

# CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

## SOUTH FORK WALLA WALLA RIVER POST FLOOD ADAPTIVE MANAGEMENT

### Site 2 - RM 5

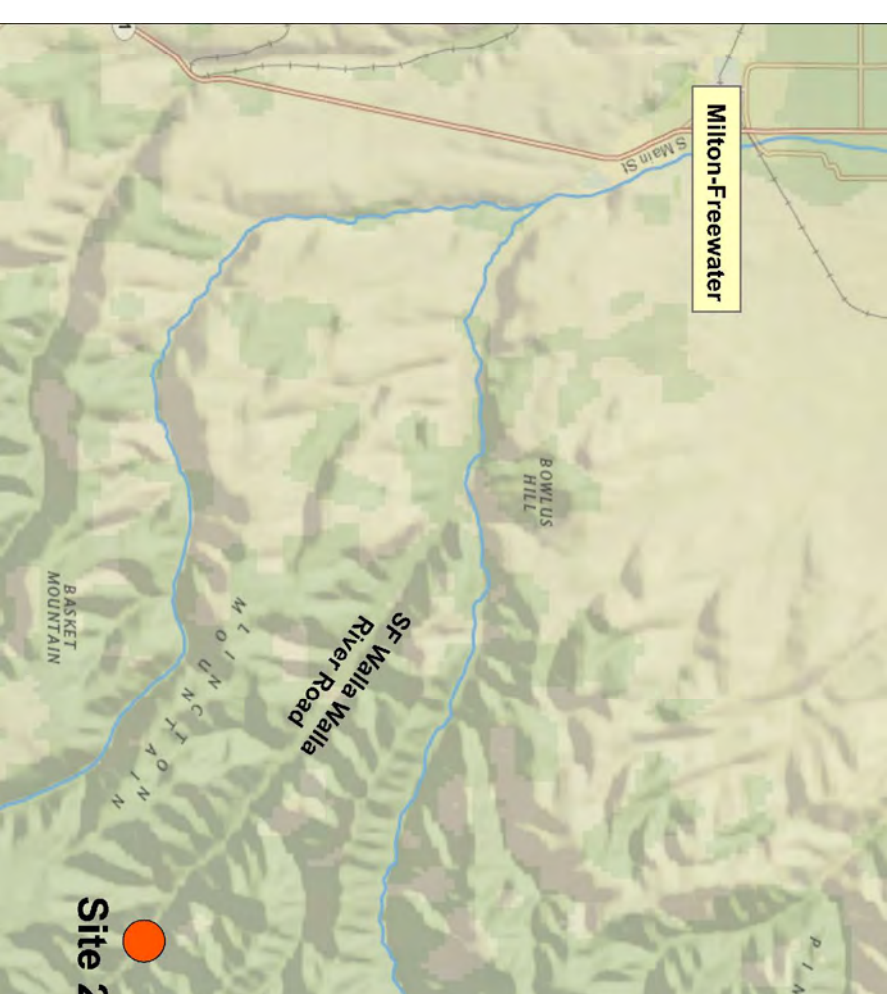
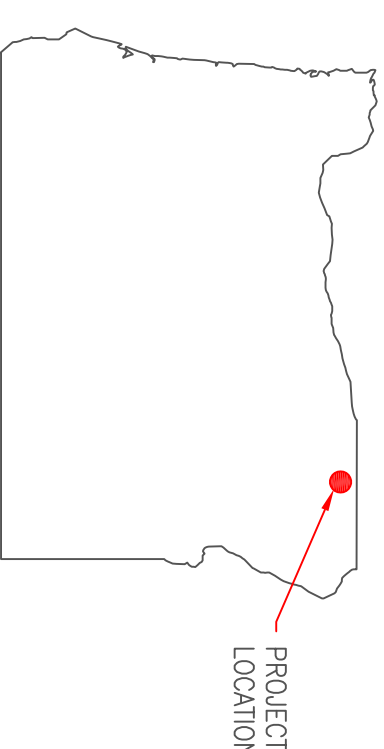
## CONSTRUCTION PLAN SET

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LEGEND	
SILT FENCE	
EXCAVATION	
BACKFILL	
SITE ACCESS/STAGING	
TEMPORARY CROSSING	
SURVEY CONTROL POINT	
FLOW ARROWS	

ABBREVIATIONS	
APPROX. DBH	APPROXIMATELY DIAMETER AT BREAST HEIGHT
E	EASTING
ELEV. FT	ELEVATION FOOT, FEET
HORIZ.	HORIZONTAL
I.E. LWD	INVERT ELEVATION LARGE WOOD HABITAT STRUCTURE
MIN	MINIMUM
N	NORTHING
N.T.S	NOT TO SCALE
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
VERT. WSE YR	VERTICAL WATER SURFACE ELEV. YEAR

HORIZONTAL DATUM FOR THIS PROJECT IS OREGON STATE PLANE NORTH INTERNATIONAL FEET. VERTICAL DATUM IS NAVD88.



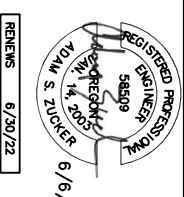
VICINITY MAP  
N.T.S.



**DEPARTMENT OF NATURAL RESOURCES**  
**FISHERIES PROGRAM**  
**WALLA WALLA HABITAT PROJECT**



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REV	DATE	REVISION DESCRIPTION	DRW	ENG	APP

SFWW ADAPTIVE MANAGEMENT  
SITE 2  
COVER SHEET

DATE: 6/2022  
SHEET NUMBER: 1 of 10

**HIP GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS**

THE ACTIVITIES COVERED UNDER THE HIP ARE INTENDED TO PROTECT AND RESTORE FISH AND WILDLIFE HABITAT WITH LONG-TERM BENEFITS TO ESA-LISTED SPECIES. THE FOLLOWING GENERAL CONSERVATION MEASURES (DEVELOPED IN COORDINATION WITH USFWS AND NMFS) WILL BE APPLIED TO ALL ACTIONS OF THIS PROJECT.

**PROJECT DESIGN AND SITE PREPARATION.**

1. STATE AND FEDERAL PERMITS.
  - A. ALL APPLICABLE REGULATORY PERMITS AND OFFICIAL PROJECT AUTHORIZATIONS WILL BE OBTAINED BEFORE PROJECT IMPLEMENTATION.
  - B. THESE PERMITS AND AUTHORIZATIONS INCLUDE, BUT ARE NOT LIMITED TO, NATIONAL ENVIRONMENTAL POLICY ACT, NATIONAL HISTORIC PRESERVATION ACT, THE APPROPRIATE STATE AGENCY REMOVAL AND FILL PERMIT, USACE CLEAN WATER ACT (CWA) 404 PERMITS, CWA SECTION 401 WATER QUALITY CERTIFICATIONS, AND FEMA NO-RISE ANALYSES.
2. TIMING OF IN-WATER WORK.
  - A. APPROPRIATE STATE (OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG) AND MONTANA FISH WILDLIFE AND PARKS (MFWP)) GUIDELINES FOR TIMING OF IN-WATER WORK WINDOWS (IMW) WILL BE FOLLOWED.
  - B. CHANGES TO ESTABLISHED WORK WINDOWS WILL BE APPROVED BY REGIONAL STATE BIOLOGISTS AND BPA'S EC LEAD.
  - C. BULL TROUT, FOR AREAS WITH DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT OR AREAS KNOWN TO HAVE BULL TROUT, PROJECT PROPONENTS WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO INSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS BEING USED TO MINIMIZE PROJECT EFFECTS.
  - D. LAMPREY, WORKING IN STREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY WILL BE AVOIDED FROM MARCH 1 TO JULY 1 FOR REACHES <9,000 FEET IN ELEVATION AND FROM MARCH 1 TO AUGUST 1 FOR REACHES >9,000 FEET. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE DEVAETERING AND SALVAGE PROCEDURES (SEE FISH SALVAGE AND ELECTROFISHING SECTIONS) TO MINIMIZE ADVERSE EFFECTS.
  - E. THE IN-WATER WORK WINDOW IS EXPECTED TO BE JULY 1 - AUGUST 15. REFER TO PROJECT PERMITS FOR MOST UP-TO-DATE IN-WATER WORK WINDOW.
3. CONTAMINANTS.
  - A. EXCAVATION OF MORE THAN 20 CUBIC YARDS WILL REQUIRE A SITE VISIT AND DOCUMENTED ASSESSMENT FOR POTENTIAL CONTAMINANT SOURCES. THE SITE ASSESSMENT WILL BE STORED WITH PROJECT FILES OR AS AN APPENDIX TO THE BASIS OF DESIGN REPORT.
  - B. THE SITE ASSESSMENT WILL SUMMARIZE:
    1. THE SITE VISIT, CONDITION OF THE PROPERTY, AND IDENTIFICATION OF ANY AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES;
    2. AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
    3. INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
    4. THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION SOURCES.
4. SITE LAYOUT AND FLAGGING.
  - A. CONSTRUCTION AREAS TO BE CLEARLY FLAGGED PRIOR TO CONSTRUCTION.
  - B. AREAS TO BE FLAGGED WILL INCLUDE:
    1. SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS, SPRINGS, AND WETLANDS;
    2. EQUIPMENT ENTRY AND EXIT POINTS;
    3. ROAD AND STREAM CROSSING ALIGNMENTS;
    4. STAGING, STORAGE, AND STOCKPILE AREAS; AND
    5. NO-SPRAY AREAS AND BUFFERS.

**5. TEMPORARY ACCESS ROADS AND PATHS.**

- A. EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOODPLAINS WILL BE MINIMIZED.
  - B. VEHICLE USE AND HUMAN ACTIVITIES, INCLUDING WALKING, IN AREAS OCCUPIED BY TERRESTRIAL ESA-LISTED SPECIES WILL BE MINIMIZED.
  - C. TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THEN THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.
  - D. THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED).
  - E. AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE OBLITERATED AND THE SOIL WILL BE STABILIZED AND REVEGETATED. ROAD AND PATH OBLITERATION REFERS TO THE MOST COMPREHENSIVE DEGREE OF DECOMMISSIONING AND INVOLVES DECOMPACTING THE SURFACE AND DITCH, PULLING THE FILL MATERIAL ONTO THE RUNNING SURFACE, AND RESHAPING TO MATCH THE ORIGINAL CONTOUR.
  - F. HELICOPTER FLIGHT PATTERNS WILL BE ESTABLISHED IN ADVANCE AND LOCATED TO AVOID TERRESTRIAL ESA-LISTED SPECIES AND THEIR OCCUPIED HABITAT DURING SENSITIVE LIFE STAGES.
- 6. TEMPORARY STREAM CROSSINGS.**
- A. EXISTING STREAM CROSSINGS OR BEDROCK WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER OF TEMPORARY STREAM CROSSINGS WILL BE MINIMIZED.
  - B. TEMPORARY BRIDGES AND CULVERTS WILL BE INSTALLED TO ALLOW FOR EQUIPMENT AND VEHICLE CROSSING OVER PERENNIAL STREAMS DURING CONSTRUCTION. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR DIRECTLY OVER WATER.
  - C. FOR PROJECTS THAT REQUIRE EQUIPMENT AND VEHICLES TO CROSS IN THE WET:
    1. THE LOCATION AND NUMBER OF ALL WET CROSSINGS SHALL BE APPROVED BY THE BPA EC LEAD AND DOCUMENTED IN THE CONSTRUCTION PLANS;
    2. VEHICLES AND MACHINERY SHALL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHENEVER POSSIBLE;
    3. NO STREAM CROSSINGS WILL OCCUR 300 FEET UPSTREAM OR 100 FEET DOWNSTREAM OF AN EXISTING REDD OR SPAWNING FISH; AND
    4. AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED AND BANKS RESTORED.
- 7. STAGING, STORAGE, AND STOCKPILE AREAS.**
- A. STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND. STAGING AREAS CLOSER THAN 150 FEET WILL BE APPROVED BY THE EC LEAD.
  - B. NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN 150 FEET IF CLEARLY INDICATED IN THE PLANS THAT AREA IS FOR NATURAL MATERIALS ONLY.
  - C. ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.
  - D. ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE DISPOSED OF OUTSIDE THE 100-YEAR FLOODPLAIN.
- 8. EQUIPMENT.**
- A. MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES, MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS).
  - B. EQUIPMENT WILL BE STORED, FUELED, AND MAINTAINED IN AN CLEARLY IDENTIFIED STAGING AREA THAT MEETS STAGING AREA CONSERVATION MEASURES.

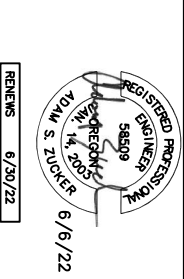
**9. EROSION CONTROL.**

- A. TEMPORARY EROSION CONTROL MEASURES INCLUDE:
    1. TEMPORARY EROSION CONTROLS WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE AND APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE;
    2. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION;
    3. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE SEDGE MATS, FIBER MATS, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH AND SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC;
    4. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS WEED FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION;
    5. SEDIMENT WILL BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL; AND
    6. ONCE THE SITE IS STABILIZED AFTER CONSTRUCTION, TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED.
  - B. EMERGENCY EROSION CONTROLS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:
    1. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
    2. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.
- 10. DUST ABATEMENT.**
- A. THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES.
  - B. WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.
  - C. DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNINSULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF WATER OR A STREAM CHANNEL AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNINSULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING MIXED 50:50 WITH WATER.
  - D. APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER, AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT MATERIALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A WATERBODY OR STREAM CHANNEL; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).
  - E. SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.
  - F. PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

- A. EQUIPMENT WILL BE REFUELED IN A VEHICLE STAGING AREA OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS).
- D. BIODEGRADABLE LUBRICANTS AND FLUIDS WILL BE USED ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
- E. EQUIPMENT WILL BE INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND.
- F. EQUIPMENT WILL BE THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN GREASE FREE.



**DEPARTMENT OF NATURAL RESOURCES  
FISHERIES PROGRAM  
WALLA WALLA HABITAT PROJECT**



REV	DATE	REVISION DESCRIPTION	DRW	ENG	APP

SFWW ADAPTIVE MANAGEMENT  
SITE 2  
HIP4 GENERAL CONSERVATION MEASURES

DATE: 6/2022  
SHEET NUMBER: 2 of 10



**PROJECT DESIGN AND SITE PREPARATION (CONTINUED).**

11. SPILL PREVENTION, CONTROL, AND COUNTER MEASURES:

- A. DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.
- B. WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
- C. SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.
- D. WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
- E. ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO AND DISPOSED OF AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.
- F. PUMPS USED ADJACENT TO WATER SHALL USE SPILL CONTAINMENT SYSTEMS.

12. INVASIVE SPECIES CONTROL:

- A. PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER WASHED, ALLOWED TO FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.
- B. WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES.
- C. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES UNLESS DECONTAMINATION PROCEDURES HAVE BEEN APPROVED BY THE EC LEAD.

**WORK AREA ISOLATION AND FISH SALVAGE:**

1. WORK AREA ISOLATION:

- A. ANY WORK AREA WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA-LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300-FEET UPSTREAM FROM KNOWN SPAWNING HABITATS.
- B. WORK AREA ISOLATION AND FISH SALVAGE ACTIVITIES WILL COMPLY WITH THE IN-WATER WORK WINDOW.
- C. DESIGN PLANS WILL INCLUDE ALL ISOLATION ELEMENTS AND AREAS (COFFER DAMS, PUMPS, DISCHARGE AREAS, FISH SCREENS, FISH RELEASE AREAS, ETC.)
- D. WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES WILL OCCUR DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS AND DEATH OF SPECIES PRESENT.

2. FISH SALVAGE:

- A. MONITORING AND RECORDING WILL TAKE PLACE FOR DURATION OF SALVAGE. THE SALVAGE REPORT WILL BE COMMUNICATED TO AGENCIES VIA THE PROJECT COMPLETION FORM (PCHF).
- B. SALVAGE ACTIVITIES SHOULD TAKE PLACE DURING CONDITIONS TO MINIMIZE STRESS TO FISH SPECIES, TYPICALLY PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES WHICH OCCUR IN THE MORNING VERSUS LATE IN THE DAY.
- C. SALVAGE OPERATIONS WILL FOLLOW THE ORDERING, METHODS, AND CONSERVATION MEASURES SPECIFIED BELOW:
  - 1. SLOWLY REDUCE WATER FROM THE WORK AREA TO ALLOW SOME FISH TO LEAVE VOLUNTARILY.
  - 2. BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
  - 3. BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL, BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH AS LONG AS PASSAGE REQUIREMENTS ARE MET.
  - 4. NETS WILL BE MONITORED HOURLY DURING IN-STREAM DISTURBANCE.

- 5. IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED AND FREE OF ORGANIC ACCUMULATION. IF BULL TROUT ARE PRESENT, NETS ARE TO BE CHECKED EVERY 4 HOURS FOR FISH IMPINGEMENT.
- 6. CAPTURE FISH THROUGH SEINING AND RELOCATE TO STREAMS.
- 7. WHILE DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
- 8. SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
- 9. MINNOW TRAPS WILL BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.
- 10. ELECTROFISH TO CAPTURE AND RELOCATED FISH NOT CAUGHT DURING SEINING PER ELECTROFISH CONSERVATION MEASURES.
- 11. CONTINUE TO SLOWLY DEWATER STREAM REACH.
- 12. COLLECT ANY REMAINING FISH IN COLD-WATER BUCKETS AND RELOCATED TO THE STREAM.
- 13. LIMIT THE TIME FISH ARE IN A TRANSPORT BUCKET.
- 14. MINIMIZE PREDATION BY TRANSPORTING COMPARABLE SIZES IN BUCKETS.
- 15. BUCKET WATER TO BE CHANGED EVERY 15 MINUTES OR AERATED.
- 16. BUCKETS WILL BE KEPT IN SHADED AREAS OR COVERED.
- 17. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS, BUT WILL BE LEFT ON THE STREAM BANK TO AVOID MORTALITY COUNTING ERRORS.

D. SALVAGE GUIDELINES FOR BULL TROUT, LAMPREY, MUSSELS, AND NATIVE FISH:

- 1. CONDUCT SITE SURVEY TO ESTIMATE SALVAGE NUMBERS.
- 2. PRE-SELECT SITE(S) FOR RELEASE AND/OR MUSSEL BED RELOCATION.
- 3. SALVAGE OF BULL TROUT WILL NOT TAKE PLACE WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.
- 4. IF DRAWDOWN LESS THAN 48 HOURS, SALVAGE OF LAMPREY AND MUSSELS MAY NOT BE NECESSARY IF TEMPERATURES SUPPORT SURVIVAL IN SEDIMENTS.
- 5. SALVAGE MUSSELS BY HAND, LOCATING BY SNORKELING OR WADING.
- 6. SALVAGE LAMPREY BY ELECTROFISHING (SEE ELECTROFISHING FOR LARVAL LAMPREY SETTINGS AND LARVAL LAMPREY DRY SHOCKING SETTINGS).
- 7. SALVAGE BONY FISH AFTER LAMPREY WITH NETS OR ELECTROFISHING (SEE ELECTROFISHING FOR APPROPRIATE SETTINGS).
- 8. REGULARLY INSPECT DEWATERED SITE SINCE LAMPREY LIKELY TO EMERGE AFTER DEWATERING AND MUSSELS MAY BECOME VISIBLE.
- 9. MUSSELS MAY BE TRANSFERRED IN COOLERS.
- 10. MUSSELS WILL BE PLACED INDIVIDUALLY TO ENSURE ABILITY TO BURROW INTO NEW HABITAT.

3. ELECTROFISHING:

- A. INITIAL SITE SURVEY AND INITIAL SETTINGS.
  - 1. IDENTIFY SPAWNING ADULTS AND ACTIVE REDDS TO AVOID.
  - 2. RECORD WATER TEMPERATURE. ELECTROFISHING WILL NOT OCCUR WHEN WATER TEMPERATURES ARE ABOVE 18 DEGREES CELSIUS.
  - 3. IF POSSIBLE, A BLOCK NET WILL BE PLACED DOWNSTREAM AND CHECKED REGULARLY TO CAPTURE STUNNED FISH THAT DRIFT DOWNSTREAM.
  - 4. INITIAL SETTINGS WILL BE 100 VOLTS, PULSE WIDTH OF 500 MICRO SECONDS, AND PULSE RATE OF 30 HERTZ.
  - 5. RECORDS FOR CONDUCTIVITY, WATER TEMPERATURE, AIR TEMPERATURE, ELECTROFISHING SETTINGS, ELECTROFISHER MODEL, ELECTROFISHER CALIBRATION, FISH CONDITIONS, FISH MORTALITIES, AND TOTAL CAPTURE RATES WILL BE INCLUDED IN THE SALVAGE LOG BOOK.

B. ELECTROFISHING TECHNIQUE:

- 1. SAMPLING SHOULD BEGIN USING STRAIGHT DC. POWER WILL REMAIN ON UNTIL THE FISH IS NETTED WHEN USING STRAIGHT DC. GRADUALLY INCREASE VOLTAGE WHILE REMAINING BELOW MAXIMUM LEVELS.
- 2. MAXIMUM VOLTAGE WILL BE 1100 VOLTS WHEN CONDUCTIVITY IS <100 MILLISECONDS, 800 VOLTS WHEN CONDUCTIVITY IS BETWEEN 100 AND 300 MILLISECONDS, AND 400 VOLTS WHEN CONDUCTIVITY IS >300 MILLISECONDS.
- 3. IF FISH CAPTURE IS NOT SUCCESSFUL USING STRAIGHT DC, THE ELECTROFISHER WILL BE SET TO INITIAL VOLTAGE FOR PDC. VOLTAGE, PULSE WIDTH, AND PULSE FREQUENCY WILL BE GRADUALLY INCREASED WITHIN MAXIMUM VALUES UNTIL CAPTURE IS SUCCESSFUL.
- 4. MAXIMUM PULSE WIDTH IS 5 MILLISECONDS. MAXIMUM PULSE RATE IS 70 HERTZ.
- 5. ELECTROFISHING WILL NOT OCCUR IN ONE AREA FOR AN EXTENDED PERIOD.
- 6. THE ANODE WILL NOT INTENTIONALLY COME INTO CONTACT WITH FISH. THE ZONE FOR POTENTIAL INJURY OF 0.5 M FROM THE ANODE WILL BE AVOIDED.
- 7. SETTINGS WILL BE LOWERED IN SHALLOWER WATER SINCE VOLTAGE GRADIENTS LIKELY TO INCREASE.
- 8. ELECTROFISHING WILL NOT OCCUR IN TURBID WATER WHERE VISIBILITY IS POOR (I.E. UNABLE TO SEE THE BED OF THE STREAM).
- 9. OPERATIONS WILL IMMEDIATELY STOP IF MORTALITY OR OBVIOUS FISH INJURY IS OBSERVED. ELECTROFISHING SETTINGS WILL BE REEVALUATED.

C. SAMPLE PROCESSING:

- 1. FISH SHALL BE SORTED BY SIZE TO AVOID PREDATION DURING CONTAINMENT.
- 2. SAMPLERS WILL REGULARLY CHECK CONDITIONS OF FISH HOLDING CONTAINERS, AIR PUMPS, WATER TRANSFERS, ETC.
- 3. FISH WILL BE OBSERVED FOR GENERAL CONDITIONS AND INJURIES
- 4. EACH FISH WILL BE COMPLETELY REVIVED BEFORE RELEASE. ESA-LISTED SPECIES WILL BE PRIORITIZED FOR SUCCESSFUL RELEASE.

D. BULL TROUT ELECTROFISHING:

- 1. ELECTROFISHING FOR BULL TROUT WILL ONLY OCCUR FROM MAY 1 TO JULY 31. NO ELECTROFISHING WILL OCCUR IN ANY BULL TROUT OCCUPIED HABITAT AFTER AUGUST 15. IN FMO HABITATS ELECTROFISHING MAY OCCUR ANY TIME.
- 2. ELECTROFISHING OF BULL TROUT WILL NOT OCCUR WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.

E. LARVAL LAMPREY ELECTROFISHING:

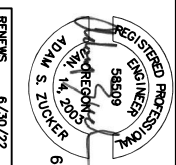
- 1. PERMISSION FROM EC LEAD WILL BE OBTAINED IF LARVAL LAMPREY ELECTROFISHER IS NOT ONE OF FOLLOWING PRE-APPROVED MODELS: ABP-2 "WISCONSIN", SMITH-ROOT LR-24, OR SMITH-ROOT APEX BACKPACK.
- 2. LARVAL LAMPREY SAMPLING WILL INCORPORATE 2-STAGE METHOD: "TICKLE" AND "STUN".
- 3. FIRST STAGE: USE 125 VOLT DC WITH A 25 PERCENT DUTY CYCLE APPLIED AT A SLOW RATE OF 3 PULSES PER SECOND. IF TEMPERATURES ARE BELOW 10 DEGREES CELSIUS, VOLTAGE MAY BE INCREASED GRADUALLY (NOT TO EXCEED 200 VOLTS). BURSTED PULSES (THREE SLOW AND ONE SKIPPED) RECOMMENDED TO INCREASE EMERGENCE.
- 4. SECOND STAGE (OPTIONAL FOR EXPERIENCED NETTERS): IMMEDIATELY AFTER LAMPREY EMERGE, USE A FAST PULSE SETTING OF 30 PULSES PER SECOND.
- 5. USE DIP NETS FOR VISIBLE LAMPREY. SEINES AND FINE MESH NET SWEEPS MAY BE USED IN POOR VISIBILITY.
- 6. SAMPLING WILL OCCUR SLOWLY (>60 SECONDS PER METER) STARTING AT UPSTREAM AND WORKING DOWNSTREAM.
- 7. MULTIPLE SWEEPS TO OCCUR WITH 15 MINUTES BETWEEN SWEEPS.
- 8. POST-DRAWDOWN "DRY-SHOCKING" WILL BE APPLIED IF LARVAL LAMPREY CONTINUE TO EMERGE. ANODES TO BE PLACED ONE METER APART TO SAMPLE ONE SQUARE METER AT A TIME FOR AT LEAST 60 SECONDS. FOR TEMPERATURES LESS THAN 10 DEGREES CELSIUS, MAXIMUM VOLTAGE MAY BE GRADUALLY INCREASED TO 400 VOLTS (DRY-SHOCKING ONLY).



**DEPARTMENT OF NATURAL RESOURCES  
FISHERIES PROGRAM  
WALLA WALLA HABITAT PROJECT**



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6/6/22  
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**SFWW ADAPTIVE MANAGEMENT  
SITE 2  
HIP4 GENERAL CONSERVATION  
MEASURES, CONT.**

DATE: 6/2022  
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**WORK AREA ISOLATION AND FISH SALVAGE (CONTINUED).**

4. DEWATERING.
    - A. DEWATERING WILL OCCUR AT A RATE SLOW ENOUGH TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA.
    - B. WHERE A GRAVITY FEED DIVERSION IS NOT POSSIBLE, A PUMP MAY BE USED. PUMPS WILL BE INSTALLED TO AVOID REPETITIVE DEWATERING AND REWATERING.
    - C. WHEN FISH ARE PRESENT, PUMPS WILL BE SCREENED IN ACCORDANCE WITH NMFS FISH SCREEN CRITERIA. NMFS ENGINEERING REVIEW AND APPROVAL WILL BE OBTAINED FOR PUMPS EXCEEDING 3 CUBIC FEET PER SECOND.
    - D. DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO THE STREAM CHANNEL AND RIPARIAN VEGETATION.
    - E. SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OF INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL AND VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.
- CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES.**
1. FISH PASSAGE.
    - A. FISH PASSAGE WILL BE PROVIDED FOR ADULT AND JUVENILE FISH LIKELY TO BE PRESENT DURING CONSTRUCTION UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION. THE STREAM IS NATURALLY IMPASSABLE, OR PASSAGE WILL NEGATIVELY IMPACT ESA-LISTED SPECIES OR THEIR HABITAT.
    - B. FISH PASSAGE ALTERNATIVES WILL BE APPROVED BY THE BPA EC LEAD UNDER ADVICE BY THE NMFS HABITAT BIOLOGIST.
  2. CONSTRUCTION AND DISCHARGE WATER.
    - A. SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.
    - B. DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.
    - C. CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS, AND OTHER POLLUTANTS.
  3. TIME AND EXTENT OF DISTURBANCE.
    - A. EARTHWORK REQUIRING IN-STREAM MECHANIZED EQUIPMENT (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING, AND COMPACTING) WILL BE COMPLETED AS QUICKLY AS POSSIBLE.
    - B. MECHANIZED EQUIPMENT WILL WORK FROM TOP OF BANK UNLESS WORK FROM ANOTHER LOCATION WILL RESULT IN LESS HABITAT DISTURBANCE (TURBIDITY, VEGETATION DISTURBANCE, ETC.)
  4. CESSATION OF WORK.
    - A. PROJECT OPERATIONS WILL CEASE WHEN HIGH FLOW CONDITIONS MAY RESULT IN INUNDATION OF THE PROJECT AREA (FLOOD EFFORTS TO DECREASE DAMAGES TO NATURAL RESOURCES PERMITTED).
    - B. WATER QUALITY LEVELS EXCEEDED. SEE CWA SECTION 401 WATER QUALITY CERTIFICATION AND TURBIDITY MEASURES.
  5. SITE RESTORATION.
    - A. DISTURBED AREAS, STREAM BANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED TO IMPROVED OR PRE-PROJECT CONDITIONS.
    - B. PROJECT-RELATED WASTE WILL BE REMOVED.
    - C. TEMPORARY ACCESS ROADS AND STAGING WILL BE DECOMPACTED AND RESTORED. SOILS WILL BE LOOSESED IF NEEDED FOR REVEGETATION OR WATER INFILTRATION.
    - D. THE PROJECT SPONSOR WILL RETAIN THE RIGHT OF REASONABLE ACCESS TO THE SITE TO MONITOR AND MAINTAIN THE SITE OVER THE LIFE OF THE PROJECT.
  6. REVEGETATION.
    - A. PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.

**TURBIDITY MONITORING.**

- B. A MIX OF NATIVE SPECIES (INVASIVE SPECIES NOT ALLOWED) APPROPRIATE TO THE SITE WILL BE USED TO REESTABLISH VEGETATION. PROVIDE SHADE, AND REDUCE EROSION. REESTABLISHED VEGETATION SHOULD BE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN THREE YEARS.
  - C. VEGETATION SUCH AS WILLOWS, SEDGES, OR RUSH MATS WILL BE SALVAGED FROM DISTURBED OR ABANDONED AREAS TO BE REPLANTED.
  - D. SHORT-TERM STABILIZATION MEASURE MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, OR OTHER SIMILAR TECHNIQUES.
  - E. SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM, WATE BODY, OR WETLAND.
  - F. FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO REVEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.
  - G. INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL ESTABLISHED (TYPICALLY THREE YEARS POST-CONSTRUCTION).
7. SITE ACCESS AND IMPLEMENTATION MONITORING.
  - A. THE PROJECT SPONSOR WILL PROVIDE CONSTRUCTION MONITORING DURING IMPLEMENTATION TO ENSURE ALL CONSERVATION MEASURES ARE ADEQUATELY FOLLOWED. EFFECTS TO LISTED SPECIES ARE NOT GREATER THAN PREDICTED, AND INCIDENTAL TAKE LIMITATIONS ARE NOT EXCEEDED.
  - B. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL SUBMIT THE PROJECT COMPLETION FORM (PCF) WITHIN 30 DAYS OF PROJECT COMPLETION.
  8. CWA SECTION 401 WATER QUALITY CERTIFICATION.
    - A. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL COMPLETE AND RECORD WATER QUALITY OBSERVATIONS (SEE TURBIDITY MONITORING) TO ENSURE IN-WATER WORK IS NOT DEGRADING WATER QUALITY.
    - B. DURING CONSTRUCTION, WATER QUALITY PROVISIONS PROVIDED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, WASHINGTON DEPARTMENT OF ECOLOGY, IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY WILL BE FOLLOWED.
 

**STAGED REWATERING PLAN.**

      - A. WHEN REINTRODUCING WATER TO DEWATERED AREAS AND NEWLY CONSTRUCTED CHANNELS, A STAGED REWATERING PLAN WILL BE APPLIED.
      - B. THE FOLLOWING WILL BE APPLIED TO ALL REWATERING EFFORTS. COMPLEX REWATERING EFFORTS MAY REQUIRE ADDITIONAL NOTES OR A DEDICATED SHEET IN THE CONSTRUCTION DETAILS.
        1. TURBIDITY MONITORING PROTOCOL WILL BE APPLIED TO REWATERING EFFORTS.
        2. PRE-WASH THE AREA BEFORE REWATERING. TURBID WASH WATER WILL BE DETAINED AND PUMPED TO THE FLOODPLAIN OR SEDIMENT CAPTURE AREAS RATHER THAN DISCHARGING TO FISH-BEARING STREAMS.
        3. INSTALL SEINE NETS AT UPSTREAM END TO PREVENT FISH FROM MOVING DOWNSTREAM UNTIL 2/3 OF TOTAL FLOW IS RESTORED TO THE CHANNEL.
        4. STARTING IN EARLY MORNING INTRODUCE 1/3 OF NEW CHANNEL FLOW OVER PERIOD OF 1-2 HOURS.
        5. INTRODUCE SECOND THIRD OF FLOW OVER NEXT 1 TO 2 HOURS AND BEGIN FISH SALVAGE OF BYPASS CHANNEL IF FISH ARE PRESENT.
        6. REMOVE UPSTREAM SEINE NETS ONCE 2/3 FLOW IN REWATERED CHANNEL AND DOWNSTREAM TURBIDITY IS WITHIN ACCEPTABLE RANGE (LESS THAN 40 NTU OR LESS THAN 10% BACKGROUND).
        7. INTRODUCE FINAL THIRD OF FLOW ONCE FISH SALVAGE EFFORTS ARE COMPLETE AND DOWNSTREAM TURBIDITY VERIFIED TO BE WITHIN ACCEPTABLE RANGE.
        8. INSTALL PLUG TO BLOCK FLOW INTO OLD CHANNEL OR BYPASS. REMOVE ANY REMAINING SEINE NETS.
        9. IN LAMPREY SYSTEMS, LAMPREY SALVAGE AND DRY SHOCKING MAY BE NECESSARY.
- A. RECORD THE READING, LOCATION, AND TIME FOR THE BACKGROUND READING APPROXIMATELY 100 FEET UPSTREAM OF THE PROJECT AREA USING A RECENTLY CALIBRATED TURBIDIMETER OR VIA VISUAL OBSERVATION (SEE THE HIP HANDBOOK TURBIDITY MONITORING SECTION FOR A VISUAL OBSERVATION KEY).
- B. RECORD THE TURBIDITY READING, LOCATION, AND TIME AT THE MEASUREMENT COMPLIANCE LOCATION POINT.
  1. 50 FEET DOWNSTREAM FOR STREAMS LESS THAN 30 FEET WIDE.
  2. 100 FEET DOWNSTREAM FOR STREAMS BETWEEN 30 AND 100 FEET WIDE.
  3. 200 FEET DOWNSTREAM FOR STREAMS GREATER THAN 100 FEET WIDE.
  4. 300 FEET FROM THE DISCHARGE POINT OR NONPOINT SOURCE FOR LOCATIONS SUBJECT TO TIDAL OR COASTAL SCOUR.
- C. TURBIDITY SHALL BE MEASURED (BACKGROUND LOCATION AND COMPLIANCE POINTS) EVERY 4 HOURS WHILE WORK IS BEING IMPLEMENTED.
- D. IF THERE IS A VISIBLE DIFFERENCE BETWEEN A COMPLIANCE POINT AND THE BACKGROUND, THE EXCEEDANCE WILL BE NOTED IN THE PROJECT COMPLETION FORM (PCF). ADJUSTMENTS OR CORRECTIVE MEASURES WILL BE TAKEN IN ORDER TO REDUCE TURBIDITY.
- E. IF EXCEEDANCES OCCUR FOR MORE THAN TWO CONSECUTIVE MONITORING INTERVALS (AFTER 8 HOURS), THE ACTIVITY WILL STOP UNTIL THE TURBIDITY LEVEL RETURNS TO BACKGROUND. THE BPA EC LEAD WILL BE NOTIFIED OF ALL EXCEEDANCES AND CORRECTIVE ACTIONS AT PROJECT COMPLETION.
- F. IF TURBIDITY CONTROLS (COFFER DAMS, WADDLES, FENCING, ETC.) ARE DETERMINED INEFFECTIVE, CREWS WILL BE MOBILIZED TO MODIFY AS NECESSARY. OCCURRENCES WILL BE DOCUMENTED IN THE PROJECT COMPLETION FORM (PCF).
- G. FINAL TURBIDITY READINGS, EXCEEDANCES, AND CONTROL FAILURES WILL BE SUBMITTED TO THE BPA EC LEAD USING THE PROJECT COMPLETION FORM (PCF).



**DEPARTMENT OF NATURAL RESOURCES  
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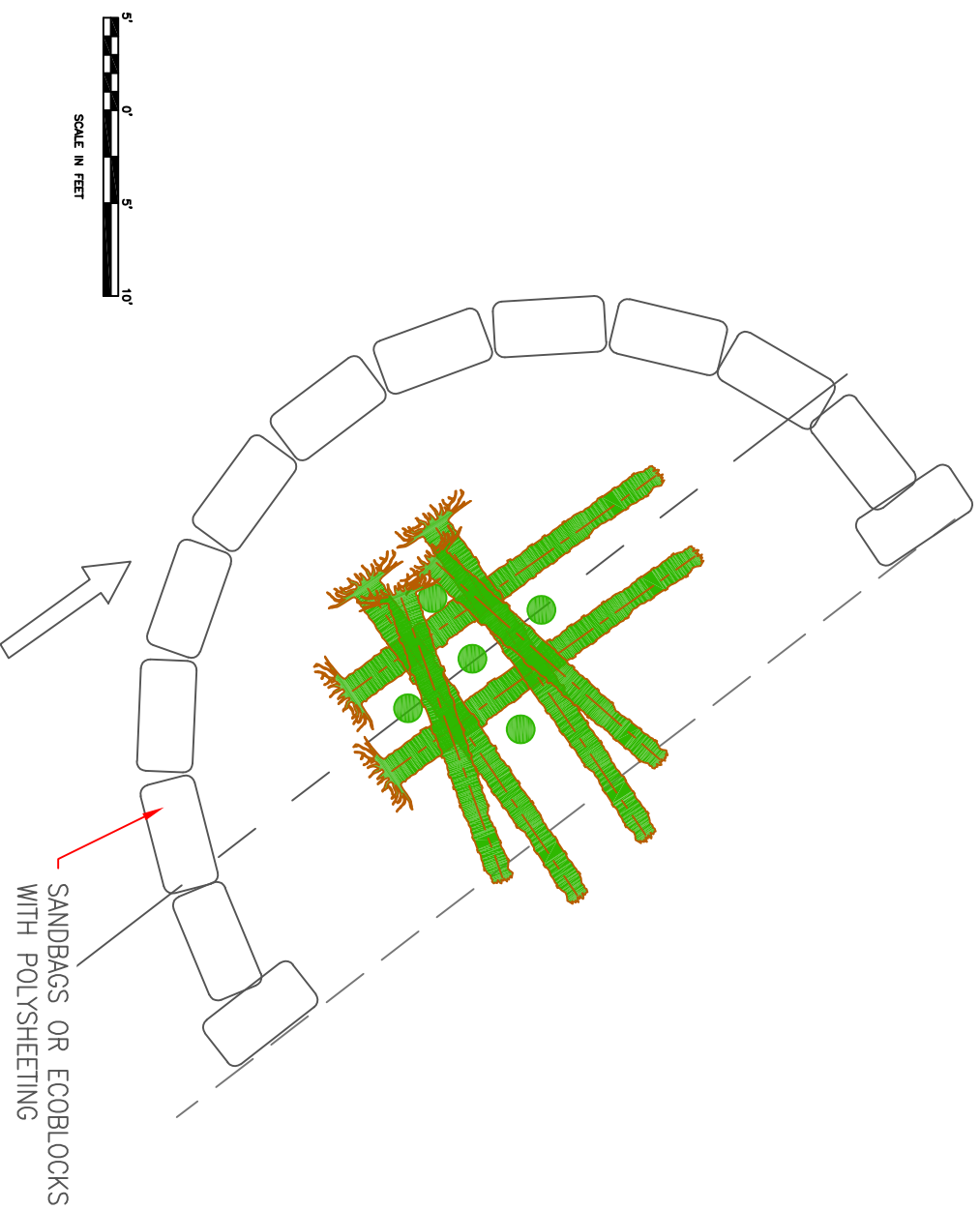
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SFWW ADAPTIVE MANAGEMENT  
SITE 2  
HIP4 GENERAL CONSERVATION  
MEASURES, CONT.

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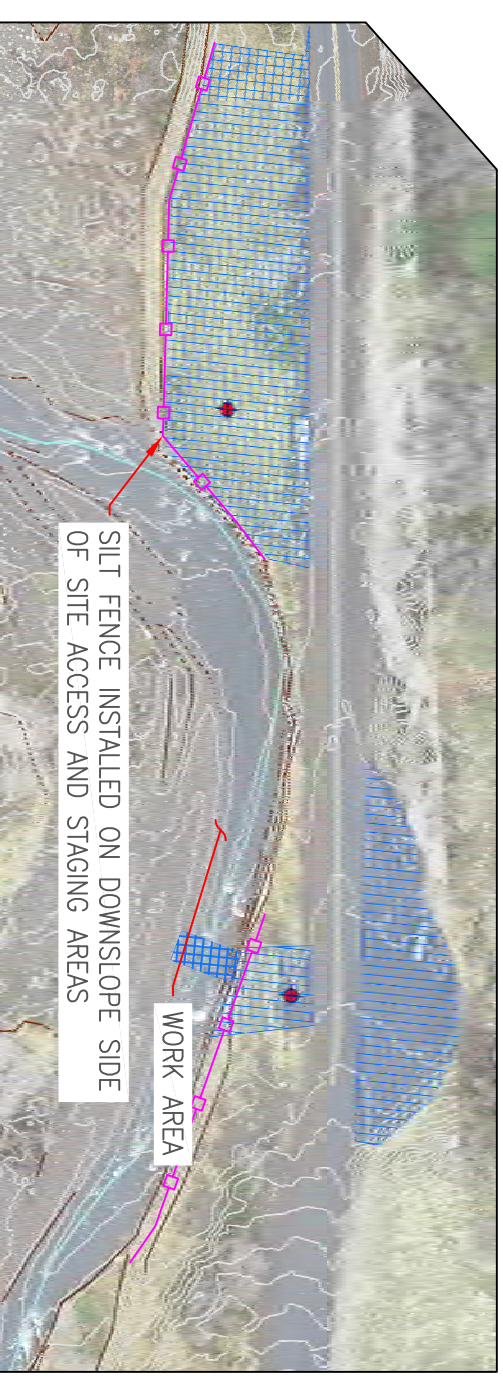
WATER MANAGEMENT PLAN

WATER MANAGEMENT NOTES:

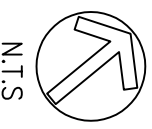
1. DEPICTED ISOLATION BARRIER FOR REFERENCE ONLY. CONTRACTOR TO SUBMIT AN IN-WATER ISOLATION/DEWATERING PLAN TO CTUIR FOR REVIEW AND APPROVAL PRIOR TO THE COMMENTMENT OF IN-WATER WORK. THE PLAN WILL FOLLOW REQUIREMENTS LISTED ON SHEET 3.
2. WATER MANAGEMENT IS REQUIRED FOR CONSTRUCTION OF LARGE WOOD HABITAT STRUCTURES (LWD). WATER MANAGEMENT STRATEGY SHALL BE TO ISOLATE WORK AREAS AND PREVENT DISCHARGE AND SEEPAGE OF DIRTY WATER TO ADJACENT STREAM CHANNEL. IN ALL CASES, SCREENED PUMPS SHALL BE USED AS NEEDED TO EITHER KEEP ISOLATED WORK AREAS SUFFICIENTLY DRY OR MAINTAIN HYDRAULIC GRADIENT FROM CHANNEL TO WORK AREA. PUMPED WATER WILL BE DISCHARGED TO FLOODPLAIN SWALES OR SAND BAG CONFINED SETTLING/INFILTRATION AREAS IF SWALE OVERFLOWS AND DRAINS TO CHANNEL. DISCHARGE AREAS TO BE IDENTIFIED IN THE IN-WATER ISOLATION/DEWATERING PLAN SUBMITTED BY CONTRACTOR. THERE SHALL BE A BACKUP PUMP AVAILABLE ON THE PROJECT SITE.
3. GENERAL SEQUENCE FOR LARGE WOOD HABITAT STRUCTURE (LWD) ISOLATION AND CONSTRUCTION:
  - 3.1. FIRST SWEEP THE AREA OF FISH USING ELECTROFISHING AND HAND NETTING FOLLOWING HIP4 REQUIREMENTS AND CTUIR FISH SALVAGE PROTOCOL.
  - 3.2. STARTING AT UPSTREAM END ON BANK, PLACE SUPERSACKS OR ECOBLOCKS TO FORM COFFERDAM. WATERPROOF WITH USE OF POLYSHEETING AND SAND BAGS. BUILD COFFERDAM AROUND EXPECTED EXCAVATION AREA AND WORK BACK TO THE DOWNSTREAM BANK.
  - 3.3. PERFORM FISH SALVAGE IN THE ISOLATED WORK AREA FOLLOWING HIP4 REQUIREMENTS AND CTUIR FISH SALVAGE PROTOCOL.
  - 3.4. USE SCREENED PUMP FOR DEWATERING WORK AREA AS NEEDED FOR SEDIMENT CONTROL AND WORKABILITY, FOLLOWING HIP4 REQUIREMENTS ON SHEET 2-4.
  - 3.5. EXCAVATE FOR VERTICAL BOLE PLACEMENT, SEE DETAILS SHEET 9.
  - 3.6. PLACE LOGS AND BACKFILL ACCORDING TO THE SEQUENCING PROVIDED ON SHEET 9.
  - 3.7. SLOWLY REMOVE THE COFFERDAM, STARTING AT THE UPSTREAM END. ALLOW DIRTY WATER TO DISPERSE SLOWLY SO AS NOT TO EXCEED TURBIDITY REQUIREMENTS.
4. FISH SALVAGE WILL BE REQUIRED AT ALL ISOLATION AREAS LEFT INTACT OVERNIGHT, PRIOR TO RESUMING CONSTRUCTION EACH DAY.
5. CHANGES TO WATER MANAGEMENT PLAN AND MATERIALS MUST BE APPROVED BY ENGINEER AND CTUIR PROJECT MANAGER.

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES:

1. INSTALL EROSION AND SEDIMENT CONTROL (TESC) MEASURES AS REQUIRED BY THIS PLAN AND PROJECT PERMITS.
2. CONSTRUCT AND/OR ASSEMBLE ESC MEASURES PRIOR TO CLEARING AND GRUBBING. RELOCATE AND REPAIR ESC MEASURES AS NECESSARY THROUGHOUT CONSTRUCTION TO ENSURE PROPER FUNCTION AND EFFECTIVENESS.
3. TESC MEASURES SHOWN IN THESE PLANS ARE THE MINIMUM REQUIREMENT FOR THE ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, ADDITIONAL MEASURES MAY BE NECESSARY FOR CONTRACTOR'S SITE ACCESS, TEMPORARY DETOURS, AND UNEXPECTED STORM EVENTS.
4. SEDIMENT LADEN WATER SHALL BE PUMPED OUT OF THE CONSTRUCTION AREA AND DISCHARGED UPSLOPE OF THE CREEK OR INTO SEDIMENTATION BASINS. NO SEDIMENT LADEN WATER SHALL BE DISCHARGED DIRECTLY TO THE CREEK.



TEMPORARY EROSION AND SEDIMENT CONTROL PLAN



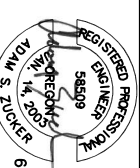
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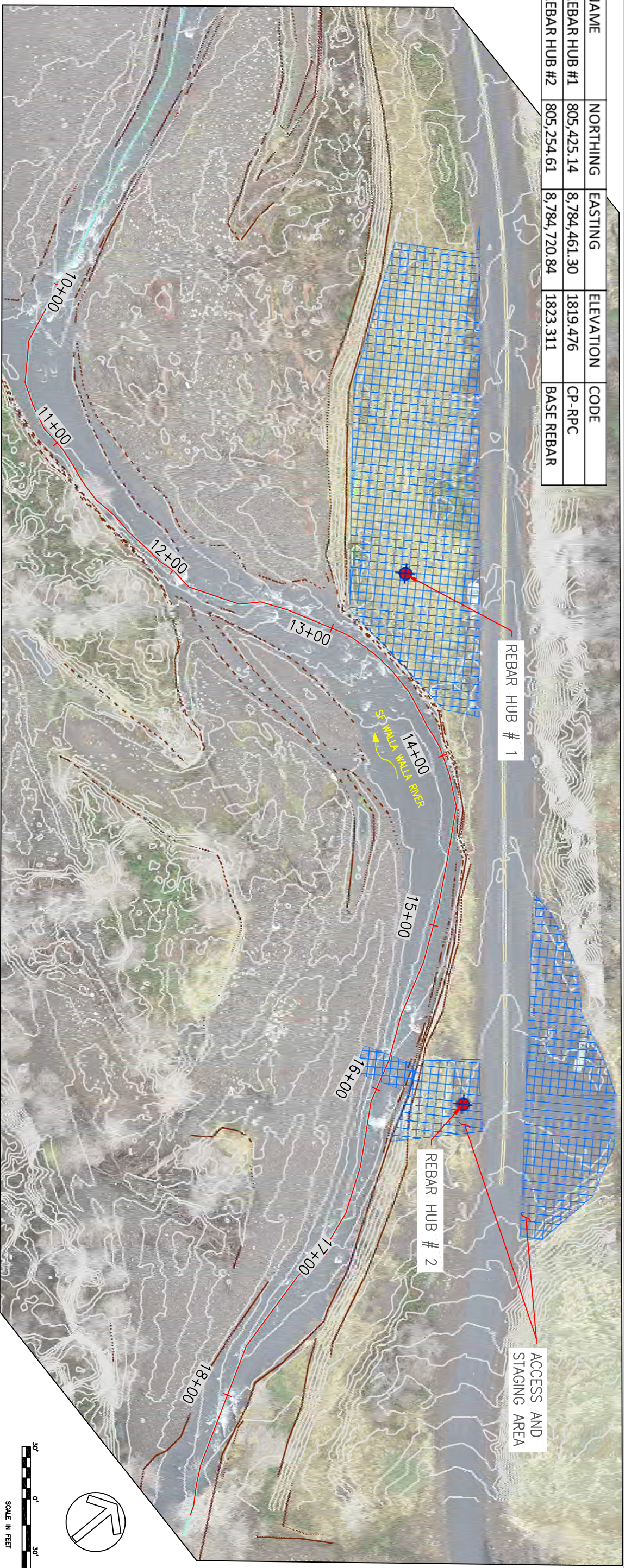
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SFWW ADAPTIVE MANAGEMENT  
 SITE 2  
 WATER MANAGEMENT AND  
 TESC PLAN

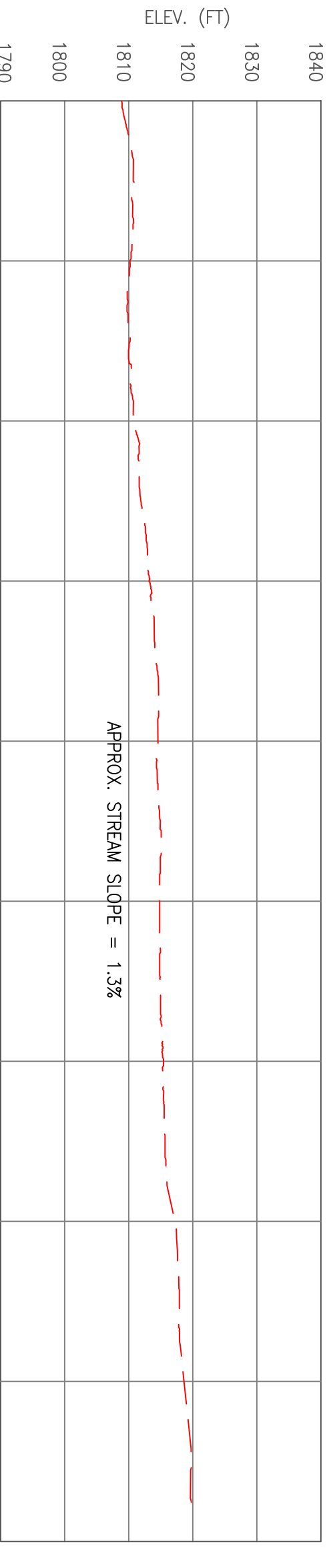
DATE: 6/2022  
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NAME	NORTHING	EASTING	ELEVATION	CODE
REBAR HUB #1	805,425.14	8,784,461.30	1819.476	CP-RPC
REBAR HUB #2	805,254.61	8,784,720.84	1823.311	BASE REBAR



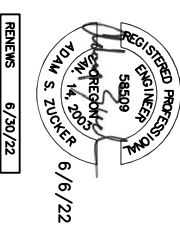
PLAN VIEW



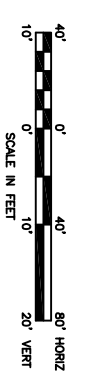
PROFILE VIEW



**DEPARTMENT OF NATURAL RESOURCES**  
**FISHERIES PROGRAM**  
**WALLA WALLA HABITAT PROJECT**



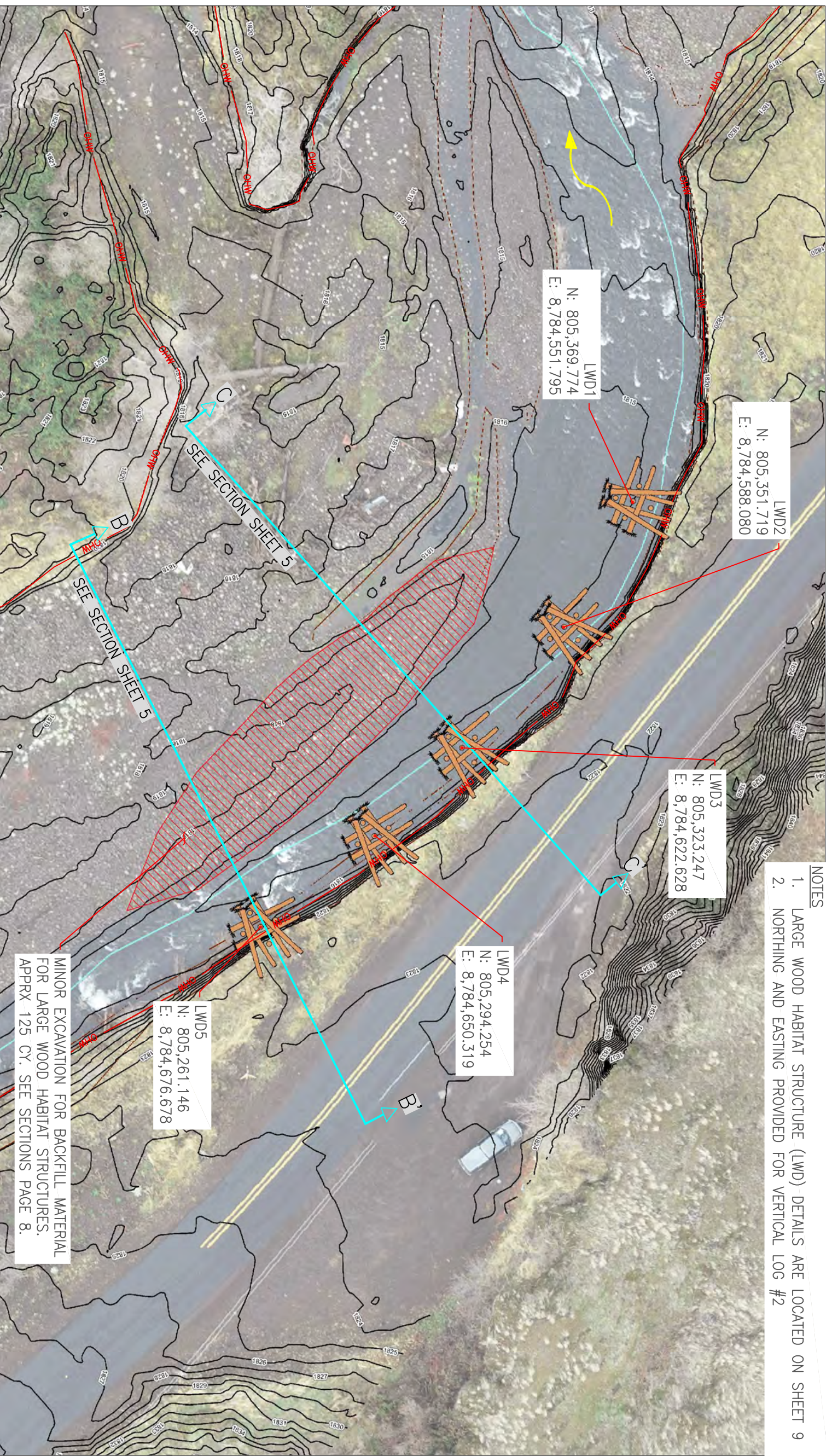
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**SFWW ADAPTIVE MANAGEMENT**  
**SITE 2**  
**EXISTING CONDITIONS**  
**AND**  
**STAGING AND ACCESS PLAN**

DATE: 6/2022  
 SHEET NUMBER: 6 of 10





- NOTES
1. LARGE WOOD HABITAT STRUCTURE (LWD) DETAILS ARE LOCATED ON SHEET 9
  2. NORTHING AND EASTING PROVIDED FOR VERTICAL LOG #2

LWD2  
N: 805,351.719  
E: 8,784,588.080

LWD1  
N: 805,369.774  
E: 8,784,551.795

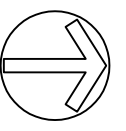
LWD3  
N: 805,323.247  
E: 8,784,622.628

LWD4  
N: 805,294.254  
E: 8,784,650.319

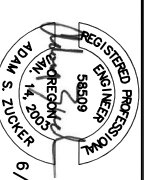
LWD5  
N: 805,261.146  
E: 8,784,676.678

MINOR EXCAVATION FOR BACKFILL MATERIAL FOR LARGE WOOD HABITAT STRUCTURES. APPRX 125 CY. SEE SECTIONS PAGE 8.

PLAN VIEW



DEPARTMENT OF NATURAL RESOURCES  
FISHERIES PROGRAM  
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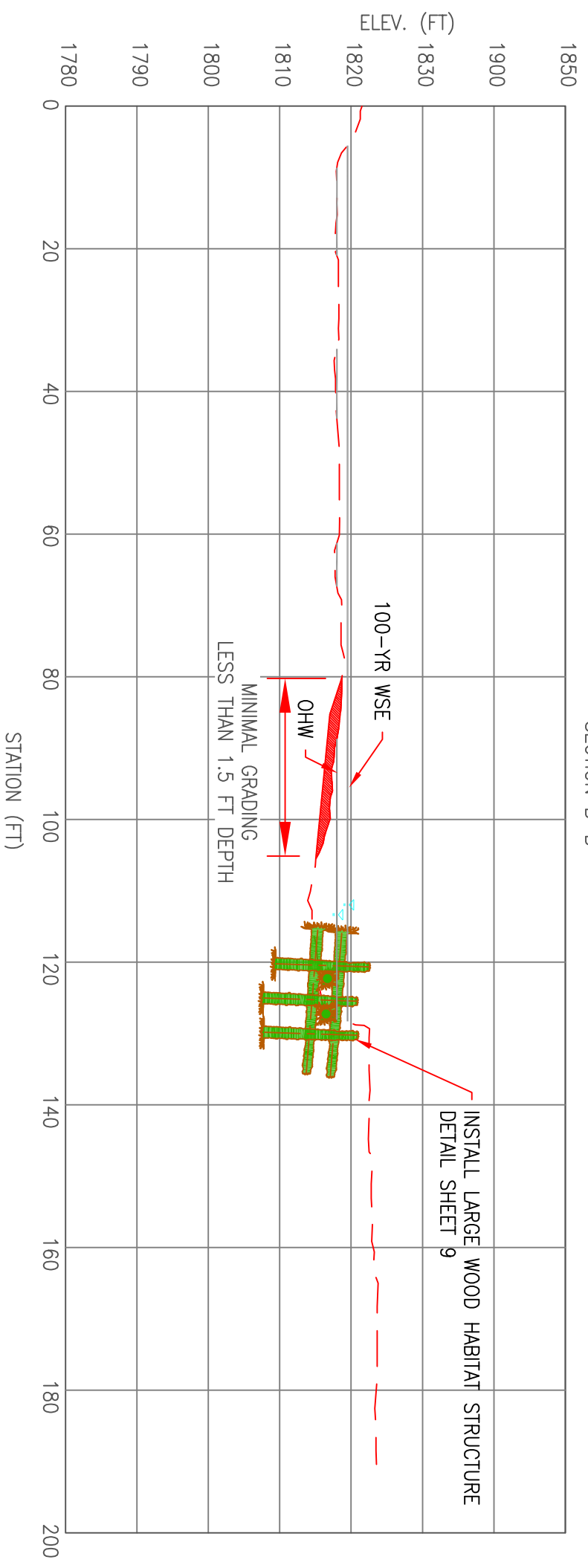
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SFWW ADAPTIVE MANAGEMENT  
SITE 2  
PLAN LAYOUT

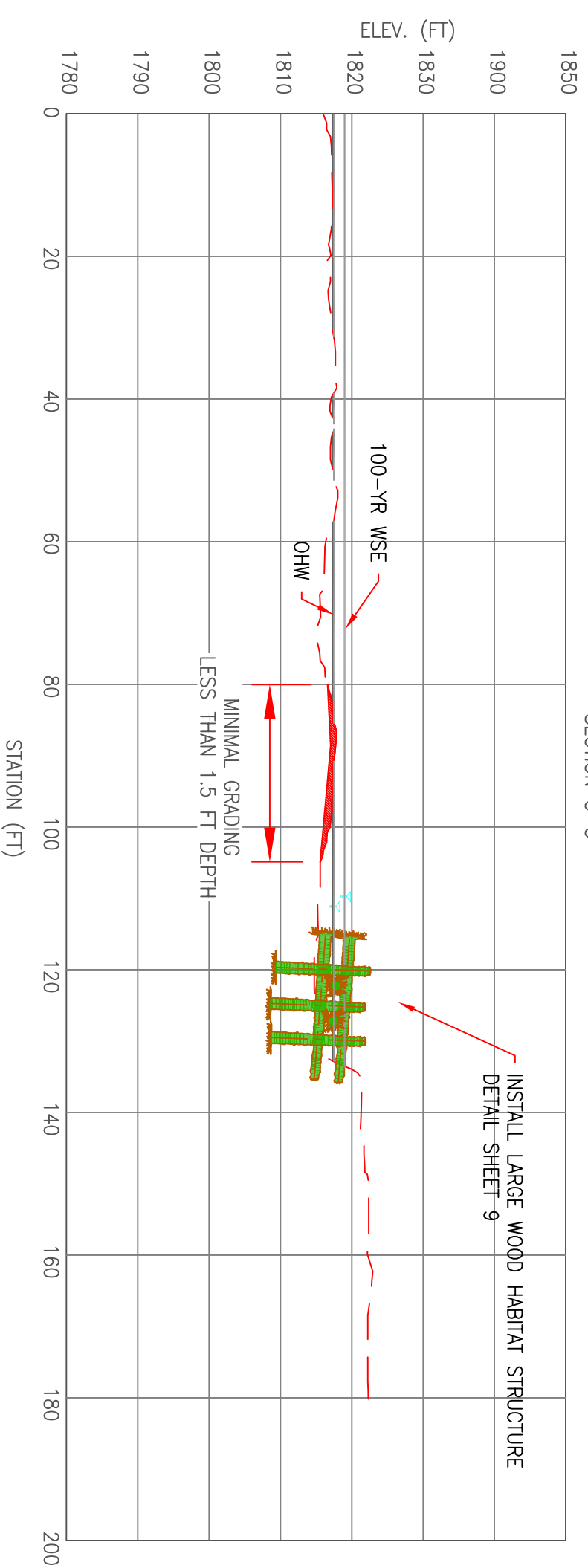
DATE: 6/2022  
SHEET NUMBER: 7 of 10



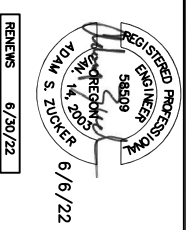
SECTION B-B'



SECTION C-C'



**DEPARTMENT OF NATURAL RESOURCES**  
**FISHERIES PROGRAM**  
**WALLA WALLA HABITAT PROJECT**



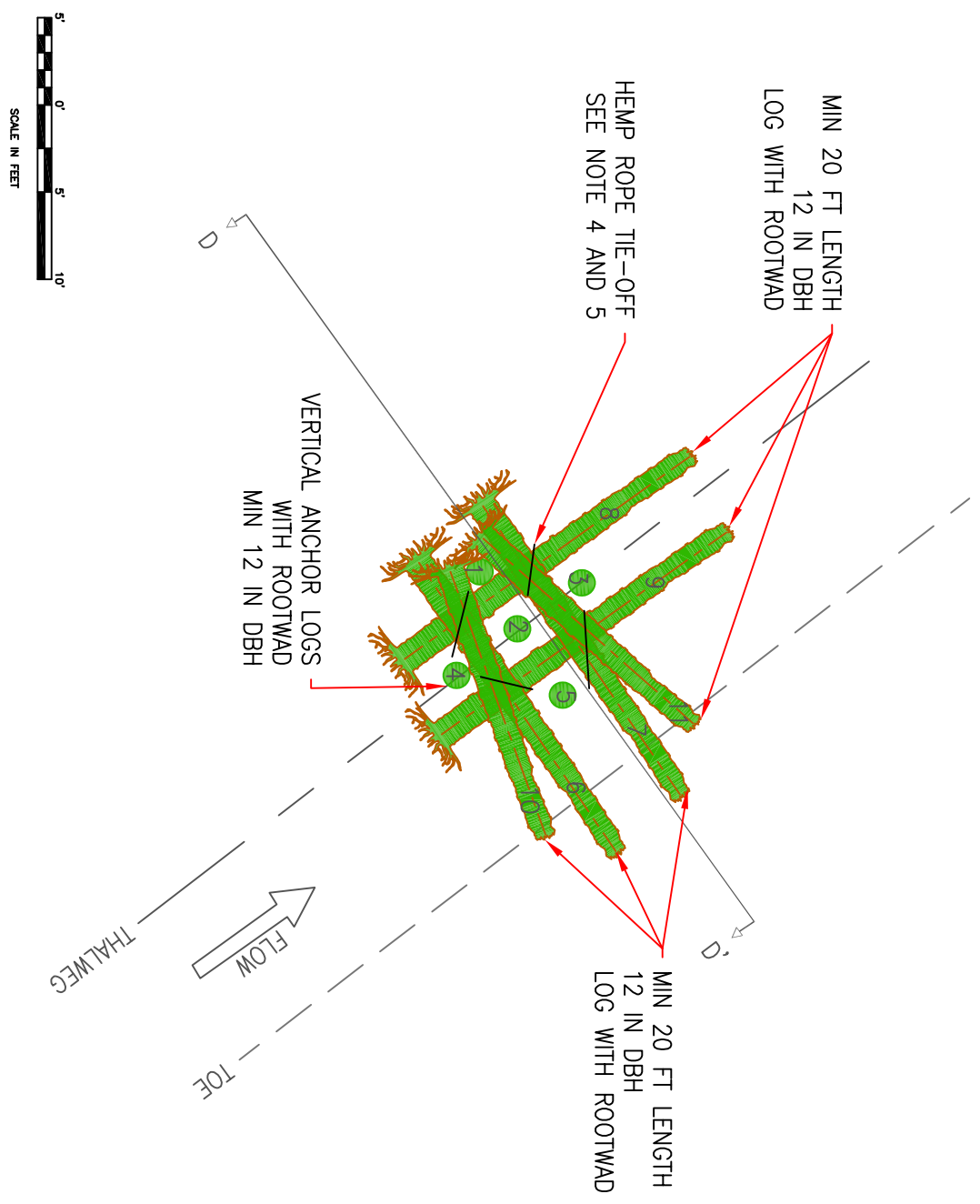
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SFWW ADAPTIVE MANAGEMENT  
 SITE 2  
 SECTION VIEWS

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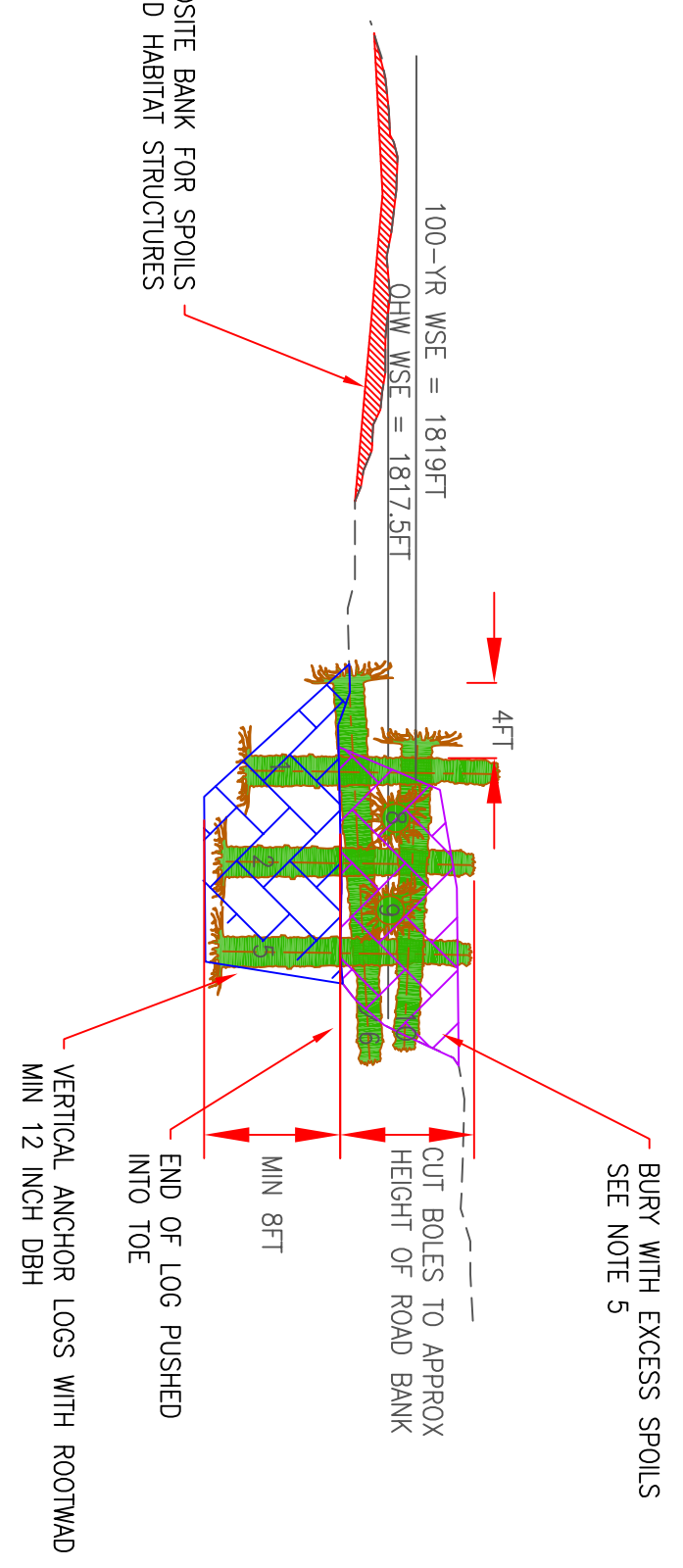


- NOTES:**
1. LOCATION OF THE LARGE WOOD HABITAT STRUCTURE TO BE VERIFIED IN FIELD BY CTUIR REPRESENTATIVE.
  2. INSTALL SAND BAG COFFERDAM FOLLOWING GENERAL WATER MANAGEMENT PLAN AND FISH SALVAGE MEASURES DESCRIBED ON SHEETS 2-5. ALLOW FOR CAVING IN ON STREAM SIDE FOR VERTICAL BOLE PLACEMENT. USE SCREENED PUMP TO MAINTAIN LOW WATER LEVEL WHILE EXCAVATING HOLE FOR VERTICAL BOLES.
  3. ORDER OF INSTALLATION INDICATED BY NUMBERS ON PLAN. AFTER VERTICAL BOLES ARE PLACED, BACKFILL TO STREAMBED LEVEL. PLACE HORIZONTAL LOGS 7, 8, 9 SEQUENTIALLY, BACKFILLING IN LAYERS.
  4. TIE ALL LOGS TOGETHER USING 1 INCH DIAMETER HEMP ROPE, MINIMUM THREE (3) WRAPS AROUND LOGS BEFORE TYING OFF WITH CARRICK BEND KNOT. DO NOT OVERTIGHTEN TO ALLOW FOR ROPE TO SHRINK.
  5. BACKFILL OVER LOGS 10, 11 AND EXPOSED ROPE WITH BOULDERS FOR BALLAST AND SPOILS FROM EXCAVATION. EACH STRUCTURE IS TO USE 8 BOULDERS MINIMUM 1.5 FOOT DIAM. FOR BALLAST. BOULDER AND EXCESS BACKFILL WILL BE SOURCED FROM STOCKPILE LOCATED AT SITE 2.
  6. ADD LOOSE SLASH AND RACKING WOOD BETWEEN AND UPSTREAM OF VERTICAL BOLES. USE WOODY FLOOD DEBRIS REMOVED FROM SIDE CHANNEL INLET FOR RACKING MATERIAL.



PLAN VIEW

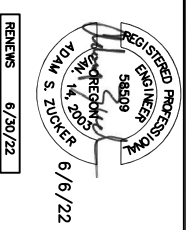
MINIMAL GRADING ON OPPOSITE BANK FOR SPOILS TO BACKFILL LARGE WOOD HABITAT STRUCTURES



SECTION D-D'



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**FISHERIES PROGRAM**  
**WALLA WALLA HABITAT PROJECT**



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SFWW ADAPTIVE MANAGEMENT  
 SITE 2  
 DETAILS

DATE: 6/2022  
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**GENERAL NOTES TO THE CONTRACTOR**

1. THE CONSTRUCTION SPECIFICATIONS AND MATERIAL SPECIFICATIONS DESCRIBE MINIMAL ACCEPTABLE QUALITY OF WORK AND MATERIALS FOR THE PROJECT. IF A CONFLICT ARISES BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE SPECIFICATION GOVERNS THE WORK AND/OR MATERIAL. THE DRAWINGS ARE A VISUAL REPRESENTATION TO COMPLEMENT CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE DRAWINGS INCLUDE LOCATION, PROFILES, SECTIONS, DETAILS AND NOTES NECESSARY TO DESCRIBE THE WORK. IF SITE CONDITIONS WARRANT CHANGES TO THE PLANS, THE PROJECT INSPECTOR RESERVES THE RIGHT TO DIRECT THE CONTRACTOR TO MAKE THESE MODIFICATIONS. NO CHANGES SHALL BE MADE TO THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR WRITTEN APPROVAL OF THE PROJECT INSPECTOR. THE PROJECT INSPECTOR FOR THE PROJECT SHALL BE CTURP STAFF.
2. IN THE EVENT THAT A PERMIT CONDITION CONFLICTS WITH THE DRAWINGS AND SPECIFICATIONS, THE ISSUE SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT INSPECTOR FOR CLARIFICATION PRIOR TO PROCEEDING WITH WORK.
3. CTURP MAKES NO REPRESENTATION OF THE EXISTENCE OR NONEXISTENCE OF UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR CALLING THE OREGON UTILITY NOTIFICATION CENTER (800-332-2344) AT LEAST TWO WEEKS PRIOR TO DIGGING.
4. COSTS INCURRED DUE TO PROJECT DELAYS RESULTING FROM FAILURE OF THE OF THE GENERAL NOTES TO THE CONTRACTOR, SAFETY, CONTRACTOR QUALIFICATIONS, MATERIAL SPECIFICATIONS, EQUIPMENT SPECIFICATIONS, CONSTRUCTION SPECIFICATIONS, AND PLAN SET SHALL BE THE EXPENSE OF THE CONTRACTOR.
5. NOTE THAT THE SUPPLEMENTAL SPECIFICATION LIST INCLUDES THE MAJOR SPECIFICATIONS APPLICABLE TO THIS PROJECT. OTHER SPECIFICATIONS REFERRED TO WITHIN THESE SPECIFICATION, EVEN THOUGH NOT SPECIFICALLY LISTED HEREIN, ARE ALSO FULLY APPLICABLE TO THIS SOLICITATION AND ANY RESULTANT CONTRACT.

**SAFETY**

1. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLIANCE WITH ALL STATE AND LOCAL LAWS, ORDINANCES, CODES, AND/OR REGULATIONS APPLICABLE FOR THE PROJECT INSTALLATION. THE PROJECT INSPECTOR WILL DOCUMENT ANY SAFETY VIOLATIONS WITNESSED.

**MATERIALS SPECIFICATIONS**

2. THE CONTRACTOR SHALL FURNISH ALL MATERIALS NECESSARY TO CONSTRUCT THE PROJECT UNLESS OTHER PROVISIONS HAVE BEEN AGREED UPON PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL DELIVER ALL MATERIALS TO THE DESIGNATED STAGING AREA LOCATIONS LABELED ON THE PLAN SET OR TO A LOCATION SPECIFIED BY THE PROJECT INSPECTOR. IF A MATERIAL SOURCE HAS BEEN PRE-DETERMINED, THE PROJECT INSPECTOR SHALL PROVIDE DIRECTIONS TO THE CONTRACTOR.
3. THE DIAMETER OF ALL TREES SHALL BE MEASURED AT BREAST HEIGHT (DBH), OR 4.5 FEET FROM THE ROOT CROWN. TREES THAT ARE DELIVERED THAT ARE TOO SMALL (I.E. MEASURED AT GROUND LEVEL) WILL BE REPLACED AT NO COST TO THE OWNER OR SUBJECT TO DEFECT PENALTIES NOT LESS THAN 50% OF THE VALUE OF THE BID PRICE PER DELIVERED TREE.
4. BALLAST BOULDERS SHALL BE 18 TO 28 INCHES. APPROXIMATE BOULDER SIZE CAN BE DETERMINED BY TAKING THE AVERAGE DIMENSION OF THE THREE AXES OF THE ROCK. BALLAST BOULDERS SHALL BE HARD, ROUND, AND DURABLE MATERIAL, FREE FROM SEAMS AND OTHER DEFECTS TENDING TO DESTROY ITS RESISTANCE TO WEATHER.
5. MATERIAL QUANTITIES, DIMENSIONS, AND SIZES SHALL CONFORM TO THE NOTES AND SPECIFICATIONS PROVIDED ON THE PROJECT DRAWINGS OR ON THE MATERIALS LIST.
6. THE PROJECT INSPECTOR SHALL INSPECT AND APPROVE ALL MATERIALS PRIOR TO CONSTRUCTION. IF MATERIALS DO NOT MEET THE MINIMUM REQUIREMENTS, THE PROJECT INSPECTOR SHALL REJECT THE MATERIALS.

**EQUIPMENT SPECIFICATIONS**

1. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT TO CONSTRUCT THE PROJECT:
  - EXCAVATOR - THE EQUIPMENT SHALL BE CAPABLE OF MOVING LARGE WOOD AS SHOWN IN THE PLANS (20 FOOT OR 35 FOOT STEMS, WITH A 6 FOOT ROOTOVAD ATTACHED AND A MINIMUM TRUNK DIAMETER OF 1 FOOT AT BREAST HEIGHT). THE EQUIPMENT MUST ALSO BE ABLE TO RAISE AND PLUCK A 4 FOOT DIAMETER ROCK AT A WEIGHT OF 11,000 LBS. MINIMUM BUCKET VOLUME SHALL BE ONE (1) CUBIC YARD. THE BUCKET SHALL BE EQUIPPED WITH A HYDRAULIC THUMB FOR GRASPING LOGS, ROCKS, AND OTHER MATERIALS. THE EQUIPMENT MUST BE CAPABLE OF CROSSING WATER AND WORKING ON OR ADJACENT TO STEEP SLOPES. A CHAIN SHALL BE AVAILABLE FOR ATTACHING PUMPS AND OTHER EQUIPMENT OF MATERIALS TO THE BUCKET FOR TRANSPORT ON-SITE.
  - TRASH PUMP - DISCHARGE CAPACITY SHALL BE AT LEAST 450 GPM (1 CFS). TOTAL HEAD LIFT SHALL BE AT LEAST 95 FEET. PUMPS SHALL BE EQUIPPED WITH AT LEAST 100 FEET OF 4" DIAMETER OUTLET HOSE. A PIPE WRENCH SHALL BE AVAILABLE FOR ATTACHING HOSES. FUEL AND OIL SHALL BE SUPPLIED FOR THE TRASH PUMPS.
  - CHAINSAW - THE CHAINSAW MUST BE CAPABLE OF COMPLETELY SAWING LOGS OF THE DIAMETER SPECIFIED IN THE MATERIAL SPECIFICATIONS.
2. ALL EQUIPMENT SHALL BE WASHED PRIOR TO MOBILIZATION TO THE SITE TO MINIMIZE THE INTRODUCTION OF FOREIGN MATERIALS AND FLUIDS TO THE PROJECT SITE. ALL EQUIPMENT SHALL BE FREE OF OIL, HYDRAULIC FLUID, AND DIESEL FUEL LEAKS. TO PREVENT INVASION OF NOXIOUS WEEDS OR THE SPREAD OF WHIRLING DISEASE, ALL EQUIPMENT SHALL BE POWER WASHED OR CLEANED TO REMOVE ANY MUD AND SOIL PRIOR TO MOBILIZATION INTO THE PROJECT AREA. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ADEQUATE MEASURES HAVE BEEN TAKEN.
3. EQUIPMENT SHALL BE IN WELL-MAINTAINED CONDITION TO MINIMIZE THE LIKELIHOOD OF A FLUID LEAK IF A FLUID LEAK DOES OCCUR. THE PROJECT INSPECTOR SHALL BE NOTIFIED IMMEDIATELY AND ALL WORK CEASED UNTIL THE LEAK HAS BEEN RECFIRED. AT ALL TIMES DURING THE CONSTRUCTION PHASE, FLUID SPILL CONTAINMENT EQUIPMENT SHALL BE PRESENT ON-SITE AND READY FOR DEPLOYMENT SHOULD AN ACCIDENTAL SPILL OCCUR. PROJECT INSPECTOR RESERVES THE RIGHT TO REFUSE EQUIPMENT THAT DOES NOT MEET THE STATED CRITERIA.
4. THE CONTRACTOR SHALL MAINTAIN A COMPLETE TOOL SET WITH COMMONLY REPLACED PARTS (E.G. O-RINGS) TO MINIMIZE DOWNTIME IN THE EVENT OF EQUIPMENT MALFUNCTION. THE CONTRACTOR SHALL HAVE AN EMERGENCY SPILL KIT ON SITE DURING THE PROJECT.

**MOBILIZATION SPECIFICATION**

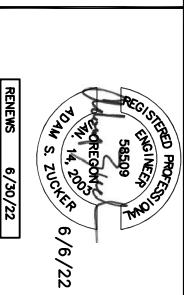
1. ALL MOBILIZATION AND DEMOBILIZATION WILL BE PERFORMED IN A SAFE AND ORDERLY MANNER WITH PARTICULAR CARE NOT TO DAMAGE EXISTING VEGETATION OR UNDUJE DISTURBANCE TO THE INGRESS-EGRESS ROUTE.
2. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE INCURRED TO PROPERTY RESOURCES DURING MOBILIZATION AND DEMOBILIZATION. VEGETATION THAT MAY BE A CAUSE FOR CONCERN DURING MOBILIZATION SHALL BE IDENTIFIED BY THE CONTRACTOR AND FLAGGED BY THE PROJECT INSPECTOR AT THE TIME OF THE PROJECT "WALK THROUGH".
3. INGRESS AND EGRESS ROUTES TO THE PROJECT SITE WILL BE IDENTIFIED DURING THE PROJECT "WALK THROUGH".
4. UPON COMPLETION OF CONSTRUCTION AND DEMOBILIZATION ACTIVITIES THE CONTRACTOR SHALL PERFORM SITE RESTORATION. COMPACTED SURFACES ARE TO BE RIPPED TO A MINIMUM DEPTH OF 18 INCHES FOR SEEDING PREPARATION AND ORGANIC CONSTRUCTION DEBRIS SHALL BE PLACED AT THE DIRECTION OF THE PROJECT INSPECTOR ON SURFACES EXPOSED DURING CONSTRUCTION. SITE RESTORATION SHALL BE CERTIFIED COMPLETE IN WRITING BY THE PROJECT INSPECTOR UPON COMPLETION OF CONSTRUCTION ACTIVITIES.

**CONSTRUCTION SPECIFICATIONS**

1. CONSTRUCTION SHALL OCCUR IN ACCORDANCE WITH THE PROJECT DRAWINGS, CONSTRUCTION SPECIFICATIONS, EQUIPMENT SPECIFICATIONS, MATERIAL SPECIFICATIONS, REVEGETATION SPECIFICATIONS AND GENERAL SPECIFICATIONS.
2. PRIOR TO CONSTRUCTION, CONSTRUCTION AREAS WILL BE STAKED OUT USING A SURVEY GRADE GLOBAL POSITIONING SYSTEM (GPS), TOTAL STATION, OR SURVEY LASER. THE PROJECT INSPECTOR SHALL STAKE THE LOCATIONS OF THE CONSTRUCTION ACCESS, STOCKPILE LOCATIONS, LIMITS OF DISTURBANCE, AND PROPOSED STRUCTURES ACCORDING TO THE PROJECT DRAWINGS. IF EXCESSIVE DISTURBANCE TO STAKES OCCURS BY THE CONTRACTOR, IT SHALL BE THE CONTRACTOR'S EXPENSE TO RE-STAKE THE PROJECT.
3. CONSTRUCTION ACCESS SHALL BE DETERMINED BY THE PROJECT INSPECTOR. CONSTRUCTION EQUIPMENT SHALL NOT CROSS PRIVATE LAND UNLESS PERMISSION IS OBTAINED FROM THE LANDOWNER. THE CONTRACTOR SHALL LEAVE ALL GATES, WHETHER OPEN OR CLOSED, AS FOUND.
4. STREAM CROSSINGS SHALL BE MINIMIZED DURING CONSTRUCTION. IF MULTIPLE CROSSINGS ARE EXPECTED, THE CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY CROSSINGS SO THE EQUIPMENT CAN CROSS THE STREAM WITHOUT GENERATING EXCESS TURBIDITY.
5. PRIOR TO CONSTRUCTION, TEMPORARY WORK AREA ISOLATION SHALL BE CONSTRUCTED ACCORDING TO THE HIP GUIDELINES AND WATER MANAGEMENT PLAN PROVIDED IN THE PROJECT DRAWINGS.
6. EXCAVATION SHALL COMPLY WITH CONSTRUCTION STAKES AND THE PLAN SET. ALL EXCAVATED MATERIALS SHALL BE STOCKPILED ON-SITE, ABOVE THE BANKFULL CHANNEL UNTIL USED ON-SITE. DISTURBANCE TO RIPARIAN VEGETATION, CHANNEL BANKS, AND SOD SHALL BE MINIMIZED.
7. AFTER EXCAVATING FOR THE INSTALLATION OF THE LARGE WOOD HABITAT STRUCTURE, THE CONTRACTOR SHALL INSTALL THE LARGE WOOD HABITAT STRUCTURE IN ACCORDANCE WITH THE PROJECT DRAWINGS. THE PROJECT INSPECTOR SHALL INSPECT AND APPROVE ALL STRUCTURES PRIOR TO BACKFILLING.
8. UPON NOTIFICATION FROM THE PROJECT INSPECTOR, THE CONTRACTOR SHALL REMOVE THE WORK AREA ISOLATION IN ACCORDANCE WITH THE HIP GUIDELINES AND WATER MANAGEMENT PLAN PROVIDED IN THE PROJECT DRAWINGS.
9. THE CONTRACTOR SHALL REMOVE EXCESS MATERIALS AND EQUIPMENT FROM THE PROJECT SITE. THE CONTRACTOR WILL REGRADE DISTURBED AREAS AND CONSTRUCTION ACCESS ROADS TO THEIR ORIGINAL GRADE. THE CONTRACTOR SHALL TREAT COMPACTED SOIL AREAS INCLUDING ACCESS ROADS AND MATERIAL STOCKPILE AREAS. THE CONTRACTOR SHALL REMOVE SOIL FROM THE PROJECT SITE IF THE SOIL IS TAINTED WITH PETROLEUM-BASED FLUIDS, ANY ACCUMULATED GARBAGE, WASTE, OR EXCESS PROJECT MATERIALS SHALL BE DISPOSED OF IN A LEGAL MATTER.



**DEPARTMENT OF NATURAL RESOURCES**  
**FISHERIES PROGRAM**  
**WALLA WALLA HABITAT PROJECT**



REV	DATE	REVISION DESCRIPTION	DRW	ENG	APP

SFWW ADAPTIVE MANAGEMENT  
 SITE 2  
 PROJECT SPECIFICATIONS

DATE: 6/2022  
 SHEET NUMBER: 10 of 10