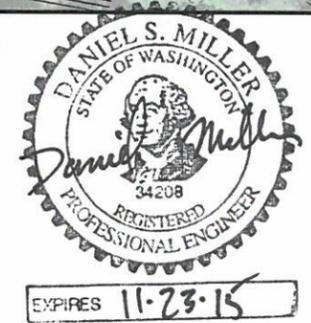


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**LEGEND**

- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOURS (1-FT)
- PROPOSED CHANNEL
- PROPOSED FLOODPLAIN
- RECONNECTED BACKWATER
- ✕ LARGE WOODY DEBRIS
- ▨ STAGING/STOCKPILE AREAS
- TEMPORARY ACCESS
- LIMITS OF DISTURBANCE



NO.	BY	DATE	REVISION DESCRIPTION
1	DM	4/7/14	REVISED

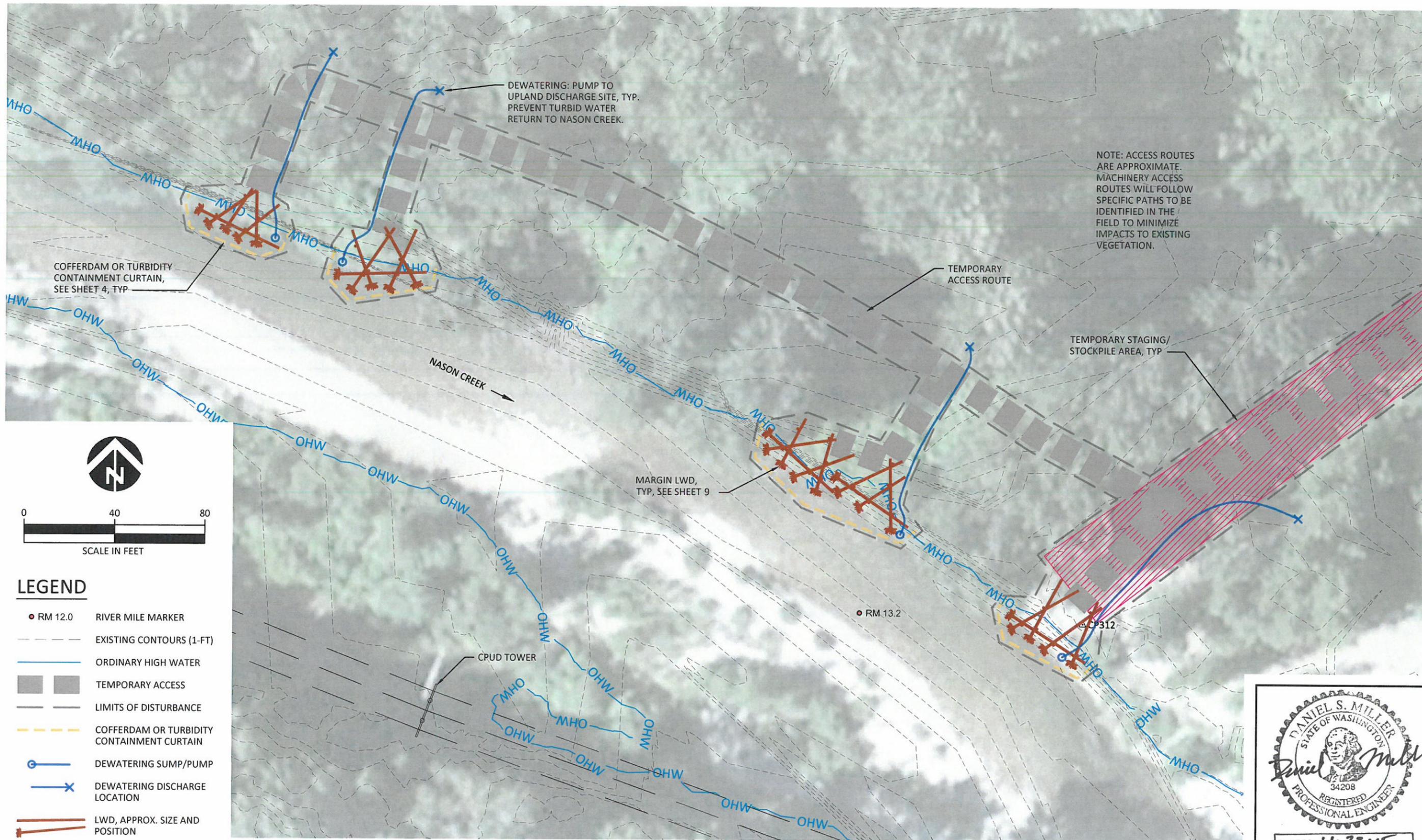
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DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
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**Confederated Tribes and Bands of the Yakama Nation**  
**Nason Creek - UWP Sub-Reaches 3-4**  
**Fish Enhancement Project**



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**PROPOSED CONDITIONS**  
**AND PROJECT AREAS**



NOTE: ACCESS ROUTES ARE APPROXIMATE. MACHINERY ACCESS ROUTES WILL FOLLOW SPECIFIC PATHS TO BE IDENTIFIED IN THE FIELD TO MINIMIZE IMPACTS TO EXISTING VEGETATION.

DEWATERING: PUMP TO UPLAND DISCHARGE SITE, TYP. PREVENT TURBID WATER RETURN TO NASON CREEK.

COFFERDAM OR TURBIDITY CONTAINMENT CURTAIN, SEE SHEET 4, TYP

TEMPORARY ACCESS ROUTE

TEMPORARY STAGING/ STOCKPILE AREA, TYP

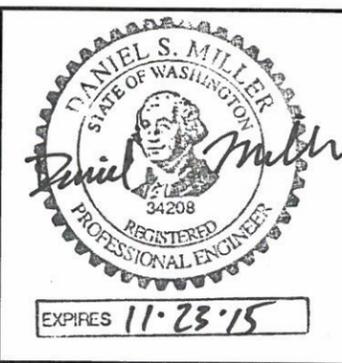
MARGIN LWD, TYP, SEE SHEET 9



**LEGEND**

- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOURS (1-FT)
- ORDINARY HIGH WATER
- TEMPORARY ACCESS
- - - LIMITS OF DISTURBANCE
- - - COFFERDAM OR TURBIDITY CONTAINMENT CURTAIN
- DEWATERING SUMP/PUMP
- × DEWATERING DISCHARGE LOCATION
- LWD, APPROX. SIZE AND POSITION

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NO.	BY	DATE	REVISION DESCRIPTION

DF	GJ, RG, MC, RP, DM	DM, MM
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APPROVED	DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation  
 Nason Creek - UWP Sub-Reaches 3-4  
 Fish Enhancement Project

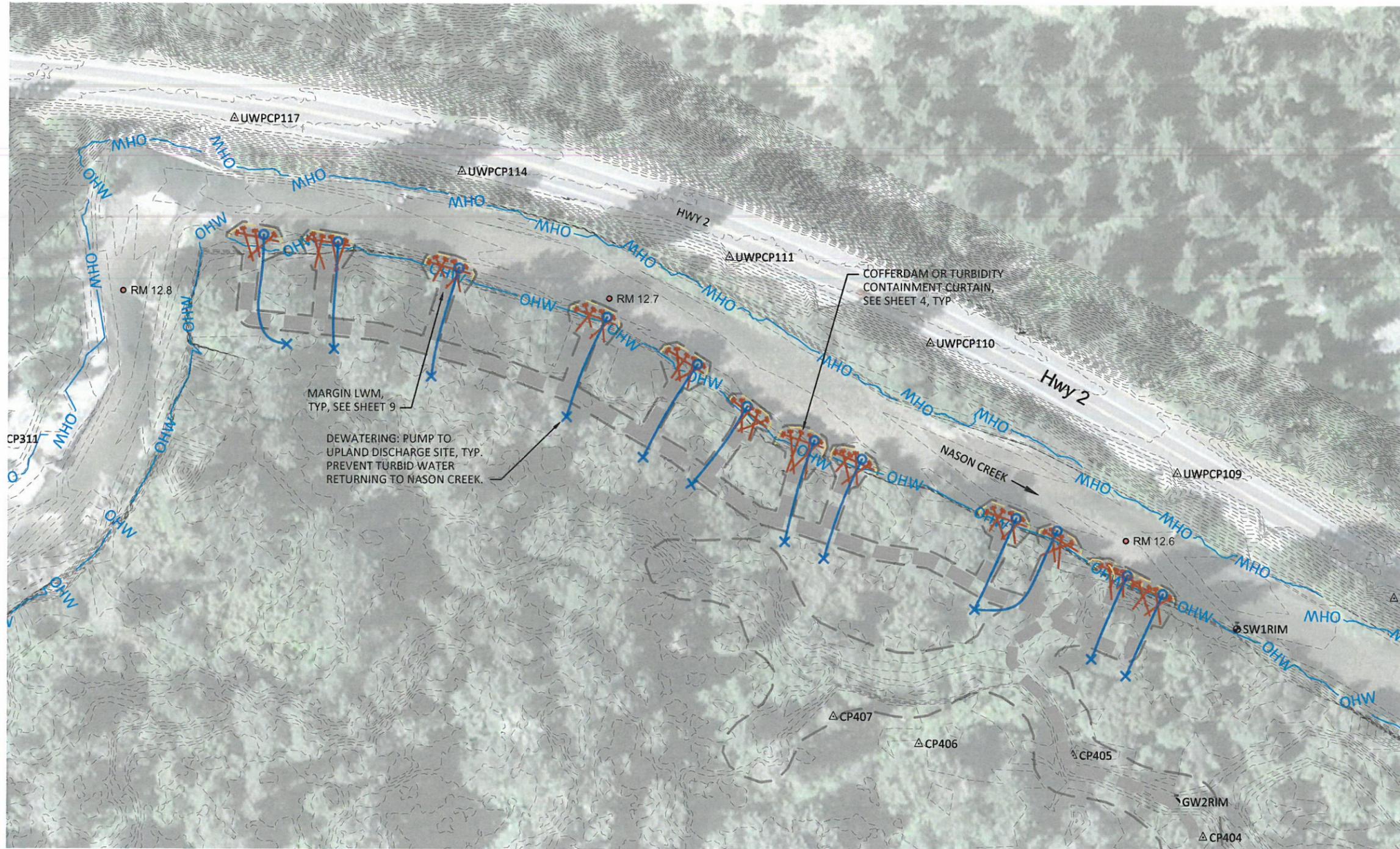


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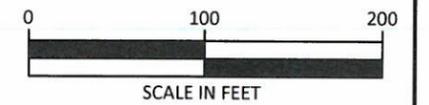
RM 13.25 CHANNEL  
 MARGIN HABITAT LWM

SHEET  
 7 OF 20

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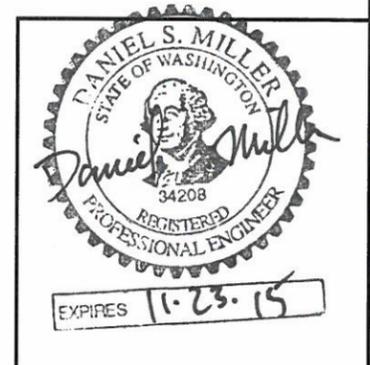


NOTE: ACCESS ROUTES ARE APPROXIMATE. MACHINERY ACCESS ROUTES WILL FOLLOW SPECIFIC PATHS TO BE IDENTIFIED IN THE FIELD TO MINIMIZE IMPACTS TO EXISTING VEGETATION.



**LEGEND**

- △ CP100 SURVEY CONTROL POINT
- ⊕ GW2RIM GROUNDWATER MONITORING WELL
- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOURS (1-FT)
- ORDINARY HIGH WATER
- ▬ TEMPORARY ACCESS
- - - LIMITS OF DISTURBANCE
- - - COFFERDAM OR TURBIDITY CONTAINMENT CURTAIN
- ⊕ DEWATERING SUMP/PUMP
- ⊕ DEWATERING DISCHARGE LOCATION
- LWM, APPROX. SIZE AND POSITION



NO.	BY	DATE	REVISION DESCRIPTION
1	DM	4/7/14	REVISED

DF	GJ, RG, MC, RP, DM	DM, MM
DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

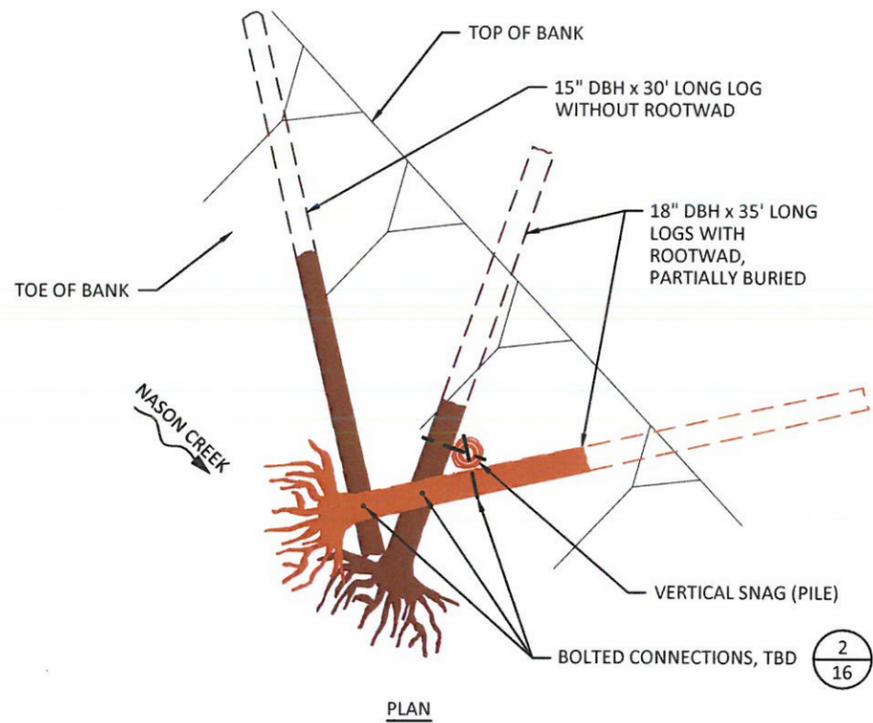
Confederated Tribes and Bands of the Yakama Nation  
Nason Creek - UWP Sub-Reaches 3-4  
Fish Enhancement Project



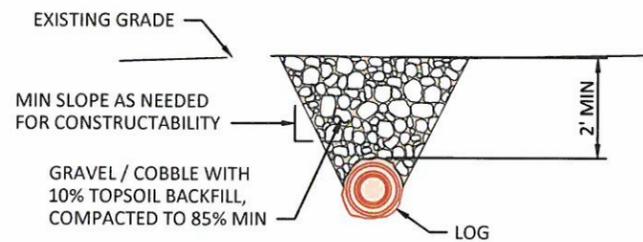
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RM 12.7 CHANNEL  
MARGIN HABITAT LWM

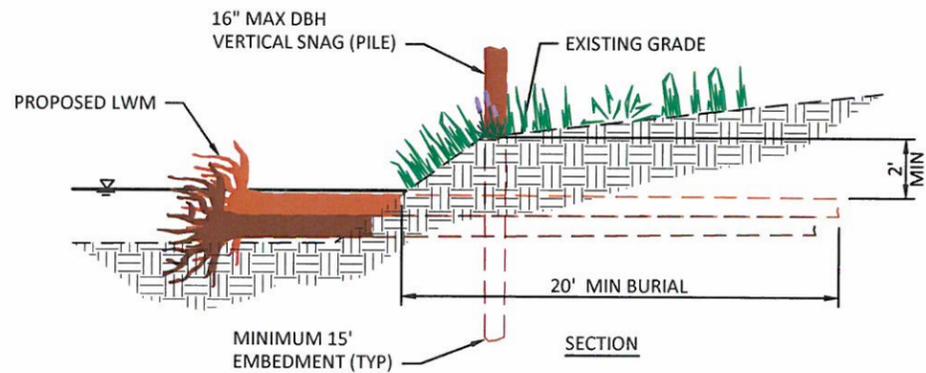
SHEET  
8 OF 20



PLAN



LOG BURIAL

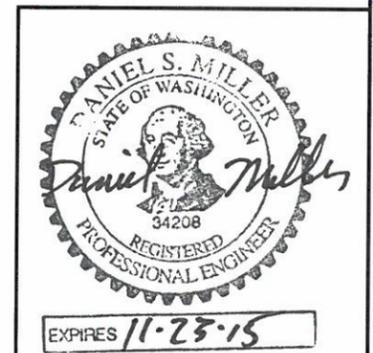


SECTION

**1**  
**9** BANK MARGIN LWM  
NOT TO SCALE



MARGIN LWM EXAMPLE



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APPROVED	DATE	PROJECT

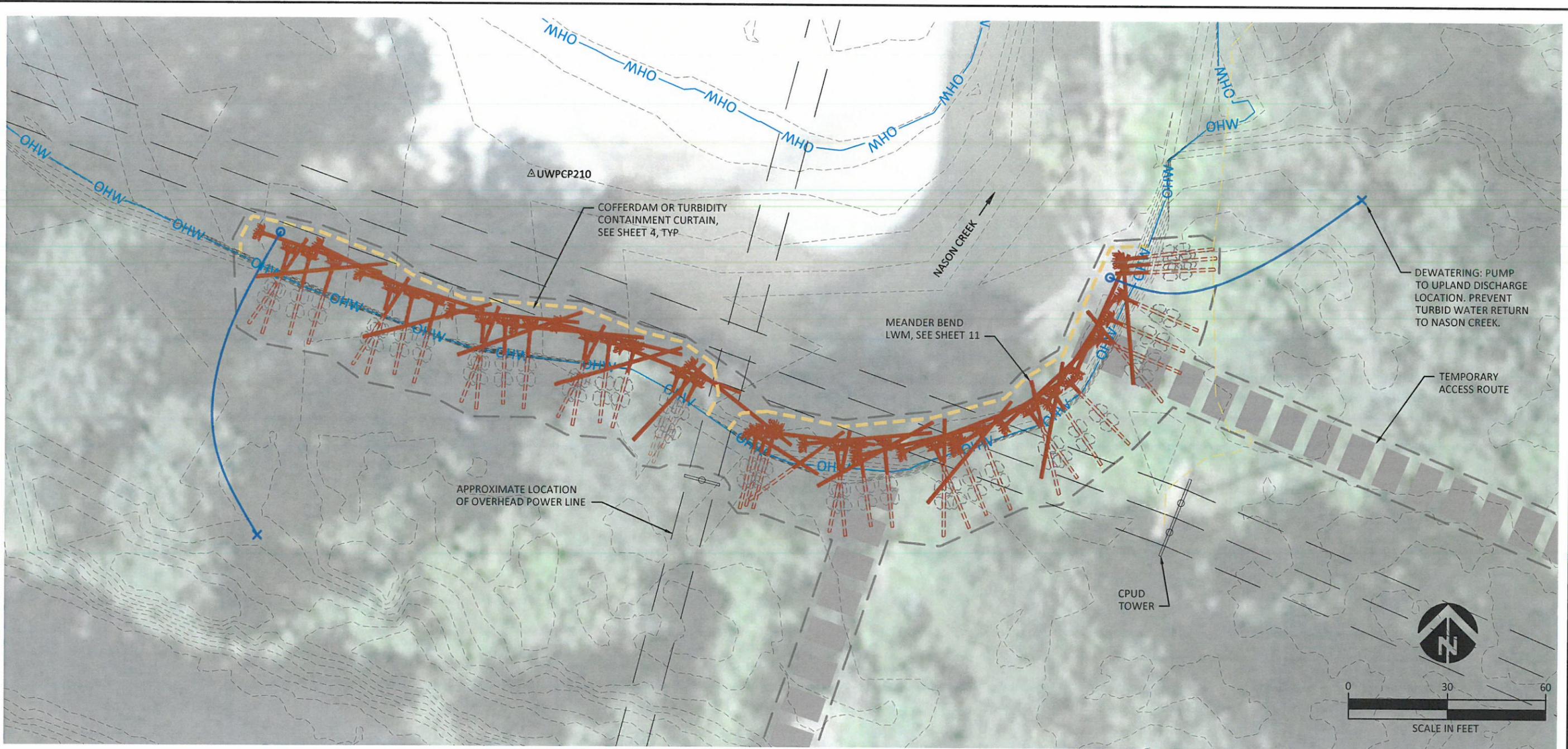
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Nason Creek - UWP Sub-Reaches 3-4  
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CHANNEL MARGIN HABITAT  
LWM TYPICAL DETAILS

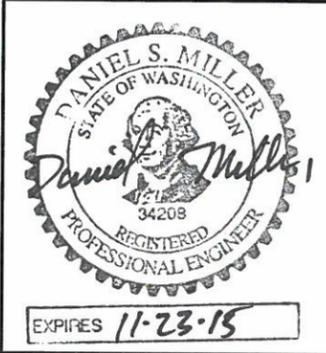
SHEET  
9 OF 20



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**LEGEND**

- ▲ CP100 SURVEY CONTROL POINT
- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOURS (1-FT)
- ORDINARY HIGH WATER
- TEMPORARY ACCESS
- - - LIMITS OF DISTURBANCE
- - - COFFERDAM OR TURBIDITY CONTAINMENT CURTAIN
- DEWATERING SUMP/PUMP
- ✕ DEWATERING DISCHARGE LOCATION
- LWM, APPROX. SIZE AND POSITION
- BURIED LWM WITH BOULDER BALLAST



NO.	BY	DATE	REVISION DESCRIPTION

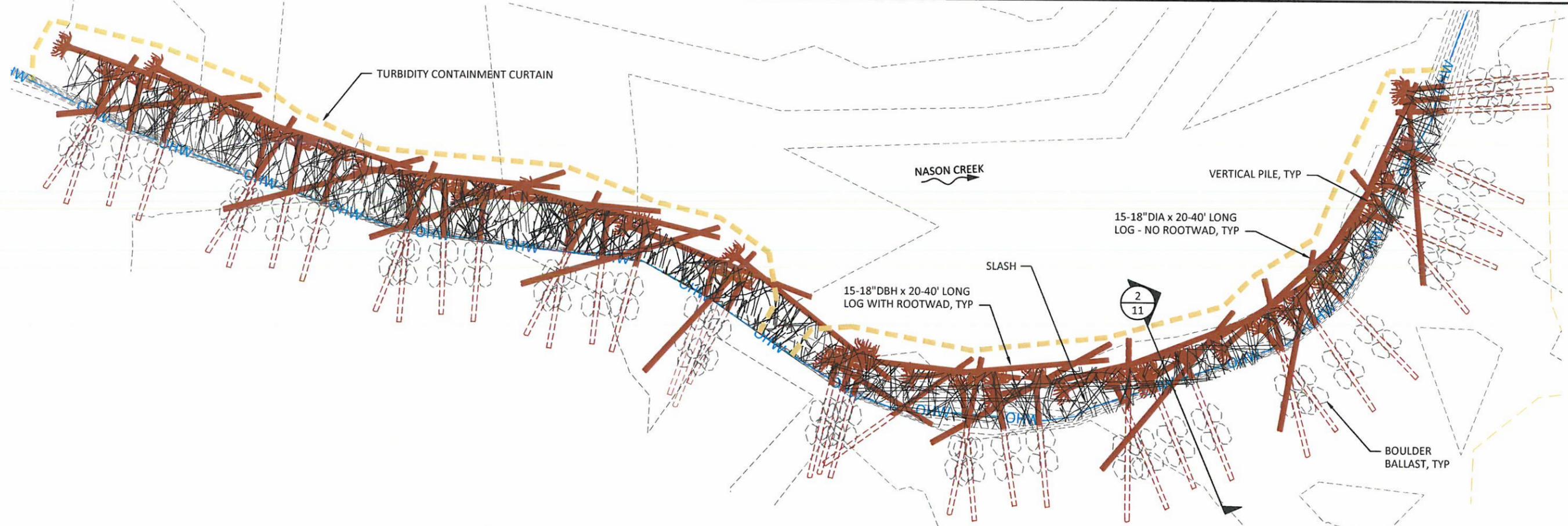
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DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

**Confederated Tribes and Bands of the Yakama Nation**  
**Nason Creek - UWP Sub-Reaches 3-4**  
**Fish Enhancement Project**

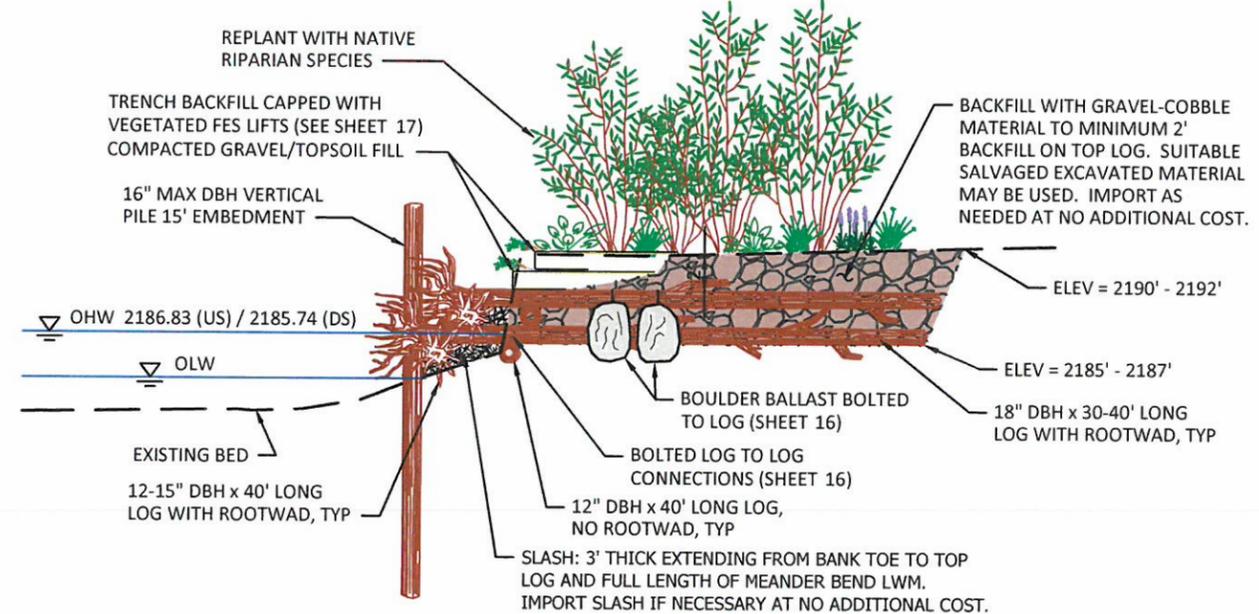


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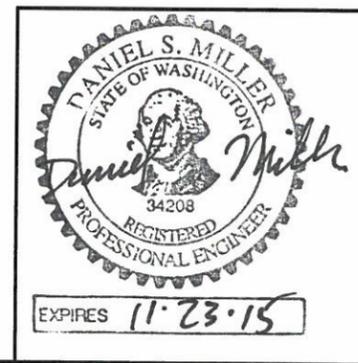
**MEANDER BEND LWM**



**1** **DETAIL - MEANDER BEND LWM**  
 NOT TO SCALE



**2** **SECTION - MEANDER BEND LWD**  
 1" = 10'



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NO.	BY	DATE	REVISION DESCRIPTION

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Confederated Tribes and Bands of the Yakama Nation  
 Nason Creek - UWP Sub-Reaches 3-4  
 Fish Enhancement Project

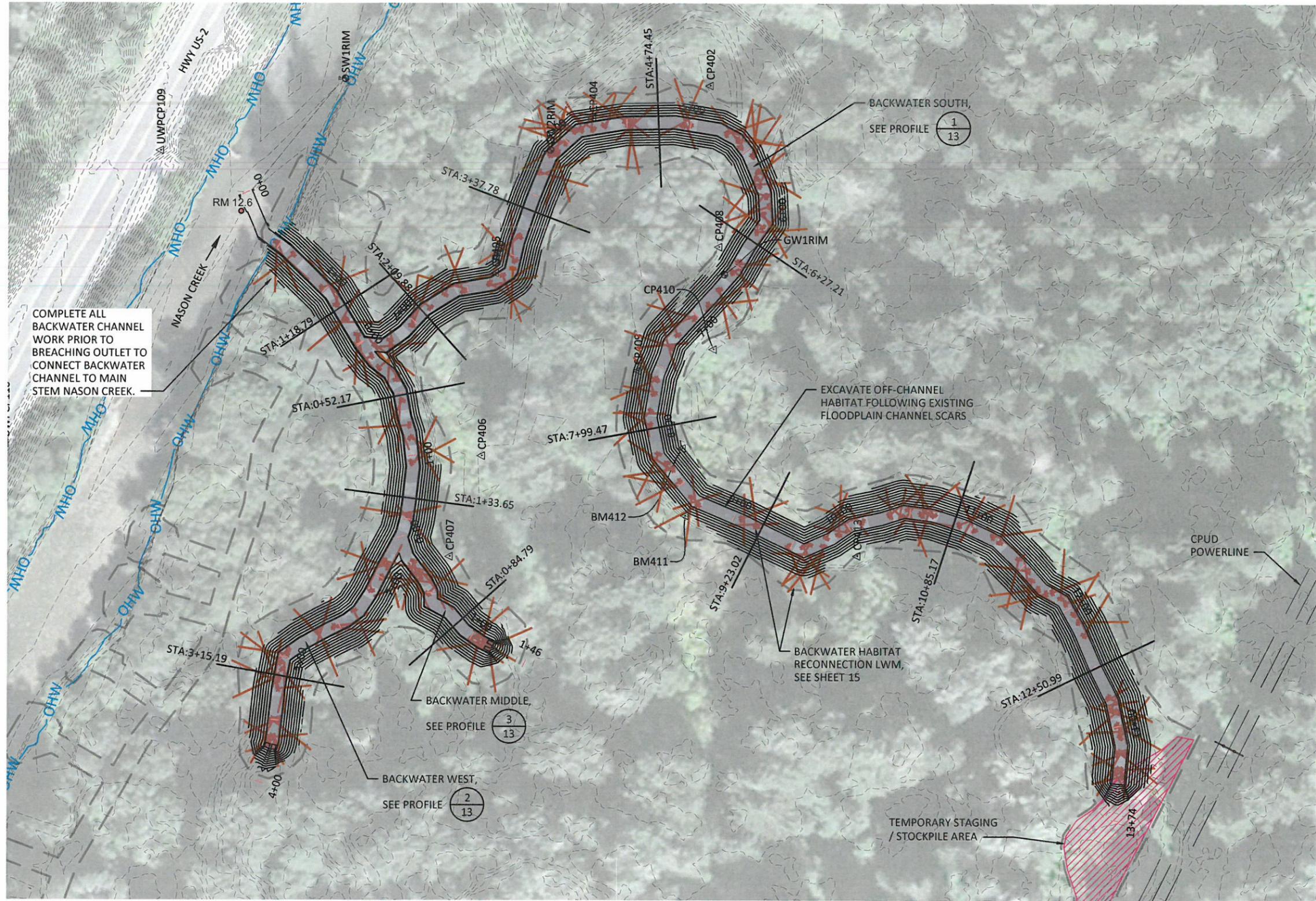


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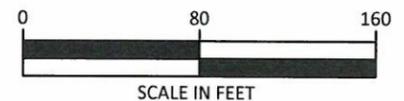
MEANDER BEND LWM  
 TYPICAL DETAILS

SHEET  
 11 OF 20

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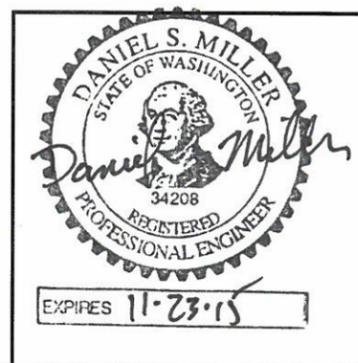


COMPLETE ALL BACKWATER CHANNEL WORK PRIOR TO BREACHING OUTLET TO CONNECT BACKWATER CHANNEL TO MAIN STEM NASON CREEK.



**LEGEND**

- ▲ CP100 SURVEY CONTROL POINT
- ⊕ GW2RIM GROUNDWATER MONITORING WELL
- RM 12.0 RIVER MILE MARKER
- - - EXISTING CONTOURS (1-FT)
- ORDINARY HIGH WATER
- TEMPORARY ACCESS
- - - LIMITS OF DISTURBANCE
- STA:12+50.99 GRADING CROSS SECTION LINE AND STATION LABEL (SEE SHEET 14)
- LWM, APPROX. SIZE AND POSITION



NO.	BY	DATE	REVISION DESCRIPTION
1	DM	4/7/14	REVISED

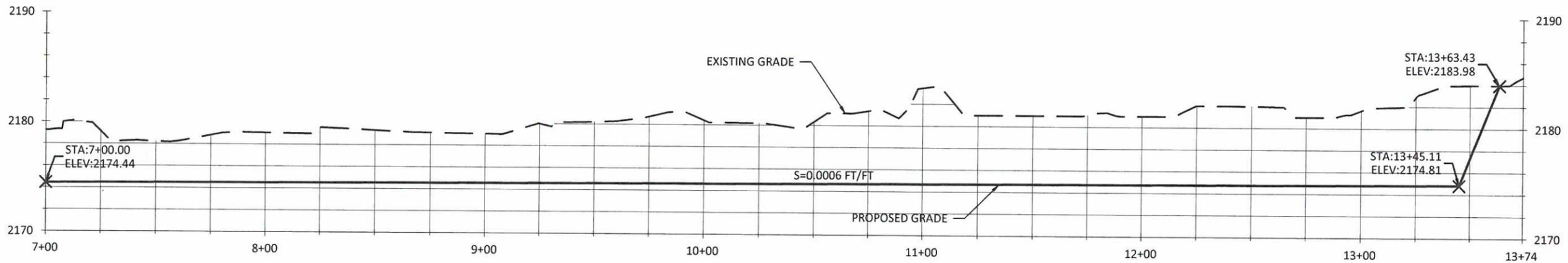
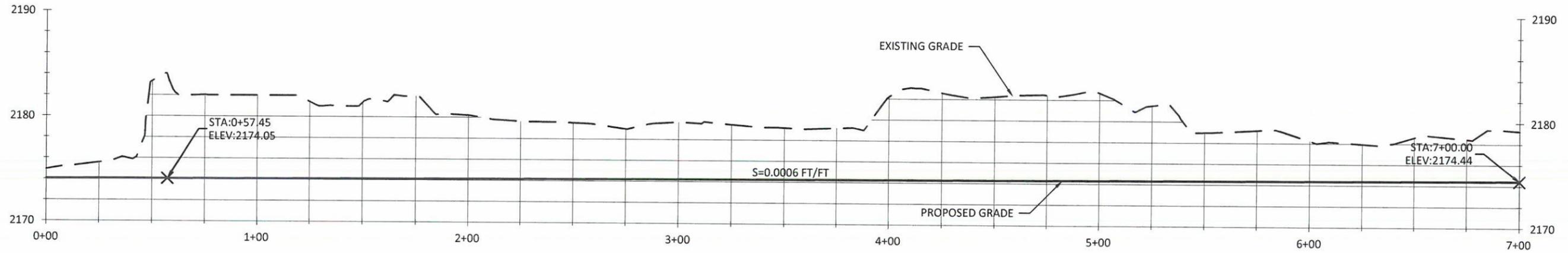
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DRAWN	DESIGNED	CHECKED
DM	3/14/14	12-02-34
APPROVED	DATE	PROJECT

Confederated Tribes and Bands of the Yakama Nation  
Nason Creek - UWP Sub-Reaches 3-4  
Fish Enhancement Project

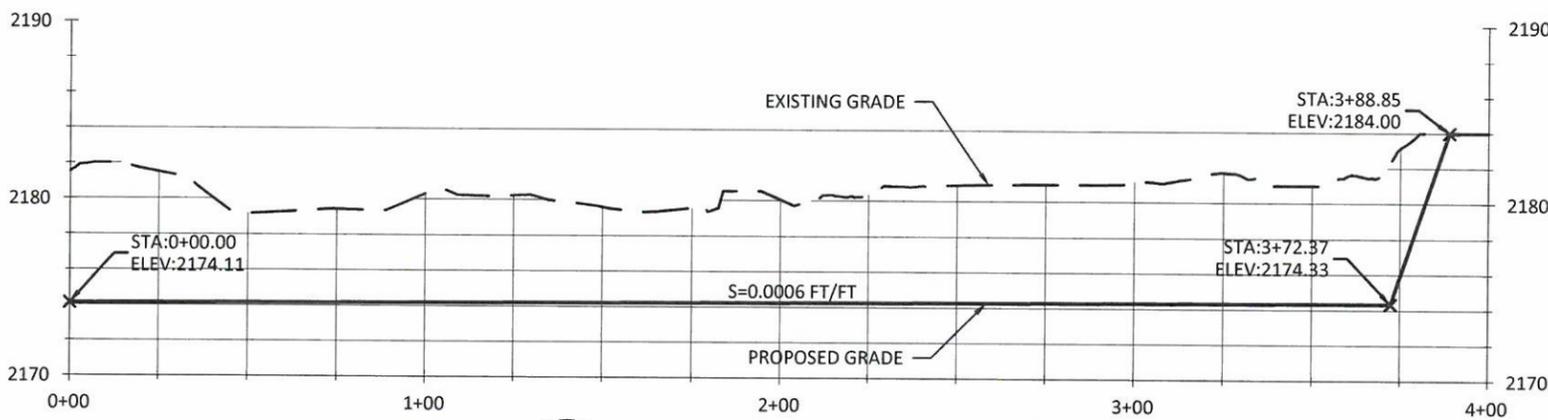
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BACKWATER RECONNECTION  
AND ENHANCEMENT

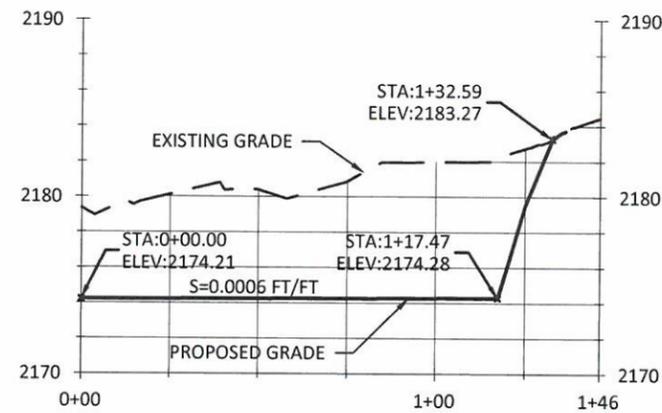
SHEET  
12 OF 20



**1**  
**13** PROFILE - BACKWATER SOUTH  
1" = 50'

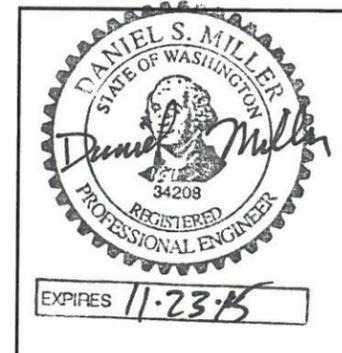


**2**  
**13** PROFILE - BACKWATER WEST  
1" = 50'



**3**  
**13** PROFILE - BACKWATER MIDDLE  
1" = 50'

SCALE: 1" = 10'  
(5x VERTICAL EXAGGERATION)  
SCALE: 1" = 50'



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Confederated Tribes and Bands of the Yakama Nation  
Nason Creek - UWP Sub-Reaches 3-4  
Fish Enhancement Project

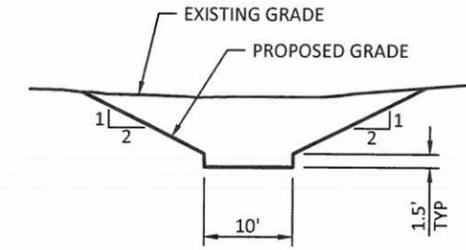
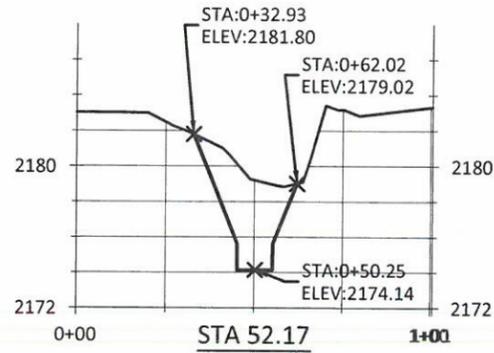
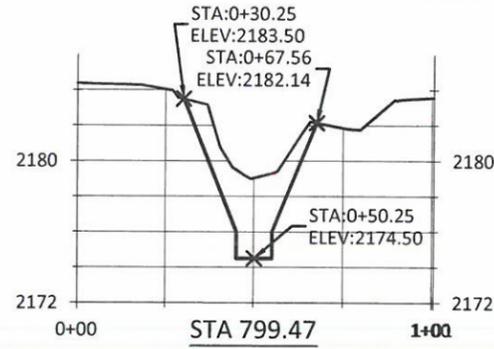
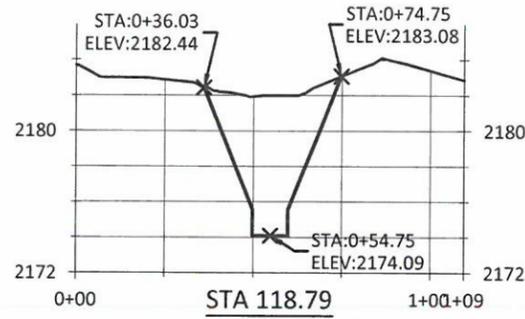


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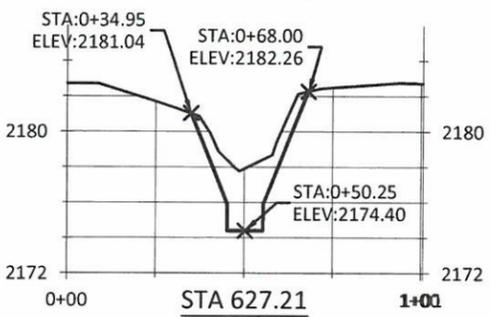
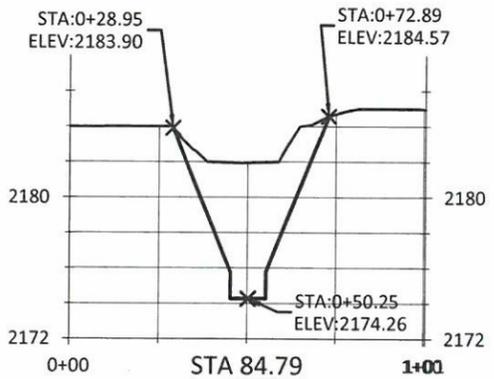
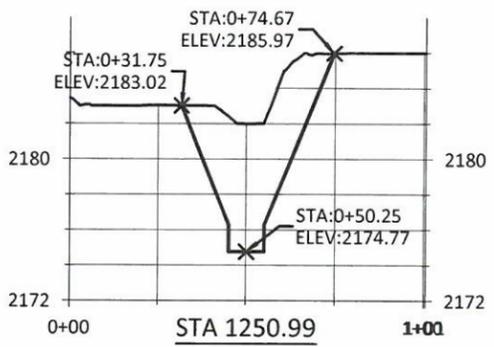
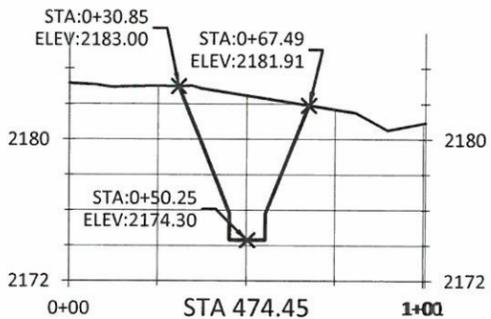
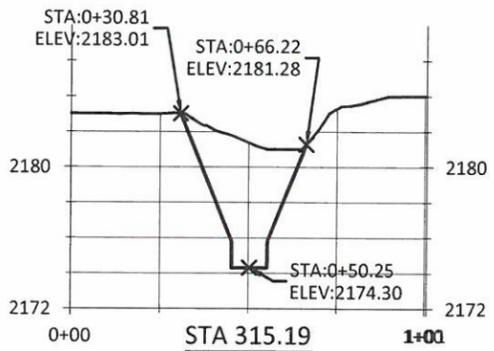
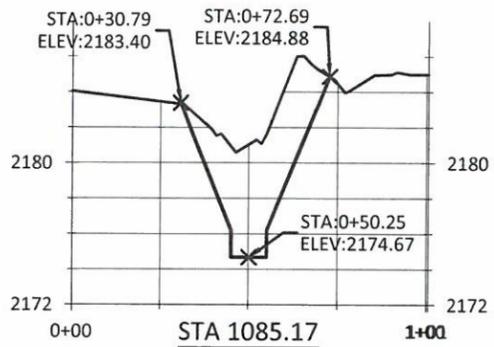
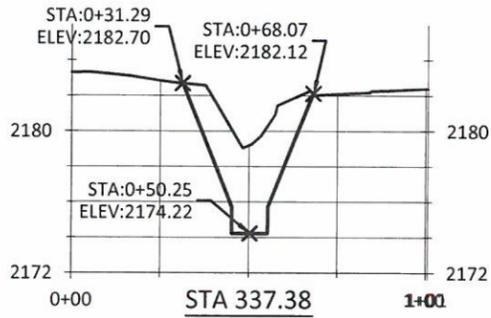
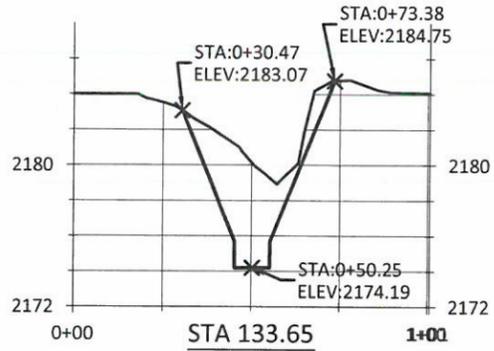
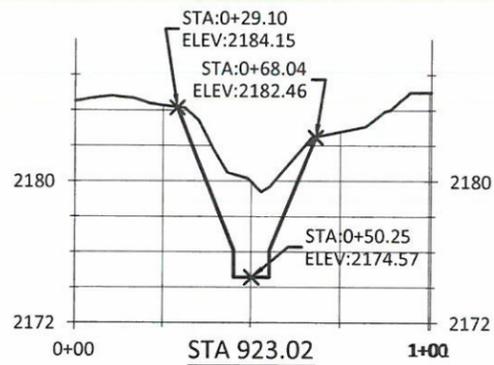
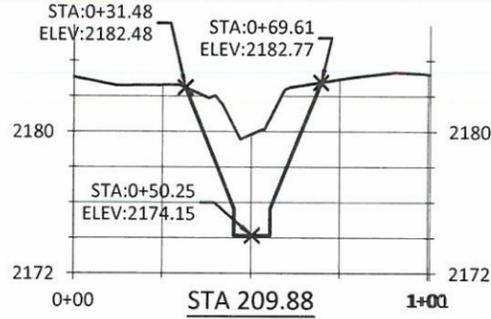
BACKWATER CHANNEL  
PROFILE VIEWS

SHEET  
13 OF 20

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TYPICAL SECTION  
NOT TO SCALE

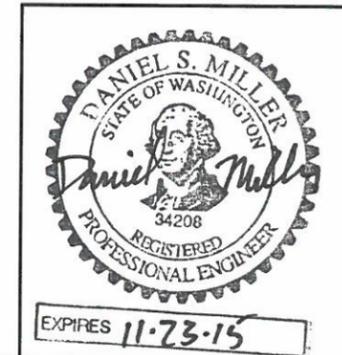


BACKWATER SOUTH

BACKWATER MIDDLE

BACKWATER WEST

SCALE: 1" = 50'  
(5x VERTICAL EXAGGERATION)



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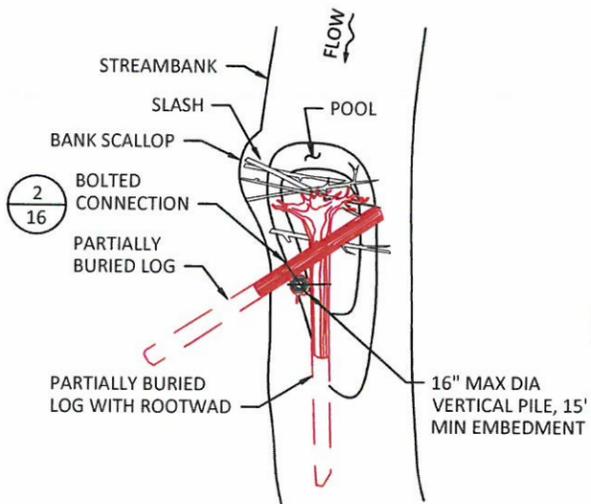


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BACKWATER CHANNEL  
GRADING CROSS SECTIONS

SHEET  
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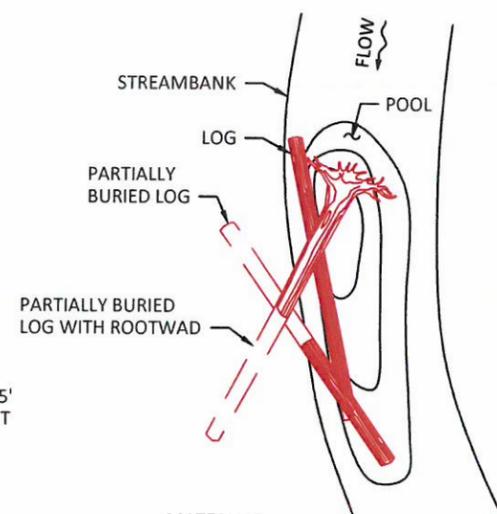


MATERIALS	
LOG WITH ROOTS	1
LOG	1
LOG TRENCH	1
PILING	1
BOLTED CONNECTION	1
SLASH	YES

**DESCRIPTION:**

1. CREATE POOL AND SCALLOP IN BANK.
2. PLACE LOG WITH ROOTWAD TO LOOK AND FUNCTION LIKE A TREE THAT HAS FALLEN OVER INTO THE CREEK. PARTIALLY BURY.
3. INSTALL SLASH UPSTREAM AND UNDER ROOTWAD.
4. HOLD DOWN LOG WITH ROOTWAD BY INSTALLING PARTIALLY BURIED LOG THAT CROSSES OVER.
5. INSTALL PILING AND BOLT LOG TO PILING.

**1**  
**15** **OPTION 1 - BALLASTED ROOTWAD**  
NOT TO SCALE

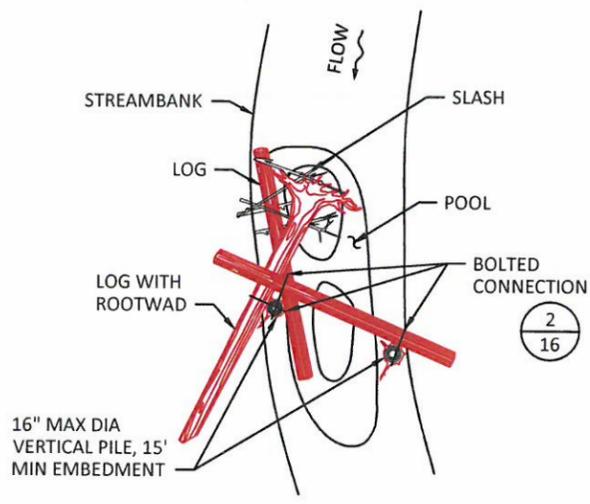


MATERIALS	
LOG WITH ROOTS	1
LOG	2
LOG TRENCH	2
PILING	0
BOLTED CONNECTION	0
SLASH	NO

**DESCRIPTION:**

1. CREATE POOL.
2. PLACE LOG IN POOL.
3. HOLD DOWN LOG WITH PARTIALLY BURIED LOG WITH ROOTWAD.

**2**  
**15** **OPTION 2 - BALLASTED ROOTWAD**  
NOT TO SCALE

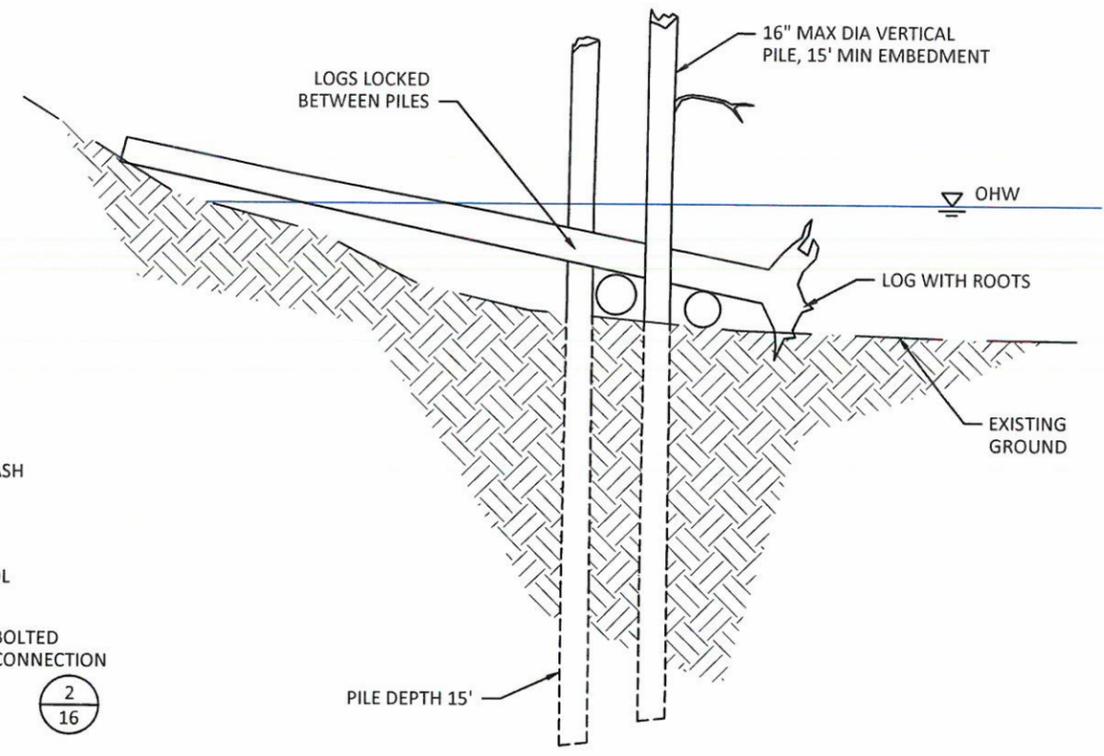


MATERIALS	
LOG WITH ROOTS	1
LOG	2
LOG TRENCH	0
PILING	2
BOLTED CONNECTION	3
SLASH	YES

**DESCRIPTION:**

1. CREATE POOL.
2. PLACE LOG IN POOL.
3. PLACE LOG WITH ROOTWAD THAT CROSSES OVER, WITH ROOTWAD IN POOL.
4. INSTALL SLASH UPSTREAM AND UNDER ROOTWAD.
5. INSTALL TWO PILING.
6. INSTALL A CHANNEL SPANNING LOG BRACED BY BOTH PILING.
7. BOLT THE SPANNING LOG AND THE ROOTWAD LOG TO THE PILING.

**3**  
**15** **OPTION 3 - BALLASTED ROOTWAD**  
NOT TO SCALE

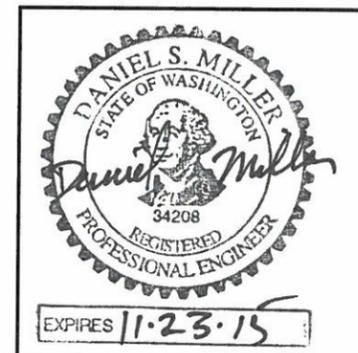


**SECTION VIEW**  
**TYPICAL OFF CHANNEL HABITAT**

NOT TO SCALE

**LOG JAM CONSTRUCTION NOTES:**

1. SIZE, LOCATION, AND ORIENTATION OF LWM SHOWN FOR BID PURPOSES. FINAL LOCATION AND ORIENTATION WILL DEPEND UPON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.
2. LWM AND ANCHOR PLACEMENTS TO BE FIELD-FIT AND APPROVED BY OWNER'S REPRESENTATIVE.
3. EACH PILING SHALL BE DRIVEN A MINIMUM 15' INTO THE GROUND.
4. EACH BURIED LOG SHALL BE BURIED A MINIMUM 20' INTO THE BANK.
5. REFER TO SHEET 3 FOR ADDITIONAL PILING NOTES.



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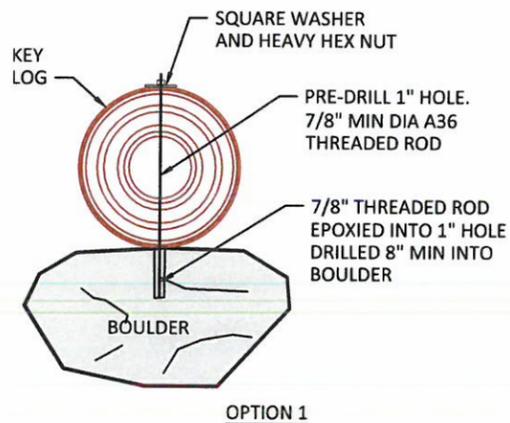
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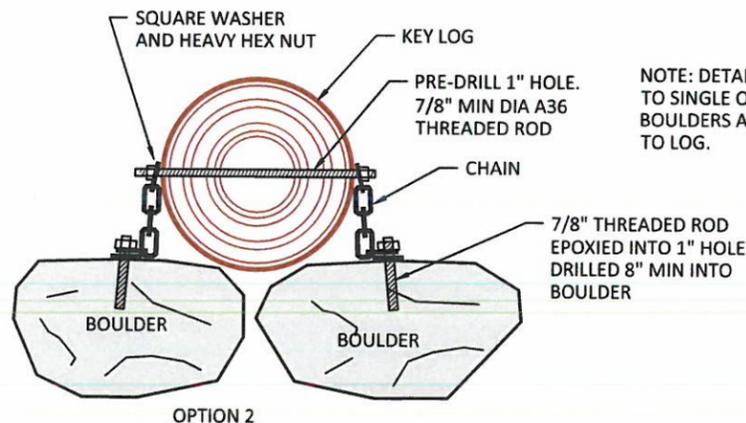
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BACKWATER HABITAT  
RECONNECTION LWM  
TYPICAL DETAILS

SHEET  
15 OF 20



OPTION 1



OPTION 2

NOTE: DETAIL APPLIES TO SINGLE OR PAIR OF BOULDERS ATTACHED TO LOG.

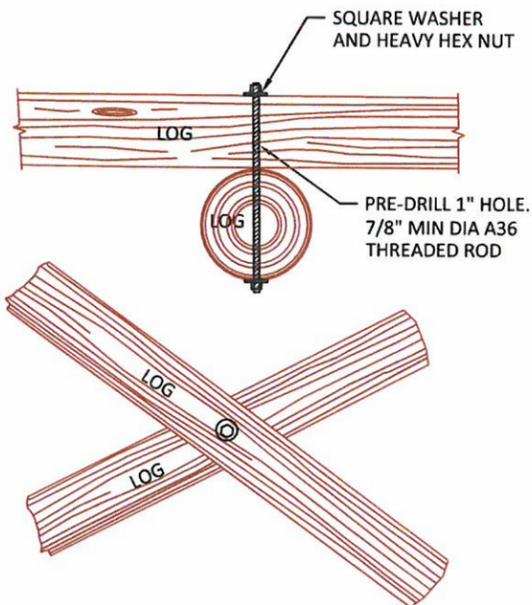
**LOG ANCHORED TO BOULDER**

1. SECURE LOG WITH THREADED ROD THROUGH LOG EPOXIED INTO BOULDER, OR CHAINED TO ANCHOR EPOXIED IN BOULDER.
2. INSTALL STEEL PLATE(S), CHAIN (IF APPLICABLE), AND HEAVY HEX NUT(S).
3. SECURE NUT(S) BY CHISELING THREADS.
4. FILE OR GRIND OFF SHARP EDGES. INSTALL PLASTIC BOLT CAP(S).



EXAMPLE OF CHAIN FASTENING TO EPOXIED BOULDER ANCHOR

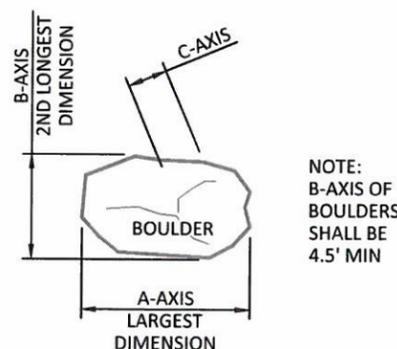
**1 BOULDER BALLAST**  
16 NOT TO SCALE



**2 LOG-LOG CONNECTIONS**  
16 NOT TO SCALE

**PIN LOGS TO LOGS**

1. DRILL 1" HOLE THROUGH LOG(S).
2. INSERT 7/8" DIA. ALL-THREAD REBAR.
3. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS.
4. FILE OR GRIND OFF SHARP EDGES. INSTALL PLASTIC BOLT CAP.



NOTE: B-AXIS OF BOULDERS SHALL BE 4.5' MIN

**3 BOULDER SIZE**  
16 NOT TO SCALE

**BOLTED CONNECTION NOTES**

**DESCRIPTION**

1. THIS WORK CONSISTS OF BALLASTING LARGE WOOD WITH BOULDERS, BOLTS AND PILES AS REQUIRED TO PROVIDE ADEQUATE BALLAST FOR STRUCTURAL STABILITY.

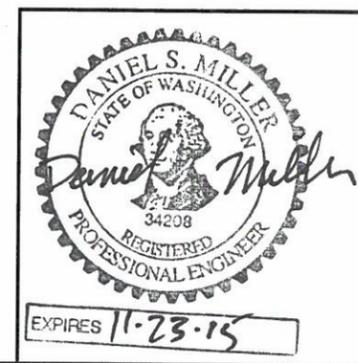
**MATERIALS**

2. BOULDERS SHALL BE NON-FRACTURED BASALT OR GRANITE WITH A MINIMUM SPECIFIC GRAVITY OF 2.65.
3. BOLTS USED FOR LOG TO BOULDER AND LOG TO LOG CONNECTIONS SHALL BE MINIMUM 7/8" DIAMETER THREADED ROD. GRADE A36 STEEL.
4. WASHERS SHALL BE SQUARE PLATE, 3/8" x 4" x 4" MINIMUM.
5. NUTS SHALL BE HEAVY HEX.
6. EPOXY FOR ANCHORING SHALL BE HILTI HIT RE 500 ADHESIVE OR APPROVED EQUAL.
7. CHAIN FOR FLEXIBLE LINKAGE BETWEEN LOG AND BOULDERS SHALL HAVE MINIMUM WORKING LOAD OF 12 TONS AND GEOMETRY TO EASILY FIT OVER THREADED ROD AND BE RETAINED BY HEAVY HEX NUT.

**CONSTRUCTION**

8. FINAL POSITIONING OF THE ANCHORED STRUCTURES SHALL BE IN THE APPROXIMATE LOCATION AS SHOWN ON THE DRAWINGS, AS APPROVED IN THE FIELD BY THE OWNERS REPRESENTATIVE, AND AS REQUIRED TO MEET BALLASTING REQUIREMENTS.
9. LOG STRUCTURES SHALL BE SECURED AS SHOWN ON THE PLANS. DRILL HOLES IN SOLID ROCK AND AVOID ANY CRACKS OR FRACTURES. HOLES MUST BE DRILLED 8" MINIMUM INTO ROCK. HOLES MUST BE CLEANED OF LOOSE ROCK FRAGMENTS AND POWDER IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. HOLES MUST BE CLEAN OF ALL DUST, DEBRIS, OIL, AND SOAP RESIDUES. THE HOLES MUST BE FLUSH CLEAR TO INSURE NO MATERIAL EXISTS BETWEEN THE CABLE, EPOXY, AND ROCK SURFACE. INSTALL EPOXY PER MANUFACTURER'S RECOMMENDATIONS.

BOLTED CONNECTIONS SHALL BE INSTALLED THROUGH LOG INTO BOULDER BALLAST WITH END INSERTED INTO THE DRILLED HOLES FILLED WITH EPOXY, OR INSTALLED THROUGH LOG AND CHAINED TO A SEPARATE ANCHOR INSERTED INTO DRILLED HOLE FILLED WITH EPOXY. CLEAN THREADED ROD WITH ACETONE TO REMOVE OILS AND GREASES PRIOR TO INSERTION INTO EPOXY FILLED HOLE. FILL DRILL HOLES ENOUGH TO ENSURE COMPLETE COVERAGE WITH EPOXY. INSTALL 7/8" DIA. A36 THREADED ROD BY SLOWLY TURNING THE BAR WHILE INSERTING INTO HOLE. EXCESS EPOXY SHOULD COME OUT OF THE TOP OF THE HOLE AS ROD IS SEATED IN DRILL HOLE.



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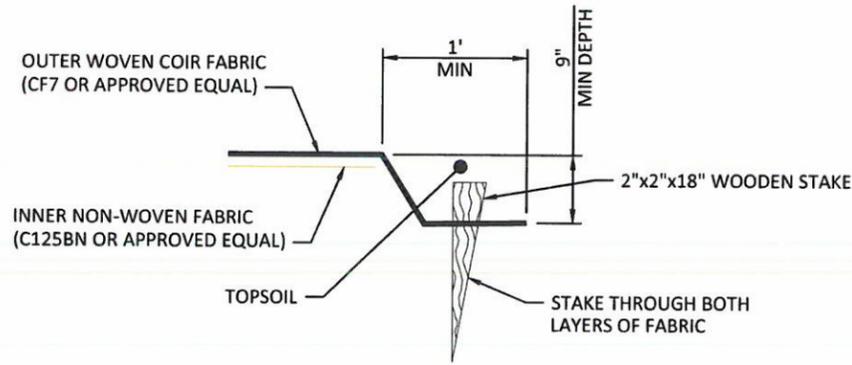
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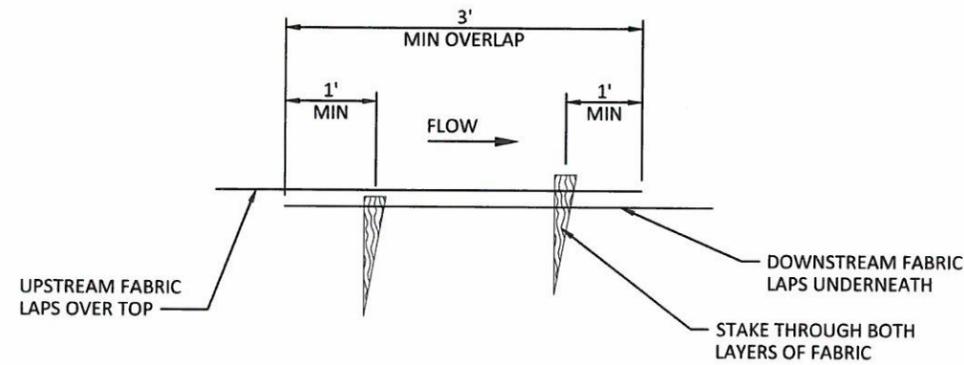
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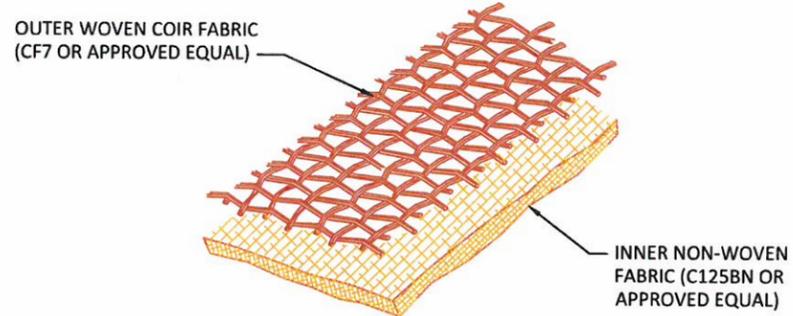
LOG AND BOULDER BOLTED CONNECTION TYPICAL DETAILS



**DETAIL A: FABRIC EDGE**  
NOT TO SCALE



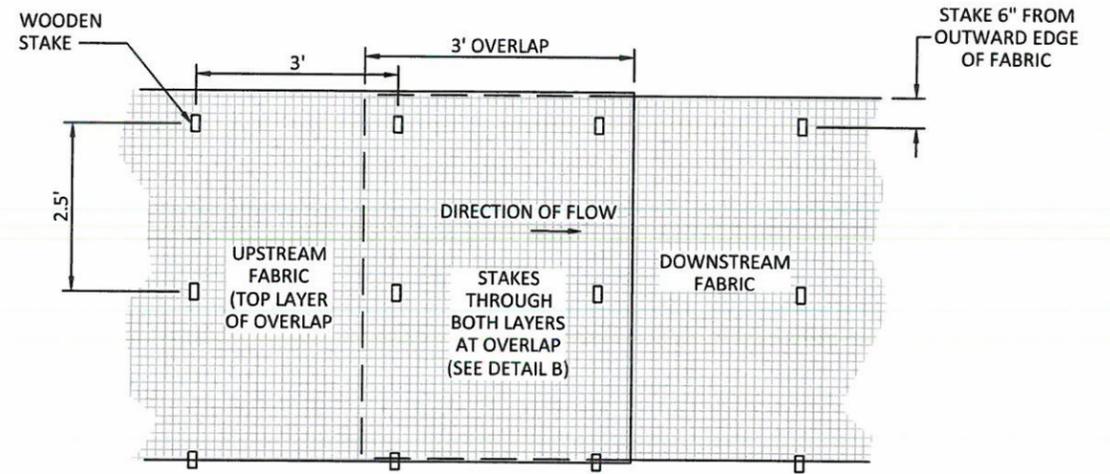
**DETAIL B: FABRIC OVERLAP**  
NOT TO SCALE



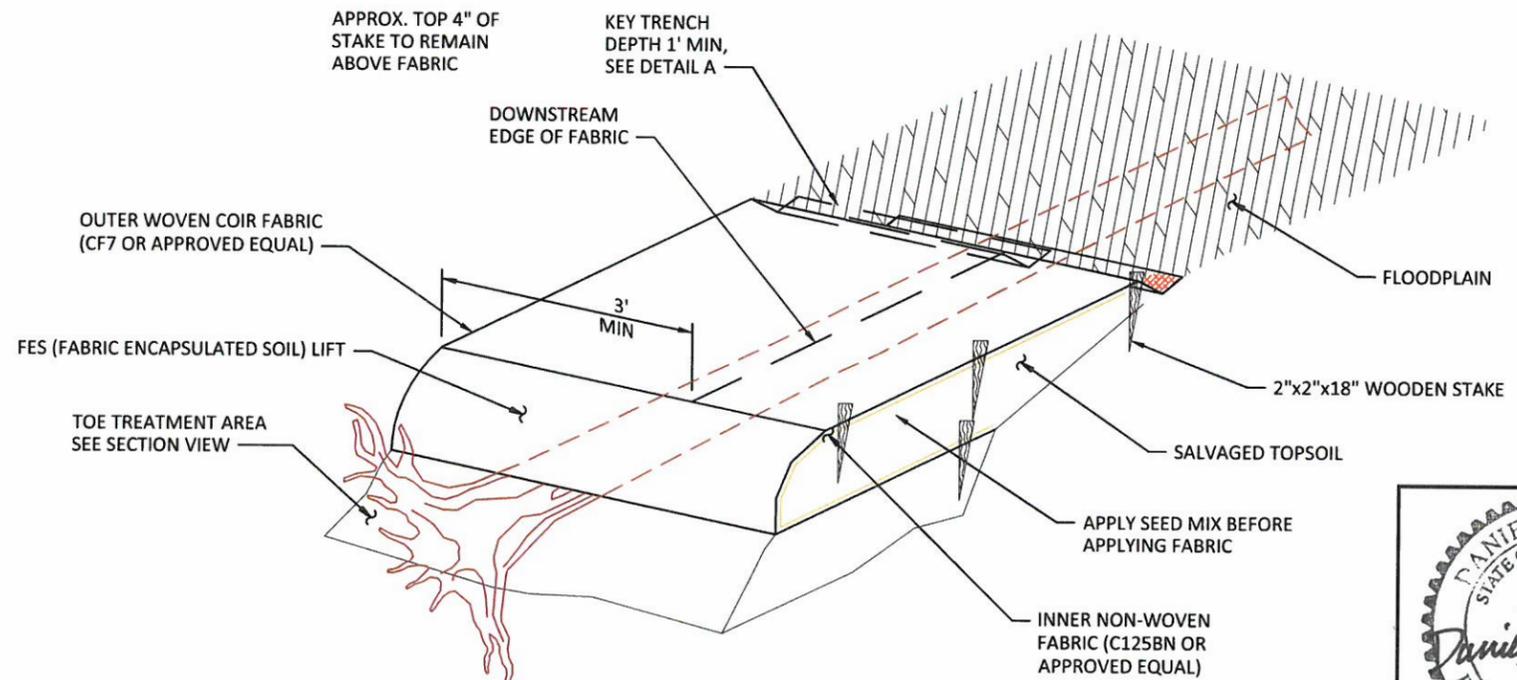
**TYPICAL DETAIL C: FABRIC LAYERING**  
NOT TO SCALE



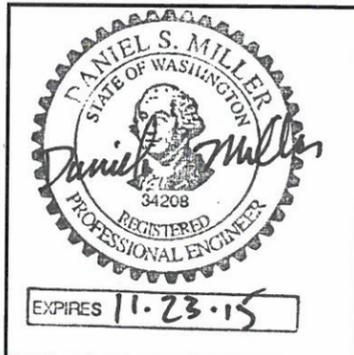
**DETAIL D: WOODEN STAKE CONSTRUCTION**  
NOT TO SCALE



**DETAIL E: PLAN VIEW: STREAMBANK CONSTRUCTION FABRIC OVERLAP AND STAKING DETAIL**  
NOT TO SCALE



**ISOMETRIC: FES CONSTRUCTED LIFT**  
NOT TO SCALE



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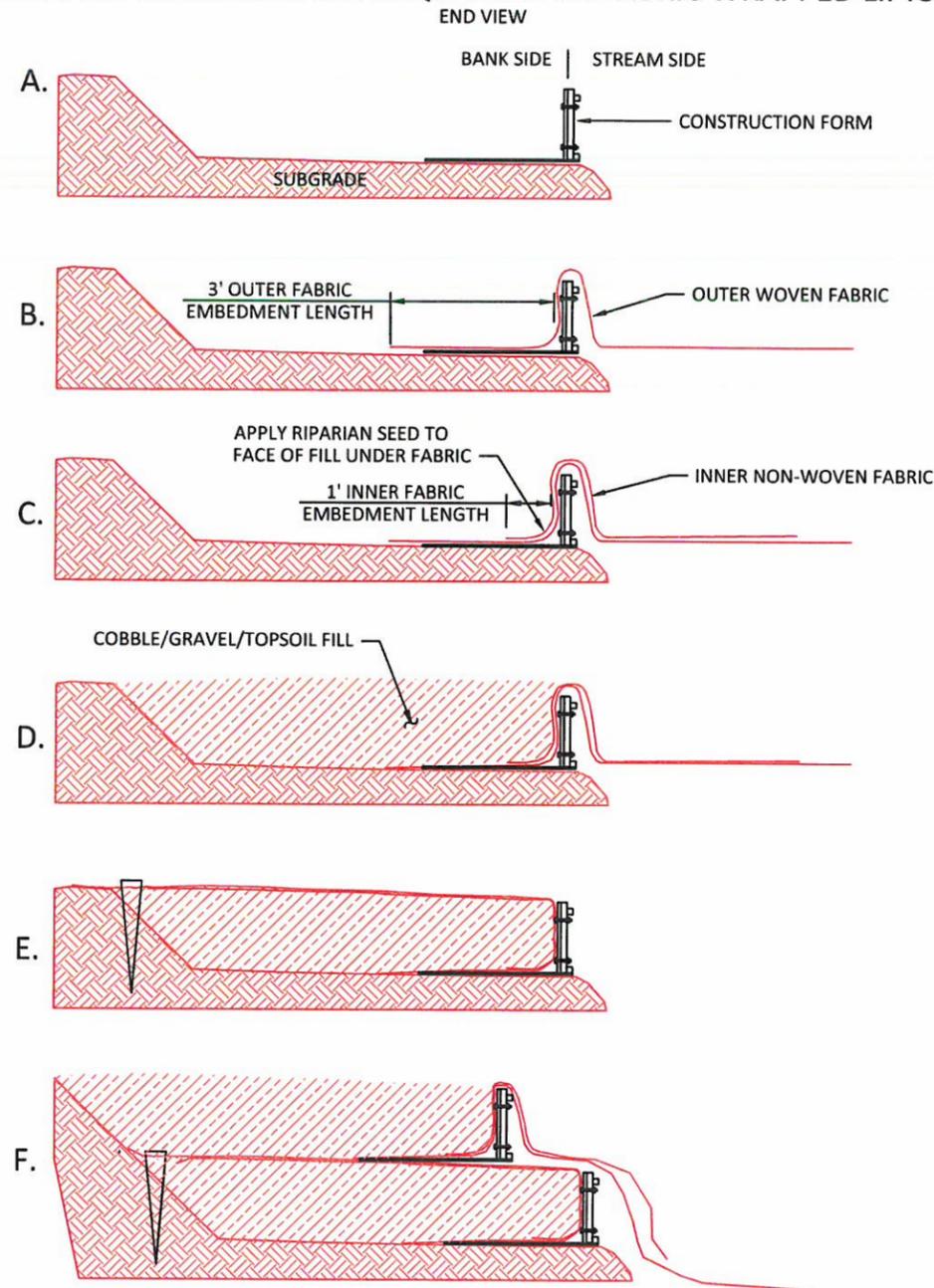
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FABRIC ENCAPSULATED  
LIFT TYPICAL DETAILS

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### SUGGESTED CONSTRUCTION SEQUENCE FOR FABRIC WRAPPED LIFTS

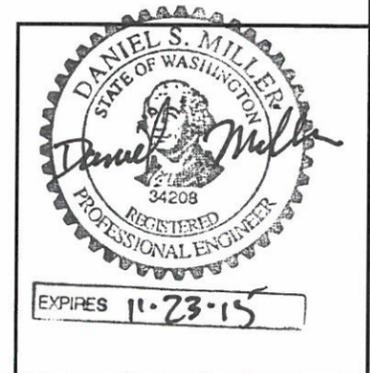


NOTE: ORDINARY HIGH WATER (OHW) ELEVATION IS BELOW FES LIFTS

### GENERAL INSTRUCTIONS FOR CONSTRUCTING FABRIC WRAPPED LIFTS.

1. LIFTS WILL BE CONSTRUCTED TO ENCAPSULATE TRENCH BACKFILL AND ARE ANTICIPATED TO BE ALONG A LIMITED LENGTH OF THE TREATMENT.
2. UNROLL THE OUTER FABRIC (WOVEN COIR) PARALLEL TO THE LONG AXIS OF THE CHANNEL AND POSITION IT SO THAT 3 FEET EXTENDS FOR EMBEDMENT ON THE BANK SIDE OF THE FORMS (FIG B), AND A MINIMUM 3 FEET EXTENDS LENGTHWISE BEYOND THE LAST FORM FOR OVERLAP. DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE (FIG B).
3. UNROLL THE INNER FABRIC (NON-WOVEN COIR) OVER THE TOP OF THE OUTER FABRIC AND POSITION IT SO THAT AT LEAST 1 FOOT OF THE INNER FABRIC EXTENDS AS AN EMBEDMENT LENGTH ON THE BANK SIDE OF THE FORMS (FIG C). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE AND ALIGN THE LONG EDGES OF THE INNER AND OUTER FABRICS. STRETCH AND PULL THE FABRIC LAYERS TO REMOVE WRINKLES.
4. PLACE COBBLE / GRAVEL / TOPSOIL FILL OVER THE FABRIC ON THE BANK SIDE OF THE FORMS TO A COMPACTED DEPTH OF 12 INCHES.
5. RIPARIAN SEED SHALL BE PLACED ON SOIL AND BENEATH FABRIC ON ALL EXPOSED SURFACES.
6. FOLD THE LOOSE ENDS OF THE TWO FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG D). SECURE WITH WOODEN STAKES.
7. ON THE TOP LIFT, EXCAVATE A KEY TRENCH 1.5 FEET WIDE AND 0.5 FEET DEEP ALONG THE EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SECURE FABRIC IN THE KEY TRENCH WITH WOODEN STAKES.
8. BACKFILL & COMPACT THE KEY TRENCH WITH TOPSOIL AND CONTINUE TO APPLY TOPSOIL TO SMOOTHLY MERGE WITH EXISTING CONTOURS.

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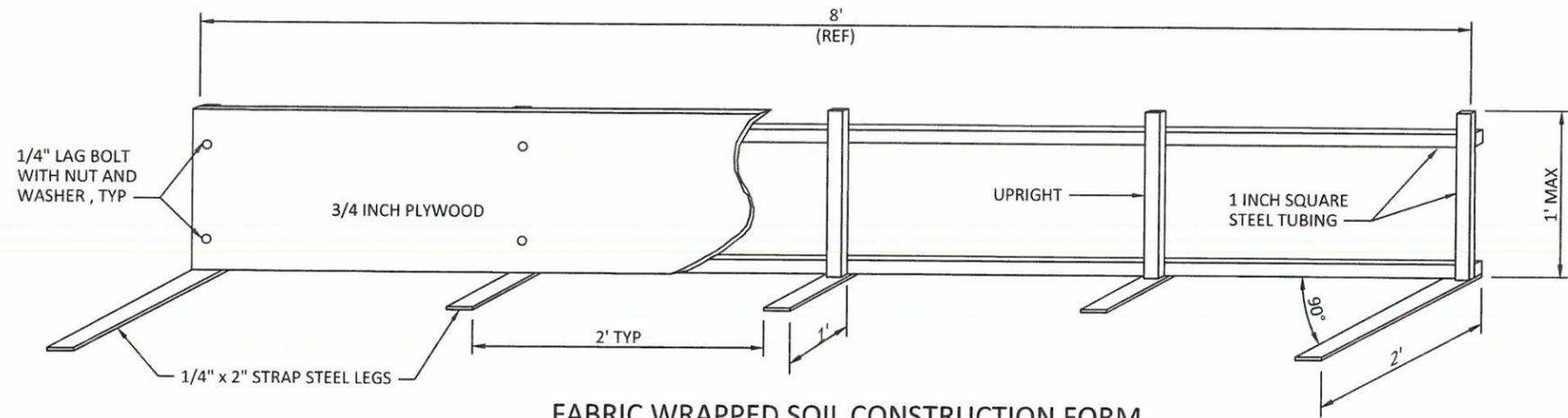


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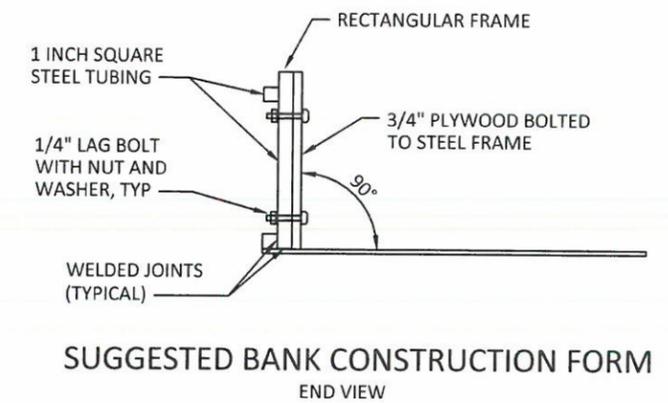
FABRIC ENCAPSULATED LIFT  
CONSTRUCTION SEQUENCE

SHEET

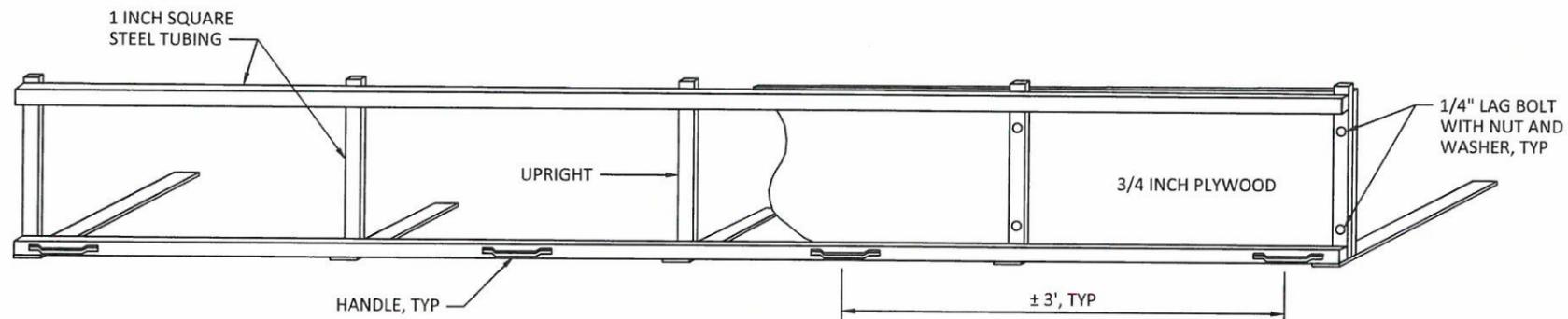
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FABRIC WRAPPED SOIL CONSTRUCTION FORM  
ISOMETRIC VIEW FROM REAR



SUGGESTED BANK CONSTRUCTION FORM  
END VIEW

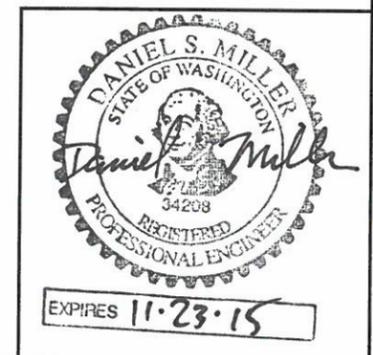


FABRIC WRAPPED SOIL CONSTRUCTION FORM  
ISOMETRIC VIEW FROM FRONT

GENERAL NOTES ON FABRICATION OF FORMS FOR FABRIC WRAPPED SOIL CONSTRUCTION

1. FABRICATE FORMS BY WELDING 1 INCH TUBULAR STEEL TOGETHER TO CREATE A 1x8 FOOT RECTANGULAR FRAMEWORK.
2. WELD LENGTHS OF 1/4x2 INCH STEEL STRAP AT 90 DEGREES TO THE FRAME EVERY 2 FEET.
3. ATTACH A PIECE OF 3/4 INCH PLYWOOD TO THE FRAME USING 1/4 INCH DIAMETER LAG BOLTS OR EQUIVALENT.
4. REMOVAL AND TRANSPORT OF THE FORMS IS FACILITATED IF HEAVY DUTY HANDLES ARE ATTACHED TO THE FRAME AS SHOWN.

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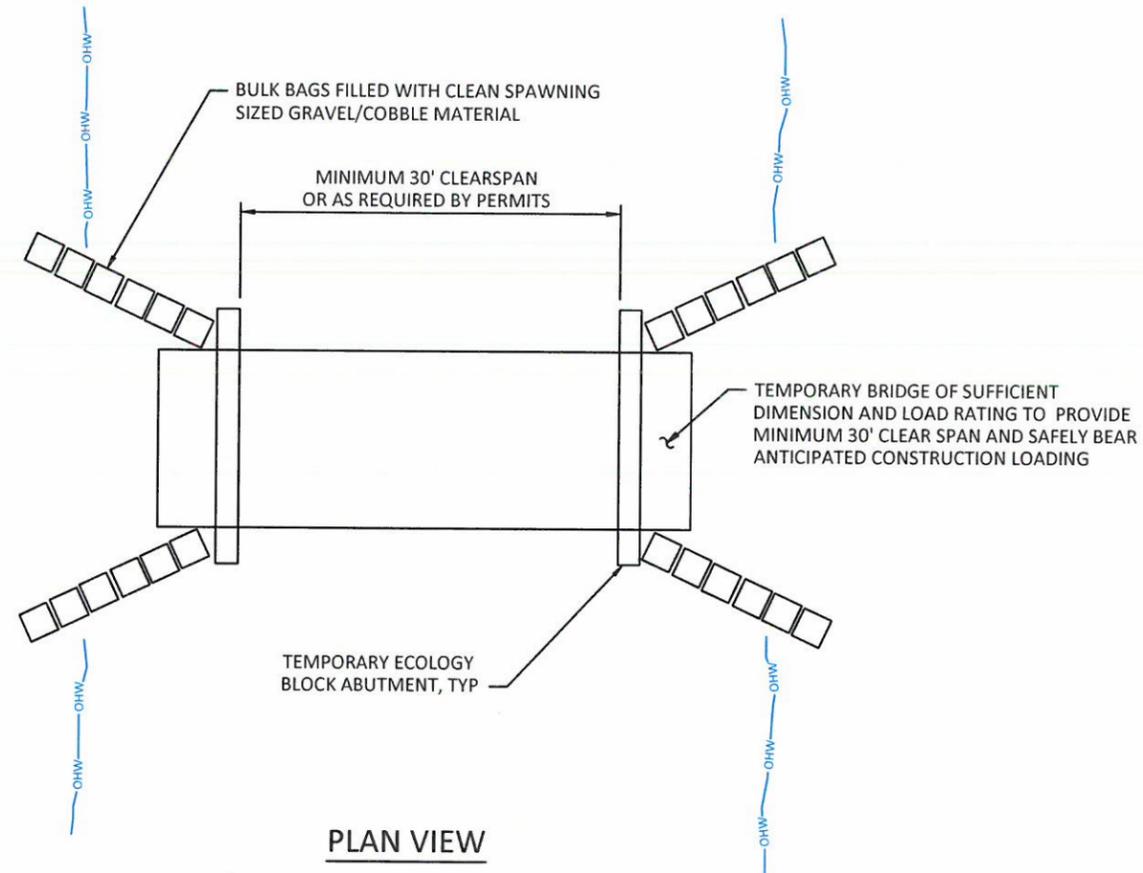
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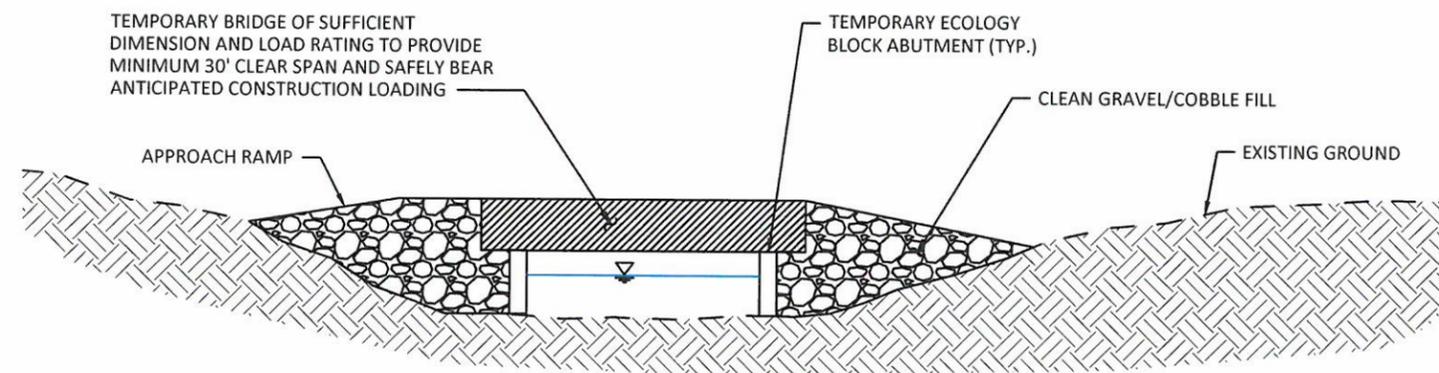
SUGGESTED CONSTRUCTION  
OF FORM FOR FABRIC  
ENCAPSULATED LIFTS

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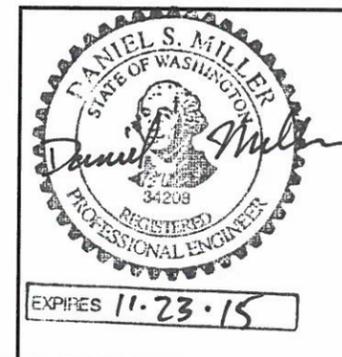


PLAN VIEW

NOTE:  
 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



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TEMPORARY CROSSING  
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