

**DEPARTMENT OF THE ARMY PERMIT**

**Permittee:** Hudson Capital / MBBH Development, LLC  
123 Northwest 7<sup>th</sup> Street  
Corvallis, Oregon 97330-6301

**Permit No:** NWP-2015-502/1

**Issuing Office:** U.S. Army Corps of Engineers, Portland District

NOTE: The term "you" and its derivatives as used in this permit means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

**Project Description:** The permittee is authorized to fill up to 8.72 acres of wetland to construct a housing development and extend a street.

Temporary impacts will result from the extension of utilities across Wetland N and the Burkhart Creek Overflow. Temporary impacts will result in the removal and fill of 0.04 acres of native soil. A 2-foot wide, 18-foot long bottomless box culvert is designed to span the ordinary high water mark of Burkhart Creek Overflow with no direct impacts to the creek. The outfall to Truax Creek will result in the temporary removal of 1,012 sq. ft. of native soils to place the pipe. Dredged material will be returned to the trench following placement of the pipe. The outfall will be stabilized with 2 cubic yards of riprap. Stormwater from the development and road will be pretreated and will be directed either into Wetland A or Truax Creek.

**Purpose:** The project purpose is to provide residential housing in the city of Albany.

**Project Location:** The site is in Section 34, Township 10 South, Range 3 West. Latitude and Longitude: 44.653° North, 123.0446° West

**Drawings:** Eleven (11) (Attachment 1)

**Permit Conditions:**

## **General Conditions:**

1. The time limit for completing the work authorized ends on 24 August 2023. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition No. 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions (Attachment 2).
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

## **Special Conditions:**

a. Upon starting the activities authorized in this permit/verification letter, Permittee shall notify the U.S. Army Corps of Engineers, Portland District, Regulatory Branch the work has started. Notification shall be provided by e-mail to [cenwp.notify@usace.army.mil](mailto:cenwp.notify@usace.army.mil) and the email subject line shall include: Corps project number and the projects county location. NWP- 2015-502/1, Linn County.

b. The permittee shall complete a wetland delineation three years following the construction of the road connecting Santa Maria Avenue and Somerset Drive for all avoided wetlands within the deed restriction labeled as Tract 1, 2, 3, and 4 in the conservation easement. The delineation shall utilize the same data points as used in Timber Ridge Property/City of Albany Public Works Department - Wetland delineation Report 29 Feb 2016 conducted by The Acker Group LLC and the wetland delineation received by Zion Natural Resources Consulting in 2015 that are left after the fill. Additional data points as necessary to satisfactorily characterize the site will be

proposed by the delineator at the time of the delineation. The primary focus of this monitoring shall be to assess the avoided wetlands to determine if they are successfully being maintained as wetlands and have not been adversely affected by surrounding development.

c. Permittee shall mitigate any loss of wetlands noted as a result of the delineation required by special condition b. through on- site restoration if the delineation indicates these wetland boundaries have been reduced in size or function. The permittee will develop a mitigation proposal and submit it to the Corps for approval. Permittee's responsibility to maintain the avoided wetlands will not be considered fulfilled until Permittee has demonstrated the sufficient hydrology is being provided to sustain the avoided wetlands and has received written verification of fulfillment of their obligations from the U.S. Army Corps of Engineers.

d. Permittee shall record permanent conservation easements and deed restrictions maintaining all mitigation, preservation, and avoidance areas as wetland preserve and wildlife habitat in perpetuity. Copies of the proposed deed restriction language shall be provided to the Corps of Engineers for approval prior to recordation.

e. Permittee shall establish and maintain the hydrological connection from the avoided wetland to the tributary system.

f. All environmentally sensitive areas, including all wetlands, shall be clearly flagged during construction to prevent unauthorized impacts in jurisdictional waters.

g. Permittee shall implement all appropriate erosion control measures throughout construction to ensure turbidity is minimized and to comply with Oregon Department of Environmental Quality's water quality standards. Temporary measures shall remain in place and in operable condition until permanent controls are established.

h. Permittee shall fully implement all applicable Proposed Design Criteria (PDC) of the SLOPES V Stormwater, Transportation and Utilities programmatic opinion. A detailed list of the PDC's are enclosed (Attachment 3). The PDC's included with the SLOPES notification for the project include numbers: 5, 6, 7, 9, 13, 14, 25, 26, 27, 30, 31, 33, 36, 37, and 38.

i. Permittee shall implement the Inadvertent Discovery Plan (Attachment 4) and immediately notify the U.S. Army Corps of Engineers, Portland District, Regulatory Branch if human remains or cultural resources are discovered during the performance of the authorized work.

j. Prior to or concurrent with the first discharge of dredged or fill material into a jurisdictional water, permittee shall purchase 8.72 credits from the One Horse Slough Mitigation Bank. The purchase shall compensate off-site for adverse project impacts to 8.72 acres of wetlands. Permittee shall complete the mitigation bank transaction and provide documentation to the Corps at the address in Special Condition a prior to the first discharge of dredged or fill material.

k. If you sell the property associated with this permit, you must obtain the

signature of each new owner in the space provided below and forward copies of the permit to this office to validate the transfer of this authorization for each parcel.

I. Permittee shall complete the enclosed "Compliance Certification" (Attachment 5) and provide it to the Corps within 60 days of project completion.

**Further Information:**

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
- Section 404 of the Clean Water Act (33 U.S.C. 1344).
- Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this Authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is

not contrary to the public interest was made in reliance on the information you provided.


5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

  
\_\_\_\_\_  
**(PERMITTEE SIGNATURE)**

7/25/2018  
\_\_\_\_\_  
**(DATE)**

Myles Breadner  
\_\_\_\_\_  
**(PRINTED NAME)**

MAanager/President  
\_\_\_\_\_  
**(TITLE)**

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

**FOR THE COMMANDER, AARON L. DORF, COLONEL, CORPS OF ENGINEERS, DISTRICT COMMANDER:**

**MONICAL.TEENA.G.1231  
644691**  
\_\_\_\_\_  
**(DISTRICT COMMANDER)**

Digitally signed by MONICAL.TEENA.G.1231644691  
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,  
ou=USA, cn=MONICAL.TEENA.G.1231644691  
Date: 2018.07.25 16:01:29 -07'00'

\_\_\_\_\_  
**(DATE)**

William D. Abadie  
Acting Chief, Regulatory Branch

When the structures or work authorized by this permit are still in existence at the time the property is transferred , the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign below.

**PERMIT TRANSFEREE:**

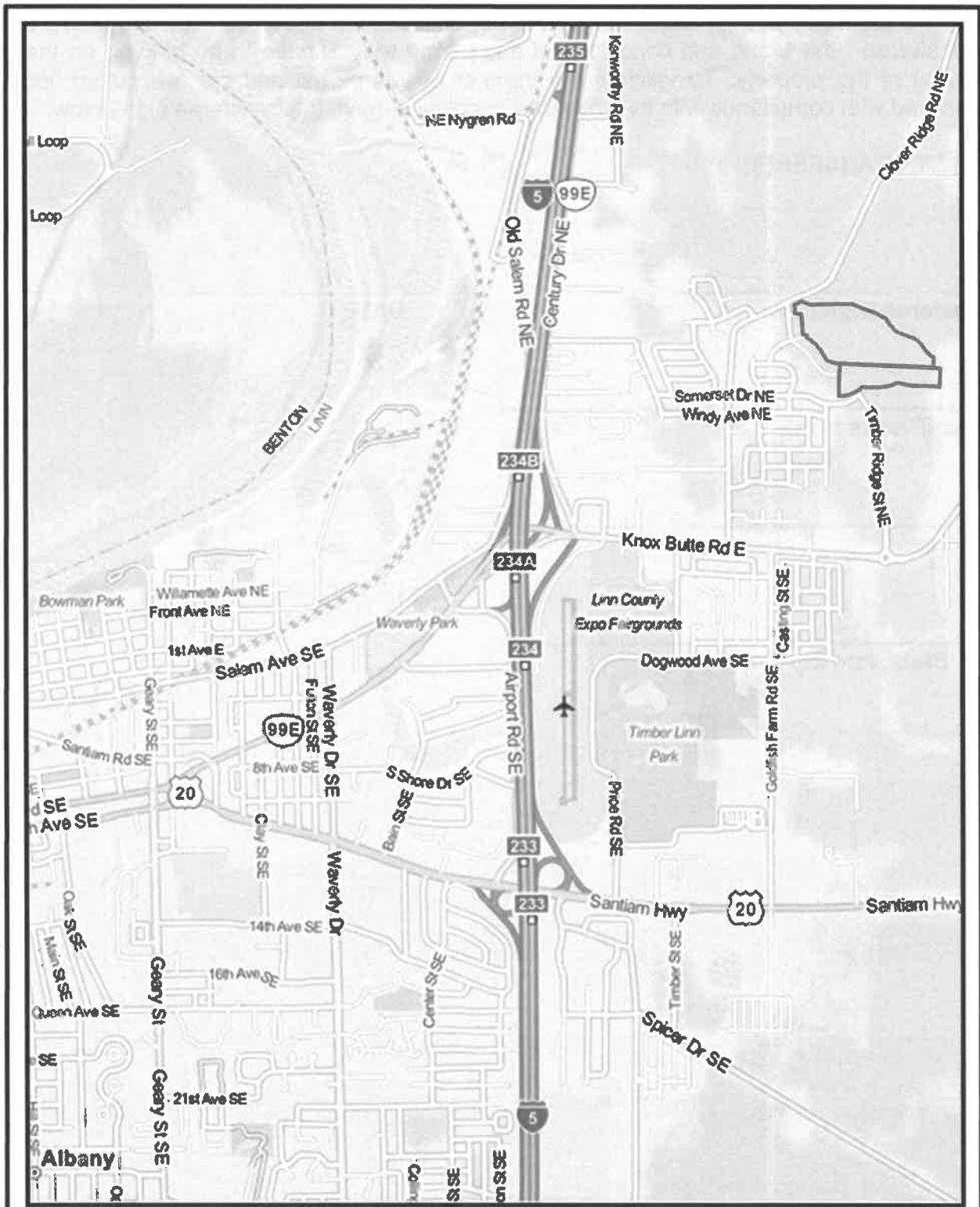
\_\_\_\_\_  
**Transferee Signature**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**Name (Please print)**

\_\_\_\_\_  
**Address**

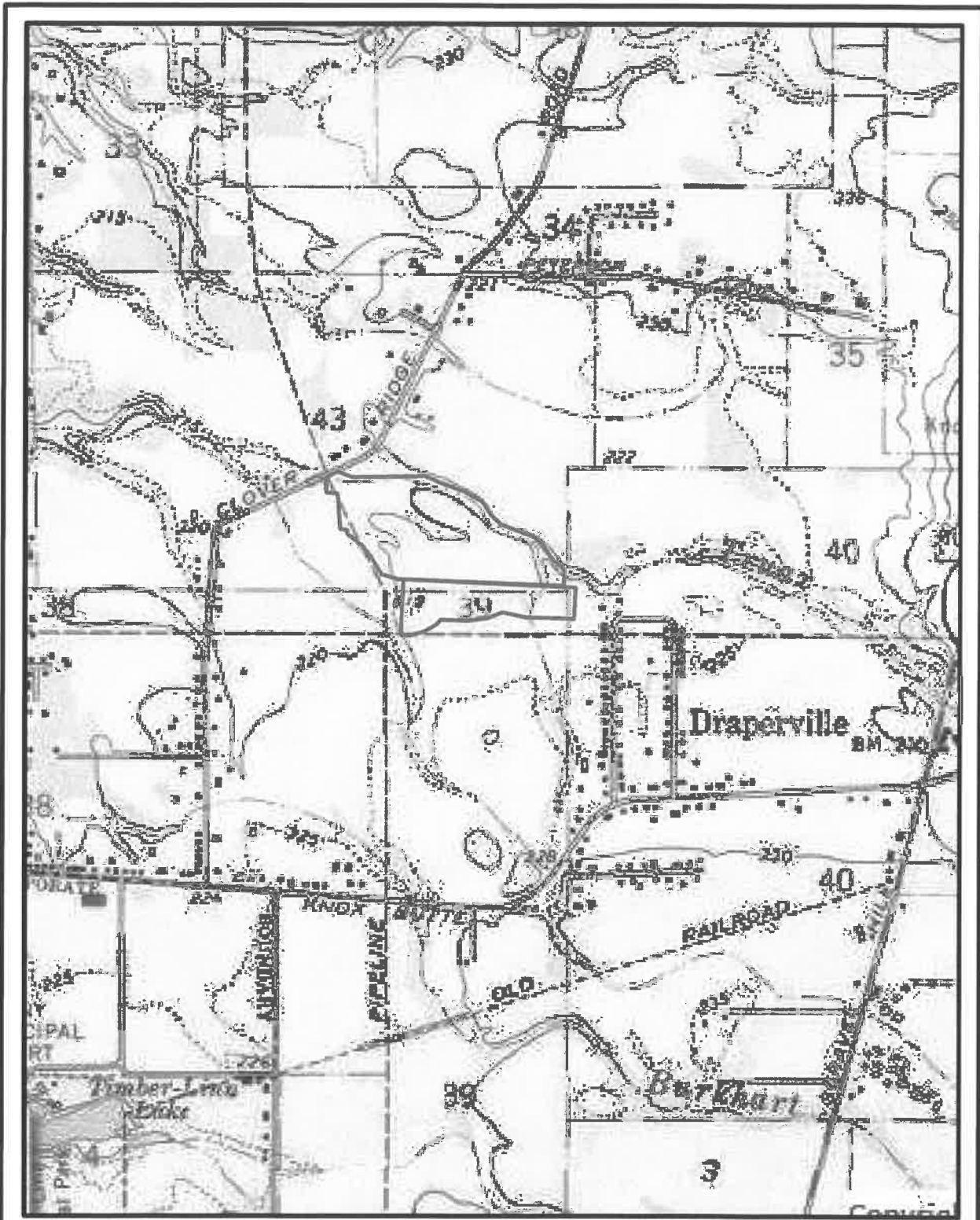
\_\_\_\_\_  
**City, State, and Zip Code**



**FIGURE 1**  
**Vicinity Map**  
**Project: Somerset**

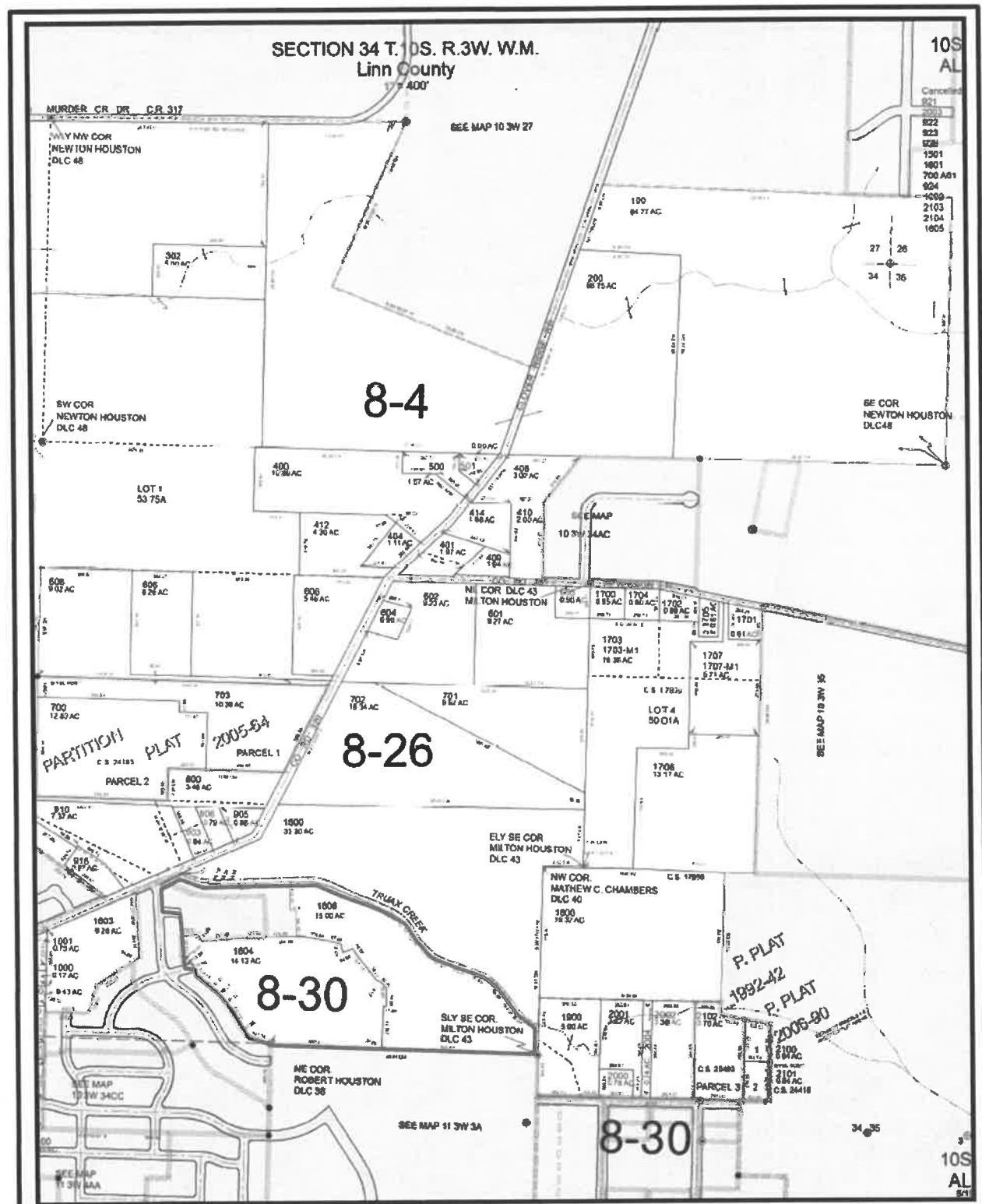






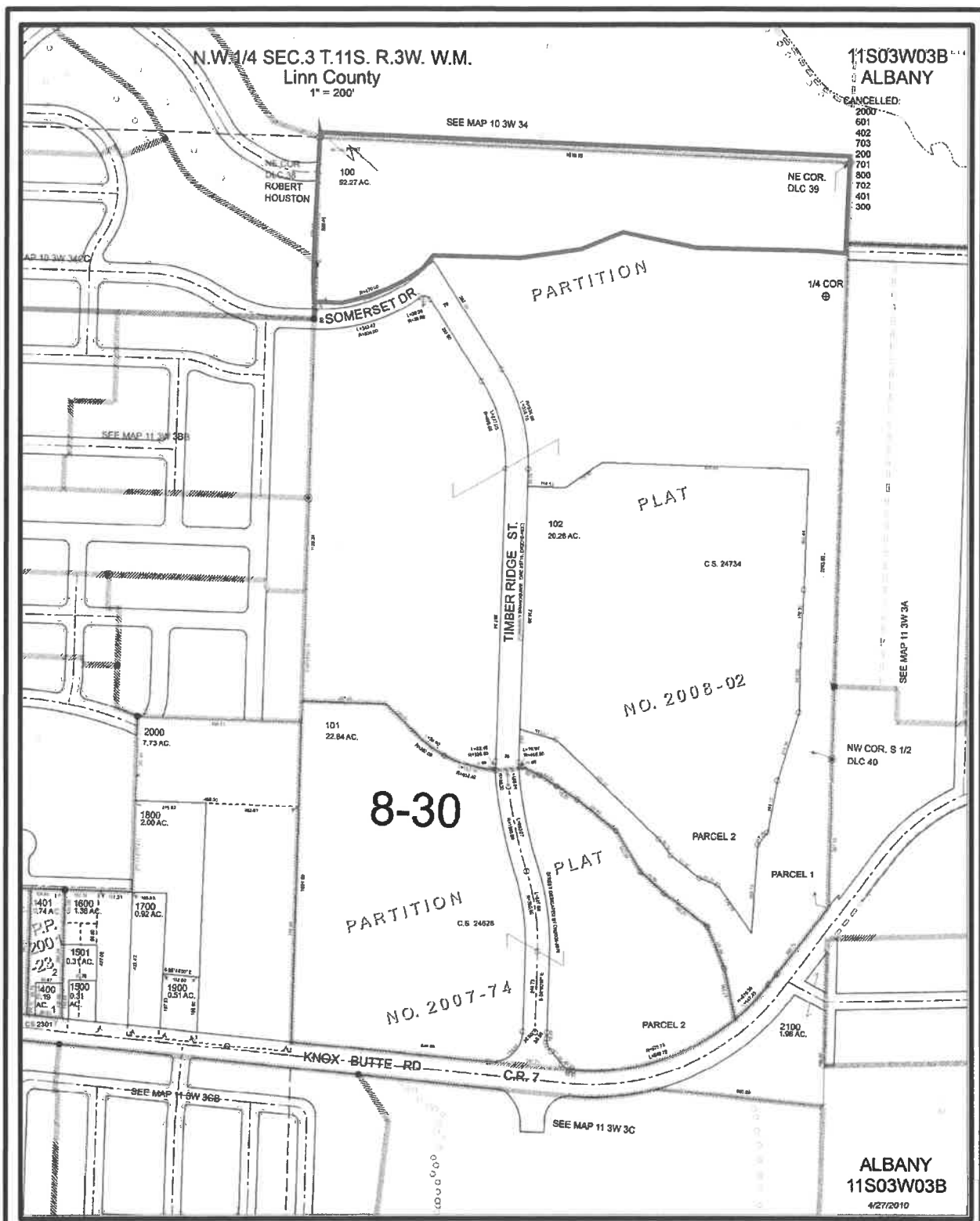
**FIGURE 2**  
**Topography Map**  
**Project: Somerset**





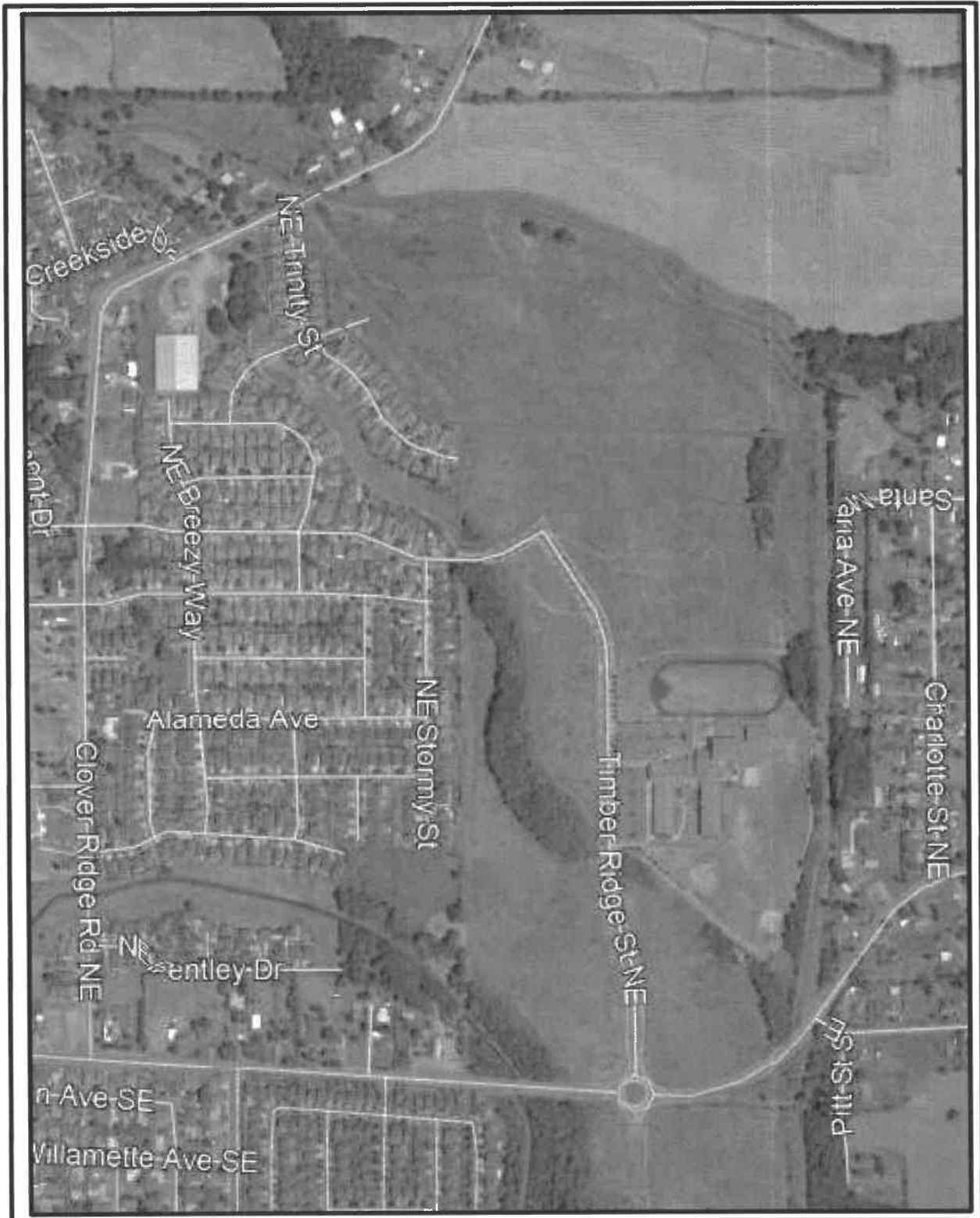
**FIGURE 3a**  
**Tax Lot Map**

**Project: Somerset**



**FIGURE 3b**  
**Tax Lot Map**

**Project: Somerset**

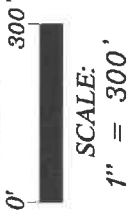


**FIGURE 4**  
**Aerial Photo – Google Earth July 3, 2017**  
**Project: Somerset**



STUDY AREA BOUNDARY 1,976,354 S.F. (45.37 AC.)  
 TOTAL WETLANDS IMPACTED 379,971 S.F. (8.72 AC.)  
 TOTAL WETLANDS AVOIDED 561,041 S.F. (12.88 AC.)  
 TOTAL WETLANDS 941,012 S.F. (21.60 AC.)  
 TOTAL WATERS IMPACTED 0 S.F. (0.00 AC.)  
 TOTAL WATERS AVOIDED 3,190 S.F. (0.07 AC.)  
 TOTAL WATERS 3,190 S.F. (0.07 AC.)  
 TOTAL DEVELOPABLE LOTS 144

STUDY AREA  
 TOTAL CUT 10,127 CU.YDS.  
 TOTAL FILL 16,016 CU.YDS.  
 TOTAL 26,143 CU.YDS.

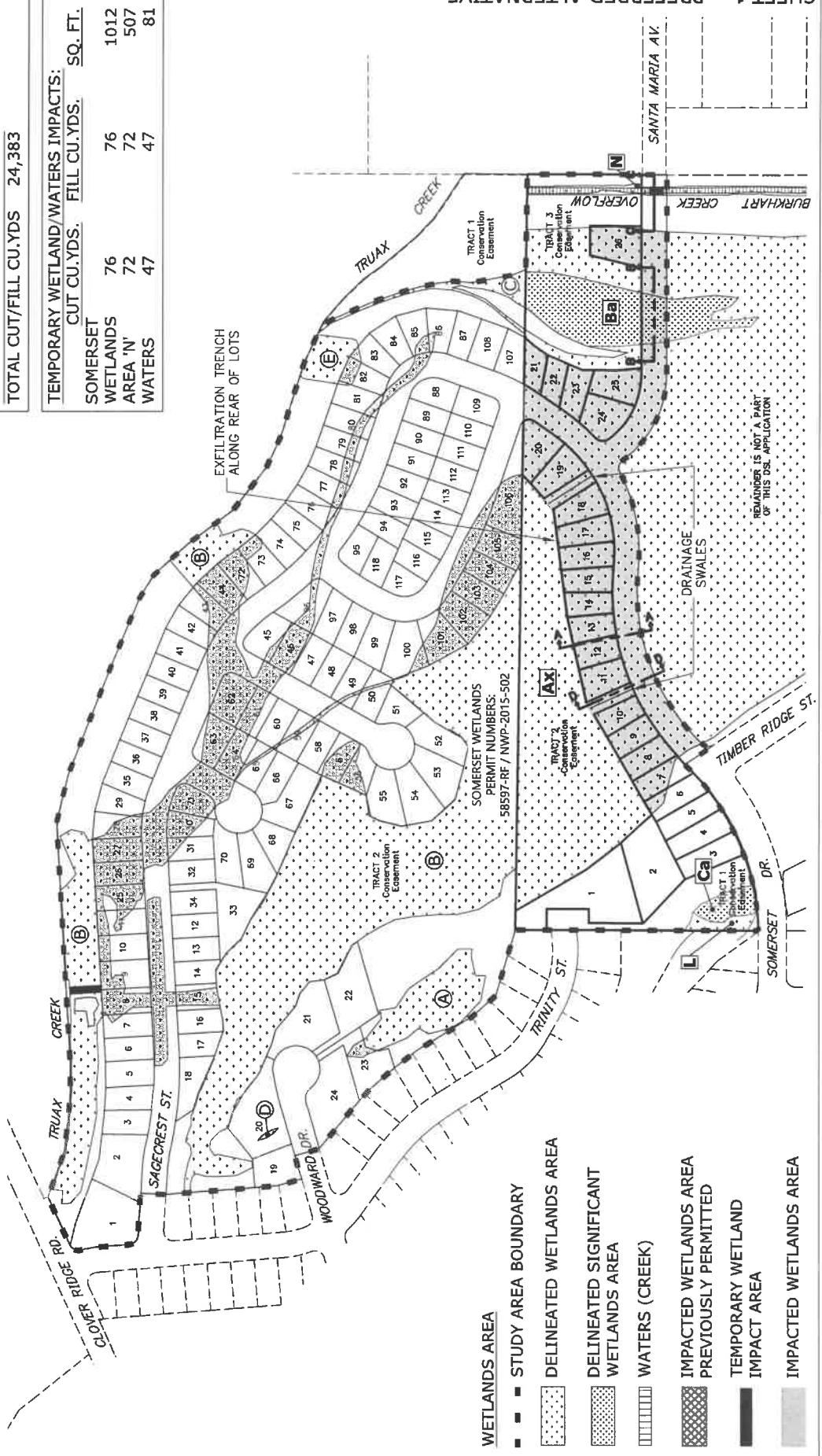


WETLAND/WATERS IMPACTS:

AREA	CUT CU.YDS.	FILL CU.YDS.	SQ. FT.
AREA 'A'	52	94	1,160
AREA 'B'	8,133	6,964	175,688
AREA 'C'	0	0	0
AREA 'D'	15	21	336
AREA 'E'	95	191	2,066
AREA 'Ax'	1,445	7,160	195,250
AREA 'Ba'	38	175	5,471
AREA 'Ca'	0	0	0
AREA 'L'	0	0	0
AREA 'N'	0	0	0
WATERS	0	0	0
TOTALS:	9,778	14,605	379,971

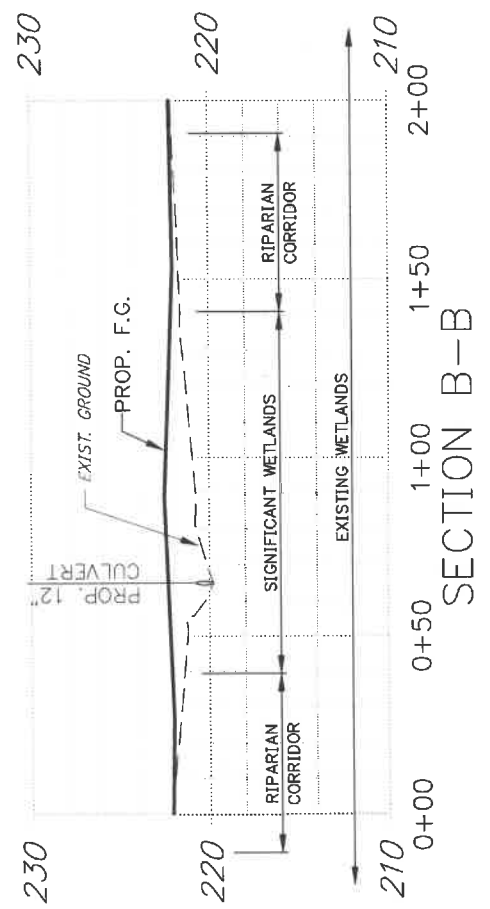
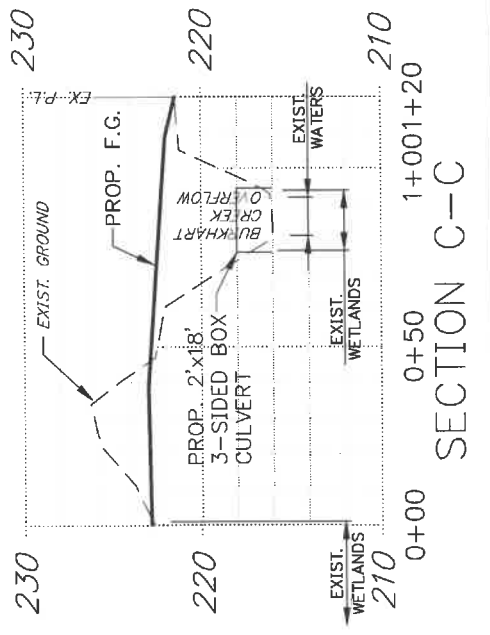
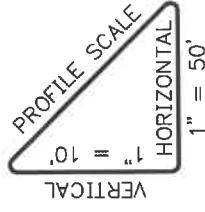
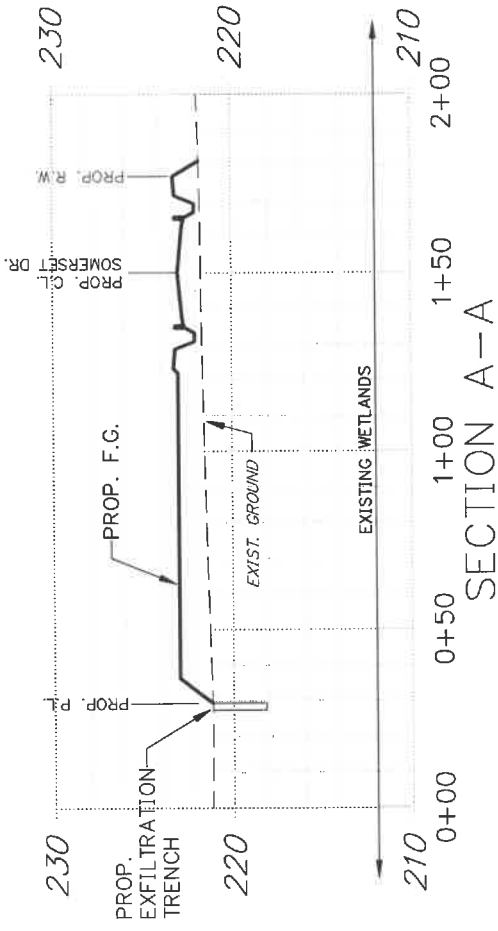
TEMPORARY WETLAND/WATERS IMPACTS:

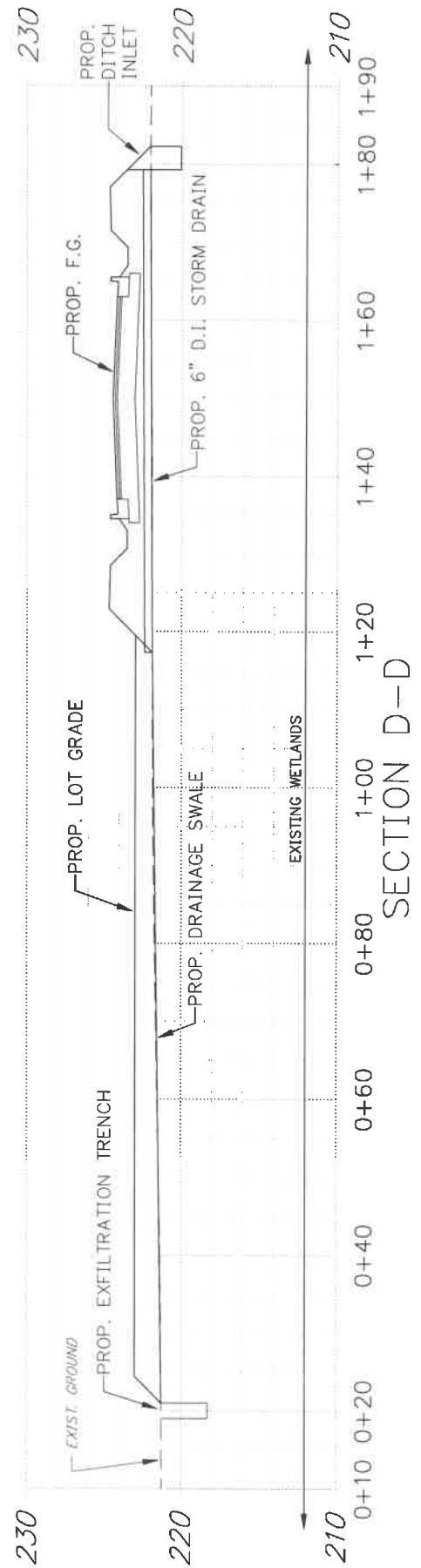
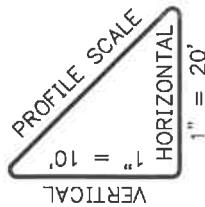
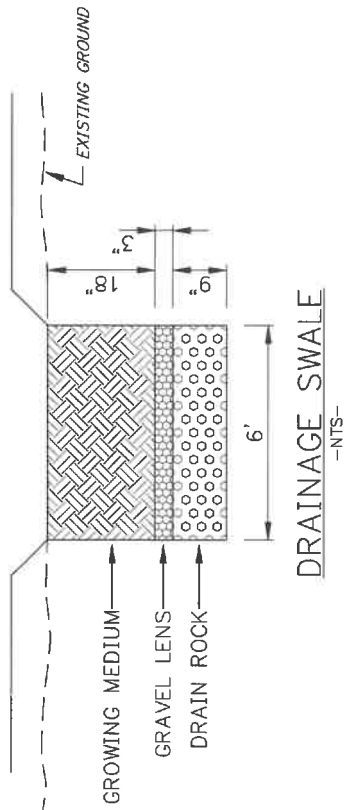
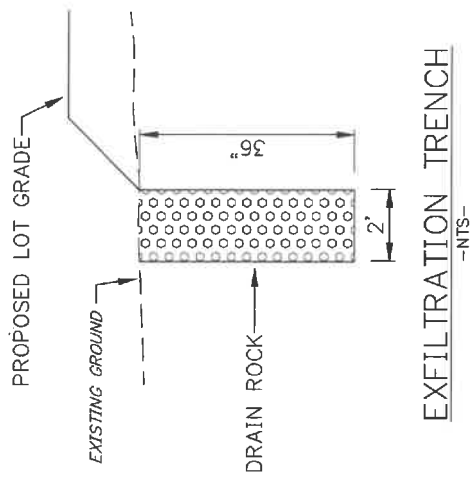
SOMERSET	CUT CU.YDS.	FILL CU.YDS.	SQ. FT.
WETLANDS	76	76	1012
AREA 'N'	72	72	507
WATERS	47	47	81



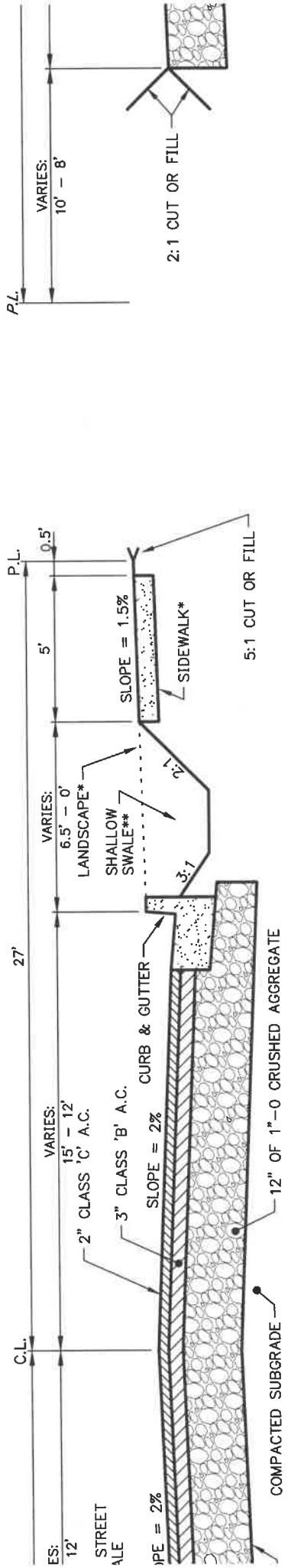
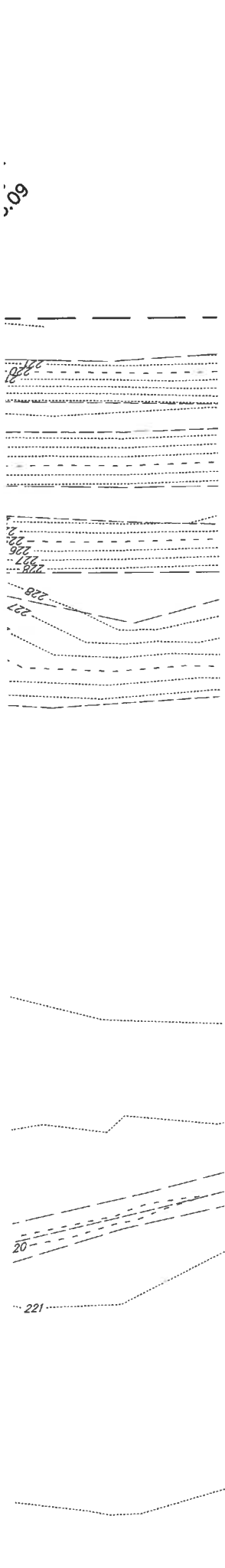
- WETLANDS AREA
- STUDY AREA BOUNDARY
  - DELINEATED WETLANDS AREA
  - DELINEATED SIGNIFICANT WETLANDS AREA
  - WATERS (CREEK)
  - IMPACTED WETLANDS AREA PREVIOUSLY PERMITTED
  - TEMPORARY WETLAND IMPACT AREA
  - IMPACTED WETLANDS AREA

REMAINDER IS NOT A PART OF THIS DSL APPLICATION





SECTION D--D



**TYPICAL STREET SECTION**

0+43.62 - 6+57.60  
-NTS-

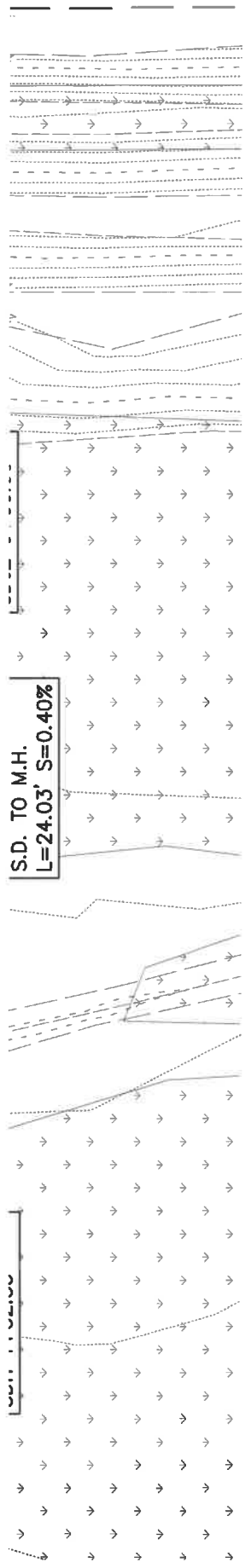
LANDSCAPE\* NOTE:  
WHERE SHALLOW SWALE IS NOT REQUIRED, LANDSCAPE STRIP  
TO SLOPE 1.5% FROM CURB TO SIDEWALK.

MS: 7+30.00  
ME: 222.70

MS: 6+70.00  
ME: 223.00

4+60.00  
221.95





**NOTE:**  
 MANHOLE RIM ELEVATIONS SHOWN ON PLAN  
 ARE FOR REFERENCE ONLY. CONTRACTOR TO  
 SET RIMS TO FINISH GRADE IMMEDIATELY  
 AFTER COMPLETION OF BASE ROCK GRADING.



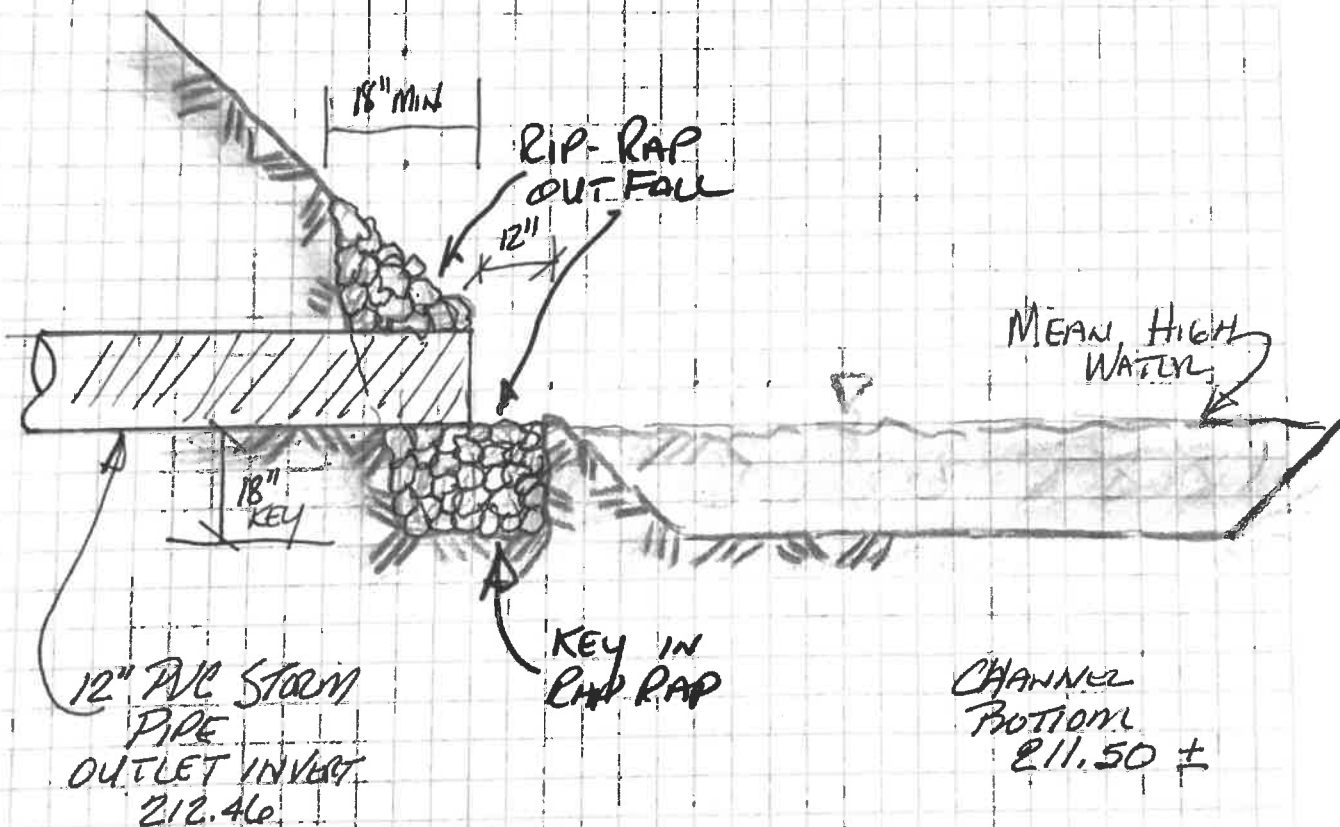
Project: SOMERSET SUBDIVISION

Job No: \_\_\_\_\_

Subject: OUTFALL DETAIL

Date: \_\_\_\_\_ By: M. GRENZ, P.E.

Sht. \_\_\_\_ of \_\_\_\_





# Oregon

Kate Brown, Governor

**Department of Environmental Quality**  
**Northwest Region Portland Office/Water Quality**  
700 NE Multnomah Street, Suite 600  
Portland, OR 97232-4100  
(503) 229-5263  
FAX (503) 229-6957  
TTY 711

July 23, 2018

Myles Breadner  
MBBH Development, LLC  
123 NW 7<sup>th</sup> Street  
Corvallis, OR 97330

**RE: 2015-00502/1; Sommerset Subdivision and Extension 401 Water Quality Certification**

The Department of Environmental Quality (DEQ) has reviewed the U.S. Army Corps of Engineers (USACE) Permit application #2015-00502/1 (Department of State Lands [DSL] #58597-RF & 59822-RF), pursuant to a request for a Clean Water Act Section 401 Water Quality Certification (WQC) received on January 18, 2018. DEQ's 401 WQC public comment opportunity was circulated with the USACE public notice. DEQ received public comments; however, these were not related to water quality.

According to the application, Myles Breadner, (the "Applicant") proposes to impact wetlands adjacent to Truax Creek in order to construct both the Sommerset Subdivision and the Sommerset Extension. The project is located in wetlands adjacent to Truax Creek, Albany, Linn County, Oregon (Section 3, Township 10 South, Range 3 West).

**Project Description:** The Applicant proposes to permanently impact 8.72 acres of wetlands by discharging 14,605 Cubic Yards (CY) of fill material in order to construct a 144 lot subdivision with corresponding streets, utilities, and facilities. Impacts to wetlands will be mitigated by the purchase of palustrine emergent wetland credits from the One Horse Slough Mitigation Bank.

**Status of Affected Waters of the State:** The Truax Creek, a tributary to the Willamette River is classified as water quality limited under the Federal Clean Water Act and is listed on the Section 303(d) List of impaired water bodies for potential concern of iron and manganese. The Willamette River is classified as water quality limited under the Federal Clean Water Act and is listed on the Section 303(d) List of impaired water bodies for the parameters of biological criteria, iron, and manganese; and has an Environmental Protection Agency Total Maximum Daily Load (TMDL) developed for the parameters of temperature, dioxin, and *E.coli*.

The above listed parameters impair the following beneficial uses in the Truax Creek: public domestic water supply, private domestic water supply, industrial water supply, irrigation, livestock watering, and fish and aquatic life. Additional beneficial uses include: wildlife and hunting, fishing, boating, water contact recreation and aesthetic quality.

**Certification Decision:** Based on the information provided by the Applicant and the USACE, DEQ is reasonably assured that implementation of the project will be consistent with applicable provisions of Sections 301, 302, 303, 306, and 307 of the federal Clean Water Act, state water quality standards set forth in Oregon Administrative Rules Chapter 340 Division 41, and other appropriate requirements of state law, provided the following conditions are strictly adhered to by the Applicant.

### 401 WQC GENERAL CONDITIONS

- 1) **Responsible parties:** This 401 WQC applies to the Applicant. The Applicant is responsible for the work of its contractors and sub-contractors, as well as any other entity that performs work related to this WQC.
- 2) **Work Authorized:** Work authorized by this 401 WQC is limited to the work described in the Joint Permit Application signed on December 20, 2017 and additional application materials (hereafter "the permit application materials"), unless otherwise authorized by DEQ. If the project is operated in a manner not consistent with the project description contained in the permit application materials, the Applicant is not in compliance with this 401 WQC and may be subject to enforcement.
- 3) **Duration of Certificate:** This 401 WQC for impacts to waters, including dredge and fill activities, is valid for five years from the date of issuance of the USACE 404 permit. A new or modified 401 WQC must be requested prior to any modification of the USACE 404 permit. Post construction stormwater facilities must be maintained for the life of the facility.
- 4) A copy of this 401 WQC letter must be kept on the job site and readily available for reference by Applicant and its contractors, as well as by DEQ, USACE, National Marine Fisheries Service (NMFS), Oregon Department of Fish and Wildlife (ODFW), and other appropriate state and local government inspectors.
- 5) **Modification:** Any approved modifications to this 401 WQC will incur a Tier 1 fee of \$985 at a minimum. Complex modifications may be charged a higher fee.
- 6) The Applicant must notify DEQ of any change in ownership or control of this project and obtain DEQ review and approval before undertaking any change to the project that might affect water quality.
- 7) DEQ may modify or revoke this 401 WQC, in accordance with OAR 340-048-0050, if the project changes or project activities are having an adverse impact on state water quality

or beneficial uses, or if the Applicant is otherwise in violation of the conditions of this certification.

- 8) The Applicant and its contractors must allow DEQ access to the project site, staging areas, and mitigation sites to monitor compliance with these 401 WQC conditions, including:
  - a. Access to any records, logs, and reports that must be kept under the conditions of this 401 WQC;
  - b. To inspect best management practices (BMPs), monitoring or operational equipment or methods;
  - c. To collect samples or monitor any discharge of pollutants.
- 9) Failure of any person or entity to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.

### CONSTRUCTION SPECIFIC CONDITIONS

- 10) **Erosion Control:** During construction, erosion control measures must be implemented to prevent or control movement of soil into waters of the state. The Applicant is required to develop and implement an effective erosion and sediment control plan. **Any project that disturbs more than one acre is required to obtain an NPDES 1200-C construction stormwater general permit from DEQ.** In addition, the Applicant must do the following, unless otherwise authorized by DEQ in writing:
  - a. Maintain an adequate supply of materials necessary to control erosion at the project construction site;
  - b. Deploy compost berms, impervious materials, or other effective methods during rain events or when stockpiles are not moved or reshaped for more than 48 hours. Erosion of stockpiles is prohibited;
  - c. Inspect erosion control measures daily and maintain erosion control measures as often as necessary to ensure the continued effectiveness of measures. Erosion control measures must remain in place until all exposed soil is stabilized;
    - i. If monitoring or inspection shows that the erosion and sediment controls are ineffective, the Applicant must mobilize immediately to make repairs, install replacements, or install additional controls as necessary.
    - ii. If sediment has reached 1/3 of the exposed height of a sediment or erosion control, the Applicant must remove the sediment to its original contour.
  - d. Use removable pads or mats to prevent soil compaction at all construction access points through, and staging areas in, riparian or wetland areas to prevent soil compaction, unless otherwise authorized by DEQ.
  - e. Flag or fence off wetlands not specifically authorized to be impacted to protect from disturbance and/or erosion.

- f. Place dredged or other excavated material on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands;
- g. Place clean aggregate at all construction entrances, and utilize other BMPs, including, but not limited to as truck or wheel washes, when earth moving equipment is leaving the site and traveling on paved surfaces. The tracking of sediment off site by vehicles is prohibited.
- h. This certification *does not* authorize the placement of BMPs into waters of the state unless specifically outlined in the application and authorized by DEQ.

11) **Deleterious waste materials:** The Applicant is prohibited from placing biologically harmful materials and construction debris including, but not limited to: petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials, chipped paint, tires, wire, steel posts, asphalt and waste concrete where such materials could enter waters of the state, including wetlands (wetlands are waters of the state). The Applicant must:

- a. Cure concrete, cement, or grout for at least 24 hours prior to any contact with flowing waters;
- b. Use only clean fill, free of waste and polluted substances;
- c. Employ all practicable controls to prevent discharges of spills of deleterious materials to surface or ground water;
- d. Maintain at the project construction site, and deploy as necessary, an adequate supply of materials needed to contain deleterious materials during a weather event;
- e. Remove all foreign materials, refuse, and waste from the project area; and
- f. Employ general good housekeeping practices at all times.

12) **Spill Prevention:** The Applicant must fuel, operate, maintain and store vehicles and equipment, and must store construction materials, in areas that will not disturb habitat either directly or result in potential discharges. In addition, the following specific requirements apply:

- a. Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any waters of the state. An exception to this distance may be authorized upon written approval by DEQ if all practicable prevention measures are employed and this distance is not possible because of any of the following site conditions:
  - i. Physical constraints that make this distance not feasible (e.g., steep slopes, rock outcroppings);
  - ii. Natural resource features would be degraded as a result of this setback; or
  - iii. Equal or greater spill containment and effect avoidance is provided even if staging area is less than 150 feet of any waters of the state.

- b. If staging areas are within 150 feet of any waters of the state, as allowed under subsection (a)(iii) of this condition, full containment of potential contaminants must be provided to prevent soil and water contamination, as appropriate;
- c. All vehicles operated within 150 feet of any waters of the state must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected in the vehicle staging area must be repaired before the vehicle resumes operation;
- d. Before operations begin and as often as necessary during operation, equipment must be steam cleaned (or undergo an approved equivalent cleaning ) until all visible external oil, grease, mud, and other visible contaminants are removed if the equipment will be used below the bank of a waterbody;
- e. All stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 feet of any waters of the state must be covered by an absorbent mat to prevent leaks, unless other suitable containment is provided to prevent potential spills from entering any waters of the state;
- f. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed to contain spills must be maintained at the project construction site and deployed as necessary;
- g. All equipment operated in state waters must use bio-degradable hydraulic fluid; and
- h. A maintenance log documenting equipment maintenance inspections and actions must be kept on-site and available upon request.

**13) Spill & Incident Reporting:**

- a. In the event that petroleum products, chemicals, or any other deleterious materials are discharged into state waters, or onto land with a potential to enter state waters, the Applicant must promptly report the discharge to the Oregon Emergency Response System (OERS, 1-800-452-0311). The Applicant must immediately begin containment and complete cleanup as soon as possible
- b. If the project operations cause a water quality problem which results in distressed or dying fish, the Applicant must immediately: cease operations; take appropriate corrective measures to prevent further environmental damage; collect fish specimens and water samples; and notify DEQ, ODFW and other appropriate regulatory agencies.

**14) Vegetation Protection and Restoration:**

- a. The Applicant must protect riparian, wetland, and shoreline vegetation in the authorized project area (as defined in the permit application materials) from disturbance through one or more of the following:
  - i. Minimization of project and impact footprint;
  - ii. Designation of staging areas and access points in open, upland areas;
  - iii. Fencing and other barriers demarcating construction areas; and
  - iv. Use of alternative equipment (e.g., spider hoe or crane).

- b. If authorized work results in vegetative disturbance and the disturbance has not been accounted for in planned mitigation actions, the Applicant must successfully reestablish vegetation to a degree of function equivalent or better than before the disturbance. The standard for success is 80% cover for native plant species. The vegetation must be reestablished by the completion of authorized work and include:
- i. Restoring damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (e.g., a natural rock wall);
  - ii. Replanting or reseeding each area requiring revegetation before the end of the first planting season following construction;
  - iii. Planting disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control;
  - iv. The use of invasive species to re-establish vegetation is prohibited;
  - v. Herbicides, pesticides and fertilizers must be applied per manufacturer's instructions, and only if necessary for vegetation establishment. If chemical treatment is necessary, the Applicant is responsible for ensuring that pesticide application laws, including with the 2300-A pesticide NPDES general permit are met. Please review the information on the following website for more information:  
[www.deq.state.or.us/wq/wqpermit/pesticides.htm](http://www.deq.state.or.us/wq/wqpermit/pesticides.htm).

Additionally:

1. Unless otherwise approved in writing by DEQ, applying surface fertilizer within stormwater treatment facilities or within 50 feet of any stream channel is prohibited
  2. Other than spot application to cut stems, no herbicides are allowed within stormwater treatment facilities or within 150 feet of waters of the state. Mechanical, hand, or other methods may be used to control weeds and unwanted vegetation within stormwater treatment facilities or within 150 feet of waters of the state; and
  3. No pesticides may be used within stormwater treatment facilities or within 150 feet of waters of the state.
- vi. Install wildlife-friendly fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.
  - vii. Minimize soil compaction, especially in areas that are designated to be replanted. If soils are compacted, decompact staging areas and work construction areas prior to replanting. Leave topsoil when possible. Chip materials from clear and grub operation and spread on soil surface, unless cleared areas contained invasive species.
- 15) Provide a minimum 50-foot buffer zone to protect existing riparian areas and wetlands, unless otherwise authorized in writing by DEQ.



- 16) **Notification to DEQ:** The Applicant must provide pre-construction notification to DEQ one week prior to the start of construction. Contact information can be found at the end of the certification.

### **SPECIFIC CONDITIONS FOR POST CONSTRUCTION STORMWATER MANAGEMENT**

- 17) **Post Construction Stormwater Management:** The Applicant must implement and comply with the terms of the approved post-construction stormwater management plan, which describes BMPs to prevent or treat pollution in stormwater anticipated to be generated by the project, in order to comply with state water quality standards. The Applicant must implement BMPs as proposed in the stormwater management plan, including operation and maintenance, dated October 11, 2017 and amended on April 13, 2018 for the Sommerset Extension portion of this proposal. Please see 401 WQ Certification for 2015-00502 for specific information regarding stormwater for the first phase of development. If proposed stormwater facilities change due to site conditions, the Applicant must notify DEQ, and receive approval in writing.

**-A series of vegetated bioswales with 3:1 slopes will treat stormwater prior to discharge to Truax Creek.**

**-The ammended element to the stormwater plan includes a series of raingardens to treat roof runnoff will supply the adjacent wetland with treated stormwater.**

**Within 30 days of project completion, the Applicant must submit a copy of the “As-Builts” or red-lined construction drawings showing all stormwater management facilities.**

- 18) **Stormwater Management & System Maintenance:** The Applicant is required to implement effective operation and maintenance practices for the lifetime of the proposed facility. These include but are not limited to:
- a. Maintenance techniques and frequency for each system component must follow appropriate recommendations in accepted manuals.
  - b. Long-term operation and maintenance of stormwater treatment facilities will be the responsibility of the Myles Breadner, unless and until an agreement transferring that responsibility to another entity is submitted to DEQ.
- 19) **Corrective Action May Be Required:** The Department retains the authority to require corrective action in the event the stormwater management facilities are not built or performing as described in the plan.

If the Applicant is dissatisfied with the conditions contained in this certification, a contested case hearing may be requested in accordance with OAR 340-048-0045. Such request must

be made in writing to the DEQ Office of Compliance and Enforcement at Lloyd 700 Building, 700 NE Multnomah St #600, Portland, OR 97232 within 20 days of the mailing of this certification.

The DEQ hereby certifies this project, with the above conditions, in accordance with the Clean Water Act and state rules, If you have any questions, please contact Alexandra Holeček at [holecek.alex@deq.state.or.us](mailto:holecek.alex@deq.state.or.us) at 541-686-7763, or at 165 East 7<sup>th</sup> Avenue, Eugene, OR 97404.

Sincerely,



Steve Mrazik  
Water Quality Manager  
Northwest Region

*2015-00502/1 Sommerset Subdivision and Extension 401 WQC.docm*

cc: Andrea Wagner, USACE  
Mike DeBlasi, DSL  
Marc Liverman, NOAA Fisheries  
Eric Henning, Zion Natural Resources Consulting

**Endangered Species Act – Section 7 Programmatic  
Consultation  
Conference and Biological  
Opinion and  
Magnuson-Stevens Fishery Conservation  
and  
Management Act  
Essential Fish Habitat  
Consultation  
For**

Revised Standard Local Operating Procedures for Endangered Species to Administer  
Maintenance or Improvement of Stormwater, Transportation, and Utility Actions  
Authorized or Carried Out by the U.S. Army Corps of Engineers in Oregon  
(SLOPES for Stormwater, Transportation or Utilities)

NMFS Consultation No.                      NWR-2013-10411

Action Agency:                                U.S. Army Corps of Engineers  
    Portland District, Operations and Regulatory Branches

Affected Species and Determinations:

ESA-Listed Species	ESA Status	Is the action likely to adversely affect this species or its critical habitat?	Is the action likely to jeopardize this species?	Is the action likely to destroy or adversely modify critical habitat for this species?
Lower Columbia River Chinook salmon	T	Yes	No	No
Upper Willamette River Chinook salmon	T	Yes	No	No
Upper Columbia River spring-run Chinook salmon	E	Yes	No	No
Snake River spring/summer run Chinook salmon	T	Yes	No	No
Snake River fall-run Chinook salmon	T	Yes	No	No
Columbia River chum salmon	T	Yes	No	No
Lower Columbia River Coho salmon	T	Yes	No	No*
Oregon Coast Coho salmon	T	Yes	No	No
Southern Oregon/Northern California coasts Coho	T	Yes	No	No
Snake River sockeye salmon	E	Yes	No	No
Lower Columbia River steelhead	T	Yes	No	No
Upper Willamette River steelhead	T	Yes	No	No
Middle Columbia River steelhead	T	Yes	No	No
Upper Columbia River steelhead	T	Yes	No	No
Snake River Basin steelhead	T	Yes	No	No
Southern green sturgeon	T	Yes	No	No
Eulachon	T	Yes	No	No
Southern resident killer whale	T	No	No	N/A

\*Critical habitat has been proposed for LCR Coho salmon.

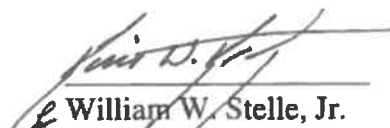
Fishery Management Plan that Describes	Would the action adversely affect	Are EFH conservation recommendations
Coastal Pelagic Species	Yes	Yes
Pacific Coast Groundfish	Yes	Yes
Pacific Coast Salmon	Yes	Yes

Consultation

Conducted By:

National Marine Fisheries Service  
West Coast Region

Issued by:

  
William W. Stelle, Jr.  
Regional Administrator

Date Issued:

March 14, 2014

## Excerpt from SLOPES for Stormwater, Transportation, or Utilities General Construction March 14, 2014

**Natural hazard response** to complete an unplanned, immediate, or short-term repair of a stormwater facility, road, culvert, bridge, or utility line without federal assistance. These include in-water repairs that must be made before the next in-water work period to resolve critical conditions that, unless corrected, are likely to cause loss of human life, unacceptable loss of property, or natural resources. Natural hazards may include, but are not limited to, a flood that causes scour erosion and significantly weakens the foundation of a road or bridge; culvert failure due to blockage by fluvial debris, overtopping, or crushing; and ground saturation that causes a debris slide, earth flow, or rock fall to cover a road. This category of actions is only included to the extent that they require Corps permits or are undertaken by the Corps, but otherwise do not require federal authorization, funding, or federal agency involvement. The response will include an assessment of its effects to listed species and critical habitats and a plan to bring the response into conformance with all other applicable PDC in this opinion, including compensatory mitigation based on the baseline conditions prior to the natural hazard.

**Streambank and channel stabilization** to ensure that roads, culverts, bridges and utility lines do not become hazardous due to the long-term effects of toe erosion, scour, subsurface entrainment, or mass failure. This action includes installation and maintenance of scour protection, such as at a footing, facing, or headwall, to prevent scouring or down-cutting of an existing culvert, road foundation, or bridge support. It does not include scour protection for bridge approach fills. Proposed streambank stabilization methods include alluvium placement, vegetated riprap with large wood (LW), log or roughened rock toe, woody plantings, herbaceous cover, deformable soil reinforcement, coir logs, bank reshaping and slope grading, floodplain flow spreaders, floodplain roughness, and engineered log jams (ELJs), alone or in combination. Any action that requires additional excavation or structural changes to a road, culvert, or bridge foundation is covered under road, culvert and bridge maintenance, rehabilitation, and replacement.

**Road surface, culvert and bridge maintenance, rehabilitation and replacement.** Maintenance, rehabilitation, and replacement to ensure that roads, culverts and bridges remain safe and reliable for their intended use without impairing fish passage, to extend their service life, and to withdraw temporary access roads from service in a way that promotes watershed restoration when their usefulness has ended. This includes actions necessary to complete geotechnical surveys, such as access road construction, drill pad preparation, mobilization and set up, drilling and sampling operations, demobilization, boring abandonment, and access road and drill pad reclamation. It also includes, excavation, grading, and filling necessary to maintain, rehabilitate, or replace existing roads, culverts, and bridges. This type of action does not include significant channel realignment, installation of fish passage (e.g., fish ladders, juvenile fish bypasses, culvert baffles, roughened chutes, step weirs), tidegate maintenance or replacements other than full removal, construction of new permanent roads within the riparian zone that are not a bridge approach, or construction of a new bridge where a culvert or other road stream crossing did not previously exist, or any project which will result in or contribute to other land use changes that trigger effects, including indirect effects not considered in this opinion.

**Stormwater facilities and utility line stream crossings** to install, maintain, rehabilitate, or replace stormwater facilities, or pipes or pipelines used to transport gas or liquids, including new or upgraded stormwater outfalls, and cables, or lines or wires used to transmit electricity or communication. Construction, maintenance or improvement of stormwater facilities include surveys, access road construction, excavation, grading, and filling necessary to maintain, rehabilitate, or replace existing stormwater treatment or flow control best management practices (BMPs). Utility line actions involve excavation, temporary side casting of excavated material, backfilling of the trench, and restoration of the work site to preconstruction contours and vegetation. This type of action does not include construction or enlargement of gas, sewer, or water lines to support a new or expanded service area for which effects, including indirect effects from interrelated or interdependent activities, have not been analyzed in this opinion. This opinion also does not include construction of any line that transits the bed of an estuary or saltwater area at depths less than -10.0 feet (mean lower low water).

### **1.3.1.2 Project Design Criteria - General Construction Measures**

#### **13. Project Design**

- a. Use the best available scientific information regarding the likely impacts of climate change on resources in the project area to design the project so that it will be resilient to those impacts, including projections of local stream flow, water temperature, and extreme events.
- b. Assess whether the project area is contaminated by chemical substances that may cause harm if released by the project. The assessment will be commensurate with site history and may include the following:
  - i. Review available records, *e.g.*, the history of existing structures and contamination events.
  - ii. If the project area was used for industrial processes, inspect to determine the environmental condition of the property.
  - iii. Interview people who are knowledgeable about the site, *e.g.*, site owners, operators, and occupants, neighbors, or local government officials.
  - iv. If contamination is found or suspected, consult with a suitably qualified and experienced contamination professional and NMFS before carrying out ground disturbing activities.
- c. Obtain all applicable regulatory permits and authorizations before starting construction.
- d. Minimize the extent and duration of earthwork, *e.g.*, compacting, dredging, drilling, excavation, and filling.

#### **14. In-Water Work Timing**

- a. Unless the in-water work is part of a natural hazard response, complete all work within the wetted channel during dates listed in the most recent version of Oregon In-water Work Guidelines (ODFW 2008), except that that in-water work in the Willamette River below Willamette Falls is not approved between December 1 and January 31.
- b. Hydraulic and topographic measurements and placement of LW or gravel may be completed anytime, provided the affected area is not occupied by adult fish congregating for spawning, or redds containing eggs or pre-emergent alevins.

**15. Pile Installation.** Pile may be concrete, or steel round pile 24 inches in diameter or smaller, steel H-pile designated as HP24 or smaller, or wood that has not been treated with preservatives or pesticides. Any proposal to use treated wood pilings is not covered by this consultation and will require individual consultation.

- a. NMFS will review and approve pile installation plans.
- b. When practical, use a vibratory hammer for in-water pile installation. In the lower Columbia River only a vibratory hammer may be used in October.
- c. Jetting may be used to install pile in areas with coarse, uncontaminated sediments that meet criteria for unconfined in-water disposal (USACE Northwest Division 2009).
- d. When using an impact hammer to drive or proof a steel pile, one of the following sound attenuation methods will be used:
  - i. Completely isolate the pile from flowing water by dewatering the area around the pile.
  - ii. If water velocity is 1.6 feet per second or less, surround the pile being driven by a confined or unconfined bubble curtain that will distribute small air bubbles around 100% of the pile perimeter for the full depth of the water column. See, *e.g.*, NMFS and USFWS (2006), Wursig *et al.* (2000), and Longmuir and Lively (2001).
  - iii. If water velocity is greater than 1.6 feet per second, surround the pile being driven with a confined bubble curtain (*e.g.*, surrounded by a fabric or non-metallic sleeve) that will distribute air bubbles around 100% of the pile perimeter for the full depth of the water column.
  - iv. Provide NMFS information regarding the timing of in-water work, the number of impact hammer strikes per pile and the estimated time required to drive piles, hours per day pile driving will occur, depth of water, and type of substrate, hydroacoustic assumptions, and the pile type, diameter, and spacing of the piles.

**16. Pile Removal.** The following steps will be used to minimize creosote release, sediment disturbance and total suspended solids:

- a. Install a floating surface boom to capture floating surface debris.
- b. Keep all equipment (*e.g.*, bucket, steel cable, vibratory hammer) out of the water, grip piles above the waterline, and complete all work during low water and low current conditions.
- c. Dislodge the pile with a vibratory hammer, when possible; never intentionally break a pile by twisting or bending.
- d. Slowly lift the pile from the sediment and through the water column.
- e. Place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment. A containment basin for the removed piles and any adhering sediment may be constructed of durable plastic sheeting with sidewalls supported by hay bales or another support structure to contain all sediment and return flow which may otherwise be directed back to the waterway.
- f. Fill the hole left by each pile with clean, native sediments immediately after removal.
- g. Dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted upland disposal site.

**17. Broken or Intractable Pile.** If a pile breaks above the surface of uncontaminated sediment, or less than 2 feet below the surface, make every attempt short of excavation to remove it entirely. If the pile cannot be removed without excavation, drive the pile deeper if possible.

- a. If a pile in contaminated sediment is intractable or breaks above the surface, cut the pile or stump off at the sediment line.
- b. If a pile breaks within contaminated sediment, make no further effort to remove it and cover the hole with a cap of clean substrate appropriate for the site.
- c. If dredging is likely where broken piles are buried, use a global positioning system (GPS) device to note the location of all broken piles for future use in site debris characterization.

**18. Fish Capture and Release**

- a. If practicable, allow listed fish species to migrate out of the work area or remove fish before dewatering; otherwise remove fish from an exclusion area as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping with minnow traps (or gee-minnow traps).
- b. Fish capture will be supervised by a qualified fisheries biologist, with experience in work area isolation and competent to ensure the safe handling of all fish.
- c. Conduct fish capture activities during periods of the day with the coolest air and water temperatures possible, normally early in the morning to minimize stress and injury of species present.
- d. Monitor the nets frequently enough to ensure they stay secured to the banks and free of organic accumulation.
- e. Electrofishing will be used during the coolest time of day, only after other means of fish capture are determined to be not feasible or ineffective.
  - i. Do not electrofish when the water appears turbid, e.g., when objects are not visible at depth of 12 inches.
  - ii. Do not intentionally contact fish with the anode.
  - iii. Follow NMFS (2000) electrofishing guidelines, including use of only direct current (DC) or pulsed direct current within the following ranges:<sup>11</sup>
    1. If conductivity is less than 100  $\mu$ s, use 900 to 1100 volts.
    2. If conductivity is between 100 and 300  $\mu$ s, use 500 to 800 volts.
    3. If conductivity greater than 300  $\mu$ s, use less than 400 volts.
  - iv. Begin electrofishing with a minimum pulse width and recommended voltage, then gradually increase to the point where fish are immobilized.
  - v. Immediately discontinue electrofishing if fish are killed or injured, i.e., dark bands visible on the body, spinal deformations, significant de-scaling, torpid or inability to maintain upright attitude after sufficient recovery time. Recheck machine settings, water temperature and conductivity, and adjust or postpone procedures as necessary to reduce injuries.

<sup>11</sup> National Marine Fisheries Service. 2000. Guidelines for electrofishing waters containing Salmonid listed under the Endangered Species Act. Portland, Oregon and Santa Rose, California  
[http://swr.nmfs.noaa.gov/sr/Electrofishing\\_Guidelines.pdf](http://swr.nmfs.noaa.gov/sr/Electrofishing_Guidelines.pdf)



- f. If buckets are used to transport fish:
  - i. Minimize the time fish are in a transport bucket.
  - ii. Keep buckets in shaded areas or, if no shade is available, covered by a canopy.
  - iii. Limit the number of fish within a bucket; fish will be of relatively comparable size to minimize predation.
  - iv. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water.
  - v. Release fish in an area upstream with adequate cover and flow refuge; downstream is acceptable provided the release site is below the influence of construction.
  - vi. Be careful to avoid mortality counting errors.
- g. Monitor and record fish presence, handling, and injury during all phases of fish capture and submit a fish salvage report (Appendix A, Part 1 with Part 3 completed) to the Corps and the SLOPES mailbox (slopes.nwr@noaa.gov) within 60 days.

## 19. Fish Passage

- a. Provide fish passage for any adult or juvenile ESA-listed fish likely to be present in the action area during construction, unless passage did not exist before construction or the stream is naturally impassable at the time of construction.
- b. After construction, provide fish passage for any adult or juvenile ESA-listed fish that meets NMFS's fish passage criteria (NMFS 2011a) for the life of the action.

## 20. Fish Screens

- a. Submit to NMFS for review and approval fish screen designs for surface water diverted by gravity or by pumping at a rate that exceeds 3 cubic feet per second (cfs).
- b. All other diversions will have a fish screen that meets the following specifications:
  - i. An automated cleaning device with a minimum effective surface area of 2.5 square feet per cubic foot per second, and a nominal maximum approach velocity of 0.4 feet per second, or no automated cleaning device, a minimum effective surface area of 1 square foot per cubic foot per second, and a nominal maximum approach rate of 0.2 foot per second; and
  - ii. A round or square screen mesh that is no larger than 2.38 millimeters (mm) (0.094") in the narrow dimension, or any other shape that is no larger than 1.75 mm (0.069") in the narrow dimension.
- c. Each fish screen will be installed, operated, and maintained according to NMFS's fish screen criteria.

## 21. Surface Water Withdrawal

- a. Surface water may be diverted to meet construction needs, including dust abatement, only if water from developed sources (e.g., municipal supplies, small ponds, reservoirs, or tank trucks) are unavailable or inadequate; and
- b. Diversions may not exceed 10% of the available flow and will have a juvenile fish exclusion device that is consistent with NMFS's criteria (NMFS 2011a).<sup>12</sup>

<sup>12</sup> National Marine Fisheries Service 2011. Anadromous Salmonid passage facility design. Northwest Region. <http://www.nwr.noaa.gov/publications/hydropower/ferc/fish-pass-age-design.pdf>

**22. Construction Discharge Water.** Treat all discharge water using best management practices to remove debris, sediment, petroleum products, and any other pollutants likely to be present (*e.g.*, green concrete, contaminated water, silt, welding slag, sandblasting abrasive, grout cured less than 24 hours, drilling fluids), to avoid or minimize pollutants discharged to any perennial or intermittent water body. Pump seepage water from the dewatered work area to a temporary storage and treatment site or into upland areas and allow water to filter through vegetation prior to reentering the stream channel. Treat water used to cure concrete until pH stabilizes to background levels.

**23. Temporary Access Roads and Paths**

- a. Whenever reasonable, use existing access roads and paths preferentially.
- b. Minimize the number and length of temporary access roads and paths through riparian areas and floodplains.
- c. Minimize removal of riparian vegetation.
- d. When it is necessary to remove vegetation, cut at ground level (no grubbing).
- e. Do not build temporary access roads or paths where grade, soil, or other features suggest slope instability.
- f. Any road on a slope steeper than 30% will be designed by a civil engineer with experience in steep road design.
- g. After construction is complete, obliterate all temporary access roads and paths, stabilize the soil, and revegetate the area.
- h. Temporary roads and paths in wet areas or areas prone to flooding will be obliterated by the end of the in-water work window. Decompact road surfaces and drainage areas, pull fill material onto the running surface, and reshape to match the original contours.

**24. Temporary Stream Crossings**

- a. No stream crossing may occur at active spawning sites, when holding adult listed fish are present, or when eggs or alevins are in the gravel.
- b. Do not place temporary crossings in areas that may increase the risk of channel re-routing or avulsion, or in potential spawning habitat, *e.g.*, pools and pool tailouts.
- c. Minimize the number of temporary stream crossings; use existing stream crossings whenever reasonable.
- d. Install temporary bridges and culverts to allow for equipment and vehicle crossing over perennial streams during construction.
- e. Wherever possible, vehicles and machinery will cross streams at right angles to the main channel.
- f. Equipment and vehicles may cross the stream in the wet only where the streambed is bedrock, or where mats or off-site logs are placed in the stream and used as a crossing.
- g. Obliterate all temporary stream crossings as soon as they are no longer needed, and restore any damage to affected stream banks or channel.

## 25. Equipment, Vehicles and Power Tools

- a. Select, operate and maintain all heavy equipment, vehicles, and power tools to minimize adverse effects on the environment, *e.g.*, low pressure tires, minimal hard-turn paths for track vehicles, use of temporary mats or plates to protect wet soils.
- b. Before entering wetlands or working within 150 feet of a water body:
  - i. Power wash all heavy equipment, vehicles and power tools, allow them to fully dry, and inspect them for fluid leaks, and to make certain no plants, soil, or other organic material are adhering to the surface.
  - ii. Replace petroleum-based hydraulic fluids with biodegradable products<sup>13</sup> in hydraulic equipment, vehicles, and power tools.
- c. Repeat cleaning as often as necessary during operation to keep all equipment, vehicles, and power tools free of external fluids and grease, and to prevent a leak or spill from entering the water.
- d. Avoid use of heavy equipment, vehicles or power tools below ordinary high water (OHW) unless project specialists determine such work is necessary, or would result in less risk of sedimentation or other ecological damage than work above that elevation.
- e. Before entering the water, inspect any watercraft, waders, boots, or other gear to be used in or near water and remove any plants, soil, or other organic material adhering to the surface.
- f. Ensure that any generator, crane or other stationary heavy equipment that is operated, maintained, or stored within 150 feet of any water body is also protected as necessary to prevent any leak or spill from entering the water.

## 26. Site Layout and Flagging

- a. Before any significant ground disturbance or entry of mechanized equipment or vehicles into the construction area, clearly mark with flagging or survey marking paint the following areas:
  - i. Sensitive areas, *e.g.*, wetlands, water bodies, OHW, spawning areas.
  - ii. Equipment entry and exit points.
  - iii. Road and stream crossing alignments.
  - iv. Staging, storage, and stockpile areas.
- b. Before the use of herbicides, clearly flag no-application buffer zones.

## 27. Staging, Storage, and Stockpile Areas

- a. Designate and use staging areas to store hazardous materials, or to store, fuel, or service heavy equipment, vehicles and other power equipment with tanks larger than 5 gallons, that are at least 150 feet from any natural water body or wetland, or on an established paved area, such that sediment and other contaminants from the staging area cannot be deposited in the floodplain or stream.
- b. Natural materials that are displaced by construction and reserved for restoration, *e.g.*, LW, gravel, and boulders, may be stockpiled within the 100-year floodplain.
- c. Dispose of any material not used in restoration and not native to the floodplain outside of the functional floodplain.

<sup>13</sup> For additional information and suppliers of biodegradable hydraulic fluids, motor oil, lubricant, or grease, see, Environmentally Acceptable Lubricants by the U.S. EPA (2011a); *e.g.*, mineral oil, polyglycol, vegetable oil, synthetic ester; Mobil® biodegradable hydraulic oils, Total® hydraulic fluid, Terresolve Technologies Ltd.® bio-based biodegradable lubricants, Cougar Lubrication® 2XT Bio engine oil, Series 4300 Synthetic Bio-degradable Hydraulic Oil, 8060-2 Synthetic Bio-Degradable Grease No. 2, *etc.* The use of trade, firm, or corporation names in this opinion is for the information and convenience of the action agency and applicants and does not constitute an official endorsement or approval by the U.S. Department of Commerce or NMFS of any product or service to the exclusion of others that may be suitable.

d. After construction is complete, obliterate all staging, storage, or stockpile areas, stabilize the soil, and revegetate the area.<sup>14</sup>

## 28. Drilling and Boring

a. If drilling or boring are used, isolate drilling operations in wetted stream channels using a steel casing or other appropriate isolation method to prevent drilling fluids from contacting water.

b. If drilling through a bridge deck is necessary, use containment measures to prevent drilling debris from entering the channel.

c. Sampling and directional drill recovery/recycling pits, and any associated waste or spoils will be completely isolated from surface waters, off-channel habitats and wetlands.

d. All waste or spoils will be covered if precipitation is falling or imminent.

e. All drilling fluids and waste will be recovered and recycled or disposed to prevent entry into flowing water.

f. If a drill boring case breaks and drilling fluid or waste is visible in water or a wetland, make all possible efforts to contain the waste and contact NMFS within 48 hours.

g. Waste containment

i. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be contained and then completely recovered and recycled or disposed of as necessary to prevent entry into any waterway. Use a tank to recycle drilling fluids.

ii. When drilling is completed, remove as much of the remaining drilling fluid as possible from the casing (e.g., by pumping) to reduce turbidity when the casing is removed.

## 29. Pesticide and Preservative-Treated Wood<sup>15</sup>

a. Treated wood may not be used in a structure that will be in or over water or permanently or seasonally flooded wetlands, except to maintain or repair an existing wood bridge. The following criteria in b, c, and d below apply to the use of treated wood for maintenance or repair of existing wood bridges.

b. No part of the treated wood may be exposed to leaching by precipitation, overtopping waves, or submersion (e.g., no treated wood piles (per PDC#10, and stringers or decking of a timber bridge can be made from treated wood only if they will be covered by a non-treated wood wearing surface that covers the entire roadway width), and all elements of the structure using the treated wood are designed to avoid or minimize impacts or abrasion that could create treated wood debris or dust.

c. Installation of treated wood

i. Treated wood shipped to the project area will be stored out of contact with standing water and wet soil, and protected from precipitation.

ii. Each load and piece of treated wood will be visually inspected and rejected for use in or above aquatic environments if visible residue, bleeding of preservative, preservative-saturated sawdust, contaminated soil, or other matter is present.

<sup>14</sup> 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.

<sup>15</sup> Treated woods may contain chromated copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA), alkaline copper quat (ACQ-B and ACQ-D), ammoniacal copper citrate (CC), copper azole (CBA-A), copper dimethyldithiocarbamate (CDDC), borate preservatives, and oil-type wood preservatives, such as creosote, pentachlorophenol, and copper naphthenate.

- iii. Prefabrication will be used whenever possible to minimize cutting, drilling and field preservative treatment.
- iv. When field fabrication is necessary, all cutting, drilling, and field preservative treatment of exposed treated wood will be done above OHW to minimize discharge of sawdust, drill shavings, excess preservative and other debris.
- v. Tarps, plastic tubs or similar devices will be used to contain the bulk of any fabrication debris, and any excess field preservative will be removed from the treated wood by wiping and proper disposal.
- d. Removal of treated wood
  - i. Evaluate all wood construction debris removed during a project, including pile, to ensure proper disposal of treated wood.
  - ii. Ensure that no treated wood debris falls into the water or, if debris does fall into the water, remove it immediately.
  - iii. After removal, place treated wood debris in an appropriate dry storage site until it can be removed from the project area.
  - iv. Do not leave any treated wood debris in the water or stacked on the streambank at or below OHW.

### 30. Erosion Control

- a. Use site planning and site erosion control measures commensurate with the scope of the project to prevent erosion and sediment discharge from the project site.
- b. Before significant earthwork begins, install appropriate, temporary erosion controls downslope to prevent sediment deposition in the riparian area, wetlands, or water body.
- c. During construction,
  - i. Complete earthwork in wetlands, riparian areas, and stream channels as quickly as possible.
  - ii. Cease project operations when high flows may inundate the project area, except for efforts to avoid or minimize resource damage.
  - iii. If eroded sediment appears likely to be deposited in the stream during construction, install additional sediment barriers as necessary.
  - iv. Temporary erosion control measures may include fiber wattles, silt fences, jute matting, wood fiber mulch and soil binder, or geotextiles and geosynthetic fabric.
  - v. Soil stabilization using wood fiber mulch and tackifier (hydro-applied) may be used to reduce erosion of bare soil, if the materials are free of noxious weeds and nontoxic to aquatic and terrestrial animals, soil microorganisms, and vegetation.
  - vi. Remove sediment from erosion controls if it reaches 1/3 of the exposed height of the control.
  - vii. Whenever surface water is present, maintain a supply of sediment control materials and an oil-absorbing floating boom at the project site.
  - viii. Stabilize all disturbed soils following any break in work unless construction will resume within four days.
- d. Remove temporary erosion controls after construction is complete and the site is fully stabilized.

### 31. Hazardous Material Safety

- a. At the project site:
  - i. Post written procedures for notifying environmental response agencies, including an inventory and description of all hazardous materials present, and the storage and handling procedures for their use.
  - ii. Maintain a spill containment kit, with supplies and instructions for cleanup and disposal, adequate for the types and quantity of hazardous materials present.
  - iii. Train workers in spill containment procedures, including the location and use of the spill containment kits.
  - iv. Temporarily contain any waste liquids generated under an impervious cover, such as a tarpaulin, in the staging area until the wastes can be properly transported to, and disposed of, at an approved receiving facility.

### 32. Barge Use. Any barge used as a work platform to support construction will be:

- a. Large enough to remain stable under foreseeable loads and adverse conditions.
- b. Inspected before arrival to ensure vessel and ballast are free of invasive species.
- c. Secured, stabilized and maintained as necessary to ensure no loss of balance, stability, anchorage, or other condition that can result in the release of contaminants or construction debris.

### 33. Dust Abatement

- a. Use dust abatement measures commensurate with soil type, equipment use, wind conditions, and the effects of other erosion control measures.
- b. Sequence and schedule work to reduce the exposure of bare soil to wind erosion.
- c. Maintain spill containment supplies on-site whenever dust abatement chemicals are applied.
- d. Do not use petroleum-based products.
- e. Do not apply dust-abatement chemicals, e.g., magnesium chloride, calcium chloride salts, lignin sulfonate, within 25 feet of a water body, or in other areas where they may runoff into a wetland or water body.
- f. Do not apply lignin sulfonate at rates exceeding 0.5 gallons per square yard of road surface, assuming a 50:50 solution of lignin sulfonate to water.

### 34. Work Area Isolation

- a. Isolate any work area within the wetted channel 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. Engineering design plans for work area isolation will include all isolation elements and fish release areas.
- c. Dewater the shortest linear extent of work area practicable, unless wetted in-stream work is deemed to be minimally harmful to fish, and is beneficial to other aquatic species.<sup>16</sup>

<sup>16</sup> For instructions on how to dewater areas occupied by lamprey, see *Best management practices to minimize adverse effects to Pacific lamprey (Entosphenus tridentatus)* (USFWS 2010).

- i. Use a coffer dam and a by-pass culvert or pipe, or a lined, non-erodible diversion ditch to divert flow around the dewatered area. Dissipate flow energy to prevent damage to riparian vegetation or stream channel and provide for safe downstream reentry of fish, preferably into pool habitat with cover.
  - ii. Where gravity feed is not possible, pump water from the work site to avoid rewatering. Maintain a fish screen on the pump intake to avoid juvenile fish entrainment.
  - iii. Pump seepage water to a temporary storage and treatment site, or into upland areas, to allow water to percolate through soil or to filter through vegetation before reentering the stream channel with a treatment system comprised of either a hay bale basin or other sediment control device.
  - iv. Monitor below the construction site to prevent stranding of aquatic organisms.
  - v. When construction is complete, re-water the construction site slowly to prevent loss of surface flow downstream, and to prevent a sudden increase in stream turbidity.
- d. Whenever a pump is used to dewater the isolation area and ESA-listed fish may be present, a fish screen will be used that meets the most current version of NMFS's fish screen criteria (NMFS 2011a). NMFS approval is required for pumping at a rate that exceeds 3 cfs.

### 35. Invasive and Non-Native Plant Control

- a. **Non-herbicide methods.** Limit vegetation removal and soil disturbance within the riparian zone by limiting the number of workers there to the minimum necessary to complete manual, mechanical, or hydro-mechanical plant control (e.g., hand pulling, bending<sup>17</sup>, clipping, stabbing, digging, brush-cutting, mulching, radiant heat, portable flame burner, super-heated steam, pressurized hot water, or hot foam (Arsenault *et al.* 2008; Donohoe *et al.* 2010))<sup>18</sup>. Do not allow cut, mowed, or pulled vegetation to enter waterways.
- b. **Herbicide Label.** Herbicide applicators will comply with all label instructions
- c. **Power equipment.** Refuel gas-powered equipment with tanks larger than 5 gallons in a vehicle staging area placed 150 feet or more from any natural water body, or in an isolated hazard zone such as a paved parking lot.
- d. **Maximum herbicide treatment area.** Do not exceed treating 1.0% of the acres of riparian habitat within a 6<sup>th</sup>-field HUC with herbicides per year.
- e. **Herbicide applicator qualifications.** Herbicides may only be applied by an appropriately licensed applicator using an herbicide specifically targeted for a particular plant species that will cause the least impact. The applicator will be responsible for preparing and carrying out the herbicide transportation and safety plan, as follows.
- f. **Herbicide transportation and safety plan.** The applicator will prepare and carry out an herbicide safety/spill response plan to reduce the likelihood of spills or misapplication, to take remedial actions in the event of spills, and to fully report the event.

<sup>17</sup> Knotweed treatment pre-treatment; See Nickelson (2013).

<sup>18</sup> See <http://ahmct.ucdavis.edu/limtask/equipmentdetails.html>

g. **Herbicides.** The only herbicides proposed for use under this opinion are (some common trade names are shown in parentheses):<sup>19</sup>

- i. aquatic imazapyr (e.g., Habitat)
- ii. aquatic glyphosate (e.g., AquaMaster, AquaPro, Rodeo)
- iii. aquatic triclopyr-TEA (e.g., Renovate 3)
- iv. chlorsulfuron (e.g., Telar, Glean, Corsair)
- v. clopyralid (e.g., Transline)
- vi. imazapic (e.g., Plateau)
- vii. imazapyr (e.g., Arsenal, Chopper)
- viii. metsulfuron-methyl (e.g., Escort)
- ix. picloram (e.g., Tordon)
- x. sethoxydim (e.g., Poast, Vantage)
- xi. sulfometuron-methyl (e.g., Oust, Oust XP)

h. **Herbicide adjuvants.** When recommended by the label, an approved aquatic surfactant or drift retardant can be used to improve herbicidal activity or application characteristics. Adjuvants that contain alky amine ethoxylates, *i.e.*, polyethoxylated tallow amine (POEA), alkylphenol ethoxylates (including alkyl phenol ethoxylate phosphate esters), or herbicides that contain these compounds are **not** covered by this opinion. The following product names are covered by this opinion:

- |                       |                  |
|-----------------------|------------------|
| i. Agri-Dex           | ii. AquaSurf     |
| iii. Bond             | iv. Bronc Max    |
| v. Bronc Plus Dry-EDT | vi. Class Act NG |
| vii. Competitor       | viii. Cut Rate   |
| ix. Cygnet Plus       | x. Destiny HC    |
| xi. Exciter           | xii. Fraction    |
| xiii. InterLock       | xiv. Kinetic     |
| xv. Level 7           | xvi. Liberate    |
| xvii. Magnify         | xviii. One-AP XL |
| xix. Pro AMS Plus     | xx. Spray-Rite   |
| xxi. Superb HC        | xxii. Tactic     |
| xxiii. Tronic         |                  |

i. **Herbicide carriers.** Herbicide carriers (solvents) are limited to water or specifically labeled vegetable oil. Use of diesel oil as an herbicide carrier is not covered by this opinion.

j. **Dyes.** Use a non-hazardous indicator dye (e.g., Hi-Light or Dynamark™) with herbicides within 100 feet of water. The presence of dye makes it easier to see where the herbicide has been applied and where or whether it has dripped, spilled, or leaked. Dye also makes it easier to detect missed spots, avoid spraying a plant or area more than once, and minimize over-spraying (SERA 1997).

k. **Herbicide mixing.** Mix herbicides and adjuvants, carriers, and/or dyes more than 150 feet from any perennial or intermittent water body to minimize the risk of an accidental discharge.

<sup>19</sup> The use of trade, firm, or corporation names in this opinion is for the information and convenience of the action agency and applicants and does not constitute an official endorsement or approval by the U.S. Department of Commerce or NMFS of any product or service to the exclusion of others that may be suitable.



i. **Tank Mixtures.** The potential interactive relationships that exist among most active ingredient combinations have not been defined and are uncertain.

Therefore, combinations of herbicides in a tank mix are not covered by this opinion.

m. **Spill Cleanup Kit.** Provide a spill cleanup kit whenever herbicides are used, transported, or stored. At a minimum, cleanup kits will include material safety data sheets, the herbicide label, emergency phone numbers, and absorbent material such as cat litter to contain spills.

n. **Herbicide application rates.** Apply herbicides at the lowest effective label rates.

o. **Herbicide application methods.** Apply liquid or granular forms of herbicides as follows:

i. Broadcast spraying – hand held nozzles attached to back pack tanks or vehicles, or by using vehicle mounted booms.

ii. Spot spraying – hand held nozzles attached to back pack tanks or vehicles, hand-pumped spray, or squirt bottles to spray herbicide directly onto small patches or individual plants.

iii. Hand/selective – wicking and wiping, basal bark, fill (“hack and squirt”), stem injection, cut-stump.

iv. Triclopyr – will not be applied by broadcast spraying.

v. Keep the spray nozzle within four feet of the ground when applying herbicide. If spot or patch spraying tall vegetation more than 15 feet away from the high water mark (HWM), keep the spray nozzle within 6 feet of the ground.

vi. Apply spray in swaths parallel towards the project area, away from the creek and desirable vegetation, *i.e.*, the person applying the spray will generally have their back to the creek or other sensitive resource.

vii. Avoid unnecessary run off during cut surface, basal bark, and hack-squirt/injection applications.

p. **Washing spray tanks.** Wash spray tanks 300 feet or more away from any surface water.

q. **Minimization of herbicide drift and leaching.** Minimize herbicide drift and leaching as follows:

i. Do not spray when wind speeds exceed 10 miles per hour, or are less than 2 miles per hour.

ii. Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.

iii. Keep boom or spray as low as possible to reduce wind effects.

iv. Increase spray droplet size whenever possible by decreasing spray pressure, using high flow rate nozzles, using water diluents instead of oil, and adding thickening agents.

v. Do not apply herbicides during temperature inversions, or when air temperature exceeds 80 degrees Fahrenheit.

vi. Wind and other weather data will be monitored and reported for all broadcast applications.

r. **Rain.** Do not apply herbicides when the soil is saturated or when a precipitation event likely to produce direct runoff to salmon bearing waters from the treated area is forecasted by the NOAA National Weather Service or other similar forecasting service within 48 hours following application. Soil-activated herbicides may follow label instructions. Do not conduct hack-squirt/injection applications during periods of heavy rainfall.

s. **Herbicide buffer distances.** Observe the following no-application buffer-widths, measured in feet, as map distance perpendicular to the bankfull elevation for streams, the upland boundary for wetlands, or the upper bank for roadside ditches. Widths are based on herbicide formula, stream type, and application method, during herbicide applications (Table 3). Before herbicide application begins, flag or mark the upland boundary of each applicable herbicide buffer to ensure that all buffers are in place and functional during treatment.

**Table 3.** Herbicide buffer distances by herbicide formula, stream type, and application method.

Herbicide	No Application Buffer Width (feet)					
	Streams and Roadside Ditches with flowing or standing water present and Wetlands			Dry Streams, Roadside Ditches, and Wetlands		
	Broadcast Spraying	Spot Spraying	Hand Selective	Broadcast Spraying	Spot Spraying	Hand Selective
Labeled for Aquatic Use						
Aquatic Glyphosate	100	waterline	waterline	50	None	none
Aquatic Imazapyr	100	15	waterline	50	None	none
Aquatic Triclopyr-TEA	<b>Not Allowed</b>	15	waterline	<b>Not Allowed</b>	None	none
Low Risk to Aquatic Organisms						
Imazapic	100	15	bankfull elevation	50	None	none
Clopyralid	100	15	bankfull elevation	50	None	none
Metsulfuron-methyl	100	15	bankfull elevation	50	None	none
Moderate Risk to Aquatic Organisms						
Imazapyr	100	50	bankfull elevation	50	15	bankfull elevation
Sulfometuron-methyl	100	50	5	50	15	bankfull elevation
Chlorsulfuron	100	50	bankfull elevation	50	15	bankfull elevation
High Risk to Aquatic Organisms						
Picloram	100	50	50	100	50	50
Sethoxydim	100	50	50	100	50	50

## 36. Actions Requiring Stormwater Management<sup>20</sup>

- a. Provide stormwater management for any project that will:
  - i. Increase the contributing impervious area within the project area
  - ii. Construct new pavement that increases capacity or widens the road prism.
  - iii. Reconstructs pavement down to subgrade.
  - iv. Rehabilitate or restore a bridge to repair structural or functional deficiencies that are too complicated to be corrected through normal maintenance, except for seismic retrofits that make a bridge more resistant to earthquake damage (e.g., external post-tensioning, supplementary dampening) but do not affect the bridge deck or drainage.
  - v. Replace a stream crossing
  - vi. Change stormwater conveyance
- b. Stormwater management is not required for the following pavement actions: minor repairs, patching, chip seal, grind/inlay, overlay or resurfacing (i.e., nonstructural pavement preservation, a single lift or inlay).
- c. Stormwater management plans will consist of:
  - i. Low impact development.
  - ii. Water quality (pollution reduction) treatment for post-construction stormwater runoff from all contributing impervious area.
  - iii. Water quantity treatment (retention or detention facilities), unless the outfall discharges directly into a major water body (e.g., mainstem Columbia River, Willamette River (downstream of Eugene), large lakes, reservoir, ocean, or estuary). Retention or detention facilities must limit discharge to match pre-developed discharge rates (i.e., the discharge rate of the site based on its natural groundcover and grade before any development occurred) using a continuous simulation for flows between 50% of the 2-year event and the 10-year flow event (annual series).
- d. Stormwater management plans will:
  - i. Explain how runoff from all contributing impervious area that is within or contiguous with the project area will be managed using site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action.
  - ii. Identify the pollutants of concern.
  - iii. Identify all contributing and non-contributing impervious areas that are within and contiguous with the project area.
  - iv. Describe the BMPs that will be used to treat the identified pollutants of concern, and the proposed maintenance activities and schedule for the treatment facilities.

<sup>20</sup> The most efficient way for an applicant or the Corps to prepare and submit a stormwater management plan for NMFS' review is to attach a completed *Checklist for Submission of a Stormwater Management Plan* (the *Checklist*, ODEQ updated 2012, or the most recent version) with the electronic notification when it is sent to the SLOPES mailbox. However, stormwater conveyance to a DEQ permitted Municipal Separate Storm Sewer System (MS4) or consistency with any other program acknowledged by DEQ as adequate for stormwater management will not meet the requirements of this opinion unless NMFS determines that the facility accepting the stormwater will provide a level of treatment that is equivalent to that called for in this opinion. The *Checklist* and guidelines for its use are available from NMFS or the ODEQ in Portland Oregon. The latest version of the *Checklist* is also available online in a portable document format (pdf) through the ODEQ Water Quality Section 401 certification webpage (ODEQ 2014) at <http://www.deq.state.or.us/wq/sec401cert/process.htm#add> (see "Post Construction Stormwater Management Plan").

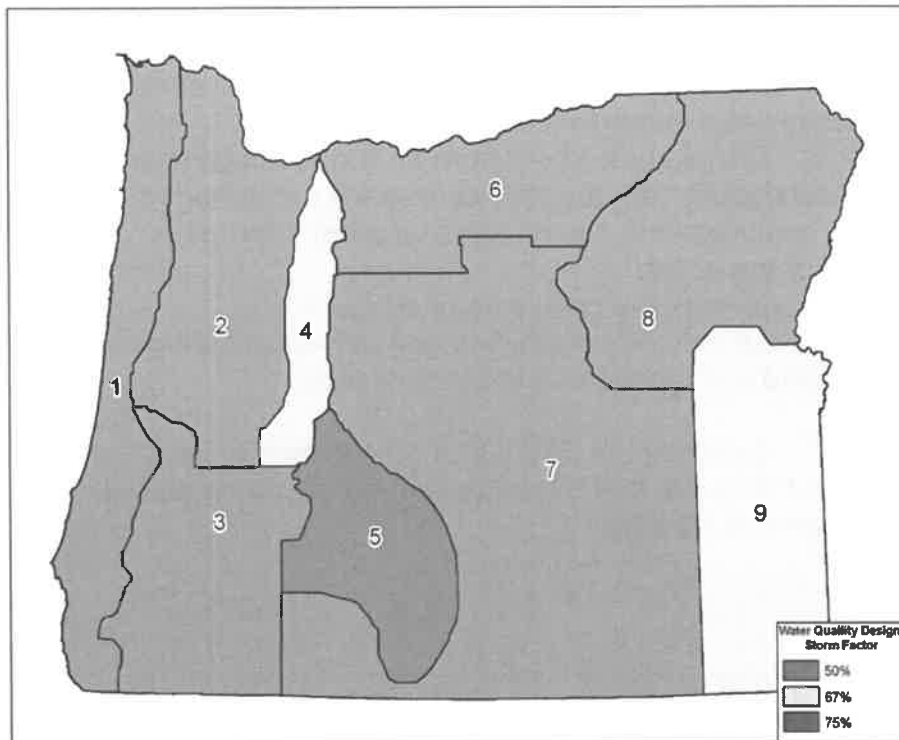
v. Provide a justification for the capacity of the facilities provided based on the expected runoff volume, including, *e.g.*, the design storm, BMP geometry, analyses of residence time, as appropriate.

vi. Include the name, email address, and telephone number of the person responsible for designing the stormwater management facilities that NMFS may contact if additional information is necessary to complete the effects analysis.

vii. The proposed action will include a maintenance, repair, and component replacement plan that details what needs to be done, when, and by whom for each facility.

e. All stormwater quality treatment practices and facilities will be designed to accept and fully treat the volume of water equal to 50% of the cumulative rainfall from the 2-year, 24-hour storm for that site, except as follows: climate zone 4 – 67%; climate zone 5 – 75%; and climate zone 9 – 67% (Figure 1). (ESA-listed species considered in this opinion are unlikely to occur in Zones 5 or 9.) A continuous rainfall/runoff model may be used instead of runoff depths to calculate water quality treatment depth.

**Figure 1.** Water Quality Design Storm Factor – Oregon Climate Regions (Oregon Department of Transportation 2008)



f. Use low impact development practices to infiltrate or evaporate runoff to the maximum extent feasible. For runoff that cannot be infiltrated or evaporated and therefore will discharge into surface or subsurface waters, apply one or more of the following specific primary treatment practices, supplemented with appropriate soil amendments:

- i. Bioretention cell
- ii. Bioslope, also known as an “ecology embankment”
- iii. Bioswale
- iv. Constructed wetlands
- v. Infiltration pond
- vi. Media filter devices with demonstrated effectiveness. Proprietary devices should be on a list of “Approved Proprietary Stormwater Treatment Technologies” *i.e.*, City of Portland (2008) Stormwater Management Manual. Bureau of Environmental Services.

vii. Porous pavement, with no soil amendments and appropriate maintenance

viii. All stormwater flow control treatment practices and facilities will be designed to maintain the frequency and duration of instream flows generated by storms within the following end-points:

1. Lower discharge endpoint, by U.S. Geological Survey (USGS) flood frequency zone:
  - a. Western Region = 42% of 2-year event
  - b. Eastern Region
    - i. Southeast, Northeast, North Central = 48% of 2-year event
    - ii. Eastern Cascade = 56% of 2-year event
2. Upper discharge endpoint
  - a. Entrenchment ratio  $<2.2$  = 10-year event, 24-hour storm
  - b. Entrenchment ratio  $>2.2$  = bank overtopping event

g. When conveyance is necessary to discharge treated stormwater directly into surface water or a wetland, the following requirements apply:

- i. Maintain natural drainage patterns.
- ii. To the maximum extent feasible, ensure that water quality treatment for contributing impervious area runoff is completed before commingling with offsite runoff for conveyance.
- iii. Prevent erosion of the flow path from the project to the receiving water and, if necessary, provide a discharge facility made entirely of manufactured elements (*e.g.*, pipes, ditches, discharge facility protection) that extends at least to OHW.

h. **NMFS review and approval.** NMFS will review proposed stormwater treatment and new or upgraded stormwater outfalls plans.

### **37. Site Restoration**

- a. Restore any significant disturbance of riparian vegetation, soils, stream banks or stream channel.
- b. Remove all project related waste; *e.g.*, pick up trash, sweep roadways in the project area to avoid runoff-containing sediment, *etc.*
- c. Obliterate all temporary access roads, crossings, and staging areas.
- d. Loosen compacted areas of soil when necessary for revegetation or infiltration.
- e. Although no single criterion is sufficient to measure restoration success, the intent is that the following features should be present in the upland parts of the project area, within reasonable limits of natural and management variation:
  - i. Human and livestock disturbance, if any, are confined to small areas necessary for access or other special management situations.
  - ii. Areas with signs of significant past erosion are completely stabilized and healed, bare soil spaces are small and well-dispersed.
  - iii. Soil movement, such as active rills and soil deposition around plants or in small basins, is absent or slight and local.
  - iv. Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site; invasive plants are absent.
  - v. Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.
  - vi. Plant litter is well distributed and effective in protecting the soil with little or no litter accumulated against vegetation as a result of active sheet erosion ("litter dams").
  - vii. A continuous corridor of shrubs and trees appropriate to the site are present to provide shade and other habitat functions for the entire streambank.

### **38. Revegetation**

- a. Plant and seed disturbed areas before or at the beginning of the first growing season after construction.
- b. Use a diverse assemblage of vegetation species native to the action area or region, including trees, shrubs, and herbaceous species. Vegetation, such as willow, sedge and rush mats, may be gathered from abandoned floodplains, stream channels, *etc.* When feasible, use vegetation salvaged from local areas scheduled for clearing due to development.
- c. Use species native to the project area or region that will achieve shade and erosion control objectives, including forb, grass, shrub, or tree species that are appropriate for the site.
- d. Short-term stabilization measures may include use of non-native sterile seed mix if native seeds are not available, weed-free certified straw, jute matting, and similar methods.
- e. Do not apply surface fertilizer within 50 feet of any wetland or water body.
- f. Install fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.
- g. Do not use invasive or non-native species for site restoration.
- h. Conduct post-construction monitoring and treatment to remove or control invasive plants until native plant species are well-established.

### **39. Actions That Require Compensatory Mitigation**

a. The Corps will rely on 33 CFR 332.3 when considering appropriate mitigation. The first option for an applicant is to purchase credits from an appropriate mitigation bank. The second option is to purchase credits from an approved in-lieu-fee sponsor. The third option is Permittee-responsible mitigation. The fourth option is a combination of some or all of the above options that collectively satisfies the mitigation requirements.

b. NMFS will review and approve compensatory mitigation plans.

c. The following actions require compensatory mitigation:

i. Any stormwater management facility that requires a new or enlarged structure within the riparian zone; or that has insufficient capacity to infiltrate and retain the volume of stormwater called for by this opinion.

ii. Any riprap revetment that extends rock above the streambank toe extends the use of riprap laterally into an area that was not previously revetted, or revetment that does not include adequate vegetation and LW.

iii. Any bridge rehabilitation or replacement that does not span the functional floodplain, or causes a net increase in fill within the functional floodplain.

d. The electronic notification (Appendix A, Part 1 with Part 4 completed) for an action that requires compensatory mitigation will explain how the Corps or applicant will complete the mitigation, including site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action.

e. Include the name, address, and telephone number of a person responsible for designing this part of the action that NMFS may contact if additional information is necessary to complete the effects analysis.

f. Describe practices that will be used to ensure:

i. No net loss of habitat function

ii. Completion before, or concurrent with, construction whenever possible

iii. Achieve a mitigation ratio that is greater than one-to-one and larger (e.g., 1.5 to 1.0 when necessary to compensate for time lags between the loss of conservation value in the project area and replacement of conservation value in the mitigation area, uncertainty of conservation value replacement in the mitigation area, or when the affected area has demonstrably higher conservation value than the mitigation area.<sup>21</sup>

iv. When practicable and environmentally sound, mitigation should be near the project impact site, or within the same local watershed and area occupied by the affected population(s) and age classes. Mitigation should be completed prior to or concurrent with the adverse impacts, or have an increased ratio as noted above.

<sup>21</sup> For additional information on compensatory mitigation, see Compensatory Mitigation for Losses of Aquatic Resources (33CFR332) at [www.poa.usace.army.mil/Portals/34/docs/regulatory/33cfr332.pdf](http://www.poa.usace.army.mil/Portals/34/docs/regulatory/33cfr332.pdf). More information is available from the U.S. Army Corps of Engineers, Portland District, Portland, Oregon. See: <http://www.nwp.usace.army.mil/Missions/Regulatory/Mitigation.aspx>

- v. To minimize delays and objections during the review process, applicants are encouraged to seek the advice of NMFS during the planning and design of mitigation plans. For complex mitigation projects, such consultation may improve the likelihood of mitigation success and reduce permit-processing time.
- g. For stormwater management:
  - i. The primary habitat functions of concern are related to the physical and biological features essential to the long-term conservation of listed species, *i.e.*, water quality, water quantity, channel substrate, floodplain connectivity, forage, natural cover (such as submerged and overhanging LW, aquatic vegetation, large rocks and boulders, side channels and undercut banks), space, and free passage.
  - ii. Acceptable mitigation for riparian habitat displaced by a stormwater treatment facility is restoration of shallow-water or off-channel habitat
  - iii. Acceptable mitigation for inadequate stormwater treatment includes providing adequate stormwater treatment where it did not exist before, and retrofitting an existing but substandard stormwater facility to provide capacity necessary to infiltrate and retain the proper volume of stormwater. Such mitigation can be measured in terms of deficit stormwater treatment capacity.
- h. For riprap:
  - i. The primary habitat functions of concern are related to floodplain connectivity, forage, natural cover, and free passage.
  - ii. Acceptable mitigation for those losses include removal of existing riprap; retrofit existing riprap with vegetated riprap and LW, or one or more other streambank stabilization methods described in this opinion, and restoration of shallow water or off-channel habitats.
- i. For a bridge replacement:
  - i. The primary habitat functions of concern are floodplain connectivity, forage, natural cover, and free passage.
  - ii. Acceptable mitigation is removing fill from elsewhere in the floodplain – native channel material, soil and vegetation may not be counted as fill.
- j. Mitigation actions will meet general construction criteria and other appropriate minimization measures (dependent on the type of proposed mitigation).



### 1.3.1.3 Project Design Criteria - Types of Actions

#### 40. Natural Hazard Response

a. A manager of a state, regional, county, or municipal stormwater facility, public transportation feature, or utility must initiate a natural hazard response by notifying the Corps.<sup>22</sup> The Corps will encourage the applicant to:

- i. Act as necessary to resolve the initial natural hazard.
- ii. Without endangering human life or contributing to further loss of property or natural resources, apply all proposed design criteria from this opinion which are applicable to the response to the maximum extent possible.

b. The Corps will also contact NMFS as part of the natural hazard response.

i. As soon as possible after the onset of the natural hazard, the Corps will require the applicant to contact the Corps and NMFS to describe the nature and location of the natural hazard, review design criteria from this opinion that are applicable to the situation, and determine whether additional steps may be taken to further minimize the effects of the initial response action on listed species or their critical habitat.

ii. For the Oregon Coast contact Ken Phippen (541-957-3385), for the Willamette Basin contact Marc Liverman (503-231-2336), and Lower Columbia River up to and including Oregon tributaries contact Jeff Fisher (360-534-9342), and for eastern Oregon contact Dale Bambrick (509-962-8911x221).

#### 41. Streambank and Channel Stabilization

a. The following streambank stabilization methods may be used individually or in combination:

- i. Alluvium placement
- ii. Large wood placement
- iii. Vegetated riprap with large wood
- iv. Roughened toe
- v. Woody plantings
- vi. Herbaceous cover, in areas where the native vegetation does not include trees or shrubs.
- vii. Bank reshaping and slope grading
- viii. Coir logs
- ix. Deformable soil reinforcement
- x. Engineered log jams (ELJ)
- xi. Floodplain flow spreaders
- xii. Floodplain roughness

<sup>22</sup> Natural hazard response actions do not include federal assistance following a gubernatorial, county or local declaration of emergency or disaster with a request for federal assistance; a federal declaration of emergency or disaster; or any response to an emergency or disaster that takes place on federal property or to a federal asset because those actions are subject to emergency consultation provisions of 50 CFR 402.05

b. For more information on the above methods see Federal Emergency Management Agency (2009)<sup>23</sup> or Cramer *et al.* (2003).<sup>24</sup> Other than those methods relying solely upon woody and herbaceous plantings, streambank stabilization projects should be designed by a qualified engineer that is appropriately registered in the state where the work is performed.

c. Stream barbs and full-spanning weirs are not allowed for stream bank stabilization under this opinion.

d. Alluvium Placement can be used as a method for providing bank stabilization using imported gravel/cobble/boulder-sized material of the same composition and size as that in the channel bed and banks, to halt or attenuate streambank erosion, and stabilize riffles. This method is predominantly for use in small to moderately sized channels and is not appropriate for application in mainstem systems. These structures are designed to provide roughness, redirect flow, and provide stability to adjacent streambed and banks or downstream reaches, while providing valuable fish and wildlife habitat.

i. **NMFS fish passage review and approval.** NMFS will review alluvium placement projects that would occupy more than 25% of the channel bed or more than 25% of the bankfull cross sectional area.

ii. This design method is only approved in those areas where the natural sediment supply has been eliminated, significantly reduced through anthropogenic disruptions, or used to initiate or simulate sediment accumulations in conjunction with other structures, such as LW placements and ELJs.

iii. Material used to construct the toe should be placed in a manner that mimics attached longitudinal bars or point bars.

iv. Size distribution of toe material will be diverse and predominately comprised of  $D_{84}$  to  $D_{max}$  size class material.

v. Spawning gravels will constitute at least one-third of the total alluvial material used in the design.

vi. Spawning gravels are to be placed at or below an elevation consistent with the water surface elevation of a bankfull event.

vii. Spawning size gravel can be used to fill the voids within toe and bank material and placed directly onto stream banks in a manner that mimics natural debris flows and erosion.

viii. All material will be clean alluvium with similar angularity as the natural bed material. When possible use material of the same lithology as found in the watershed. Reference *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings* (USDA-Forest Service 2008) to determine gravel sizes appropriate for the stream.

ix. Material can be mined from the floodplain at elevations above bankfull, but not in a manner that will cause stranding during future flood events.

x. Crushed rock is not permitted.

xi. After placement in areas accessible to higher stream flow, allow the stream to naturally sort and distribute the material.

<sup>23</sup> [http://www.fema.gov/pdf/about/regions/regionx/Engineering With Nature Web.pdf](http://www.fema.gov/pdf/about/regions/regionx/Engineering%20With%20Nature%20Web.pdf)

<sup>24</sup> <http://wdfw.wa.gov/publications/00046/wdfw00046.pdf>

xii. Do not place material directly on bars and riffles that are known spawning areas, which may cause fish to spawn on the unsorted and unstable gravel, thus potentially resulting in redd destruction.

xiii. Imported material will be free of invasive species and non-native seeds. If necessary, wash prior to placement.

e. **Large Wood Placements** are defined as structures composed of LW that do not use mechanical methods as the means of providing structure stability (*i.e.*, large rock, rebar, rope, cable, *etc.*). The use of native soil, alluvium with similar angularity as the natural bed material, large wood, or buttressing with adjacent trees as methods for providing structure stability are authorized. This method is predominantly for use in small to moderately sized channels and is not appropriate for application in mainstem systems. These structures are designed to provide roughness, redirect flow, and provide stability to adjacent streambed and banks or downstream reaches, while providing valuable fish and wildlife habitat.

i. **NMFS fish passage review and approval.** NMFS will review LW placement projects that would occupy greater than 25% of the bankfull cross section area.

ii. Structure shall simulate disturbance events to the greatest degree possible and include, but not be limited to, log jams, debris flows, wind-throw, and tree breakage.

iii. Structures may partially or completely span stream channels or be positioned along stream banks.

iv. Where structures partially or completely span the stream channel LW should be comprised of whole conifer and hardwood trees, logs, and rootwads. LW size (diameter and length) should account for bankfull width and stream discharge rates.

v. Structures will incorporate a diverse size (diameter and length) distribution of rootwad or non-rootwad, trimmed or untrimmed, whole trees, logs, snags, slash, *etc.*

vi. For individual logs that are completely exposed, or embedded less than half their length, logs with rootwads should be a minimum of 1.5 times bankfull channel width, while logs without rootwads should be a minimum of 2.0 times bankfull width.

vi. Consider orienting key pieces such that the hydraulic forces upon the LW increase stability.

f. Vegetated riprap with large wood (LW)

i. NMFS will review and approve bank stabilization projects that use vegetated riprap with LW.

ii. When this method is necessary, limit installation to the areas identified as most highly erodible, with highest shear stress, or at greatest risk of mass-failure, and provide compensatory mitigation. The greatest risk of mass-failure will usually be at the toe of the slope and will not extend above OHW elevation except in incised streams.

iii. Do not use invasive or non-native species for site restoration.

iv. Remove or control invasive plants until native plant species are well-established.

v. Do not apply surface fertilizer within 50-feet of any stream channel.

- vi. Install fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.
- vii. Vegetated riprap with LW will be installed as follows:
  1. When present, use natural hard points, such as large, stable trees or rock outcrops, to begin or end the toe of the revetment.
  2. Develop rock size gradations for elevation zones on the bank, especially if the rock will extend above OHW – the largest rock should be placed at the toe of the slope, while small rock can be used higher in the bank where the shear stress is generally lower. Most upper bank areas will not require the use of any rock but can depend on the vegetation for erosion protection.
  3. For bank areas above OHW where rock is still deemed necessary, mix rock with soil to provide a better growing medium for plants.
  4. Minimum amount of wood incorporated into the treated area, for mitigation of riprap, is equal to the number of whole trees whose cumulative summation of rootwad diameters is equal to 80% of linear-feet of treated streambank or 20% of the treated area (square feet) of streambank, whichever is greater.
  5. Where whole trees are not used (*i.e.*, snags, logs, and partial trees) designers are required to estimate the dimensions of parent material based on rootwad diameter, and calculating a cumulative equivalency of whole trees.
  6. LW should be distributed throughout the structure (not just concentrated at the toe) to engage flows up to the bankfull flow. LW placed above the toe may be in the form of rootwad or non-rootwad, trimmed or untrimmed, whole trees, logs, snags, slash, *etc.* Maximize the exposure of wood to water by placing and orienting wood to project into the water column up to the bankfull elevation.
  7. Develop an irregular toe and bank line to increase roughness and habitat value.
  8. Use LW and irregular rock to create large interstitial spaces and small alcoves to create planting spaces and habitat to mitigate for flood-refuge impacts – do not use geotextile fabrics as filter behind the riprap whenever possible, if a filter is necessary to prevent sapping, use a graduated gravel filter.
  9. Structure toe will incorporate LW with intact rootwads. Minimum spacing between rootwads placed at the toe will be no greater than an average rootwad diameter.
  10. Minimum rootwad diameter for LW placed at the toe of the structure shall be 1.0 times the bankfull depth, unless LW availability constrains the project to a smaller rootwad size. Where rootwad size is constrained due to availability, the largest diameter rootwads available should be used.
  11. LW placed at the toe will be sturdy material, intact, hard, and undecayed and should be sized or embedded sufficiently to withstand the design flood.
  12. Space between root wads may be filled with large boulders, trimmed or untrimmed, whole trees, logs, snags, slash, *etc.*

When used, diameter of boulders placed between toe logs with rootwads should be 1.5 to 2.0 times log diameter at breast height (dbh) of adjacent toe logs. A reasonable maximum rock size is 5-6 feet in diameter.

13. Plant woody vegetation in the joints between the rocks to enhance streambank vegetation.

14. Where possible, use terracing, or other bank shaping, to increase habitat diversity.

15. When possible, create or enhance a vegetated riparian buffer.

viii. Monitor vegetated riprap each year following installation by visual inspection during low flows to examine transitions between undisturbed and treated banks to ensure that native soils above and behind the riprap are not collapsing, sinking, or showing other evidence of piping loss or movement of rock materials; and the overall integrity of the riprap treatment, including:

1. Loss of rock materials
2. Survival rate of vegetation
3. Anchoring success of LW placed in the treatment.
4. Any channel changes since construction.

g. Roughened toe

i. Where designs use any of the approved streambank stabilization methods outlined in this section, in lieu of lining the bank with riprap above the toe, the design of any rock-filled toe will adhere to project criteria outlined in (f) Vegetated riprap with large wood (7-15, from above).

ii. Minimum amount of wood incorporated into the treated area, for mitigation of riprap, is equal to the number of whole trees whose cumulative summation of rootwad diameters is equal to 80% of linear-feet of treated streambank.

h. **Engineered log jams (ELJ).** ELJs are structures composed of LW with at least three key members and incorporating the use of any mechanical anchoring system (*i.e.*, rebar, rope, angular or large rock, *etc.*). Native soil, simulated streambed and bank materials, wood, or buttressing with adjacent trees, are not mechanical anchoring systems. ELJs are designed to redirect flow, provide roughness, and provide stability to adjacent streambed and banks or downstream reaches, while providing valuable fish and wildlife habitat.

i. **NMFS fish passage review and approval.** NMFS will review proposed ELJ projects.

ii. ELJs will be patterned, to the greatest degree possible, after stable natural log jams.

iii. Stabilizing or key pieces of LW will be intact and solid (little decay). If possible, acquire LW with untrimmed rootwads to provide functional refugia habitat for fish.

i. If LW mechanical anchoring is required, a variety of methods may be used. These include large angular rock, buttressing the wood between adjacent trees, the use of manila, sisal or other biodegradable ropes for lashing connections. If hydraulic conditions warrant use of structural connections, rebar pinning or bolted connections, may be used. Use of cable is not covered by this opinion.

j. When a hole in the channel bed caused by local scour will be filled with rock to prevent damage to a culvert, road, or bridge foundation, the amount of rock will be limited to the minimum necessary to protect the integrity of the structure.

k. When a footing, facing, head wall, or other protection will be constructed with rock to prevent scouring or down-cutting of, or fill slope erosion or failure at, an existing culvert or bridge, the amount of rock used will be limited to the minimum necessary to protect the integrity of the structure. Whenever feasible, include soil and woody vegetation as a covering and throughout the structure.

## 42. Road Maintenance, Rehabilitation and Replacement

a. All maintenance and rehabilitation actions shall observe applicable criteria detailed in the most recent version of NMFS fish passage criteria

i. Projects affecting fish passage shall adhere to industry design standards found in the most recent version of any of the following:

1. *Water Crossings Design Guidelines* (Barnard *et al.* 2013)<sup>25</sup>
2. *Part XII, Fish Passage Design and Implementation, Salmonid Stream Habitat Restoration Manual* (California Department of Fish and Game 2009)<sup>26</sup>
3. *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream* (USDA-Forest Service 2008)<sup>27</sup>
4. Or other design references approved by NMFS.

ii. Routine road surface, culvert and bridge maintenance activity will be completed in accordance with the *ODOT Routine Road Maintenance: Water Quality and Habitat Guide Best Management Practices* (ODOT 2009) or the most recent version approved by NMFS, unless maintenance activities and practices in that manual conflict with PDC in this opinion.

1. Any conflict between ODOT (2009) and this opinion (*e.g.*, stormwater management for maintenance yards, erosion repair related to use of riprap, dust abatement, and use of pesticides) will be resolved in favor of PDC in this opinion.

b. Grade stabilization

i. Grade control materials may include both rock and LW. Material shall not in any part consist of gabion baskets, sheet piles, concrete, articulated concrete blocks, or cable anchors.

ii. Grade control shall be provided using morphologically-appropriate constructed riffles for riffle-pool morphologies, rough constructed riffles/ramps for plane bed morphologies, wood/debris jams, rock bands, and boulder weirs for step-pool morphologies, and roughened channels for cascade morphologies.

iii. LW placements and ELJs may be used to control grade individually or together with other grade control methods by simulating natural log jams and debris accumulation that traps sediment and creates forced, riffle-pool, step-pool, or cascade-pool morphologies.

<sup>25</sup> <http://wdfw.wa.gov/publications/01501/>

<sup>26</sup> <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=12512>

<sup>27</sup> [http://stream.fs.fed.us/fishxing/aop\\_pdfs.html](http://stream.fs.fed.us/fishxing/aop_pdfs.html)

iv. Stream banks and bed shall be designed to be immobile at the design event to reduce undermining and flanking.

v. The crest of channel spanning structures will be slightly sloped on either side, with the low point in the center, to direct flows to the middle of channel and away from streambanks. Install these structures low in relation to channel dimensions so that they are completely overtopped during channel-forming flow events (approximately a 1.0- to 1.5-year flow event).

vi. Construct boulder weir structures in a 'V' or 'U' shape, oriented with the apex upstream.

vii. Key all structures into the streambed at a depth which minimizes structure undermining due to scour, at least 2.5 times their exposure height, or the Lower Vertical Adjustment Potential (LVAP) line with an offset of 2 times  $D_{90}$ , whichever is deeper.

1. LVAP, and 2 times  $D_{90}$  offset, as calculated in *Stream Simulation: An ecological approach to providing passage for aquatic organisms at road crossings* (USDA-Forest Service 2008).

viii. Structures should be keyed into both banks—if feasible greater than 8 feet.

ix. If several drop structures will be used in series, space them at the appropriate distances to promote fish passage of target species and life histories. Incorporate NMFS (2011a) fish passage criteria (jump height, pool depth, etc.) in the design of drop structures.

x. Recommended spacing for boulder weirs should be no closer than the net drop divided by the channel slope (for example, a one-foot high step structure designed with a project slope of two-percent gradient will have a minimum spacing of 50-feet [1/0.02]). Maximum project slope for boulder weir designs is 5%.

xi. A series of short steep rough ramps/chutes, cascades, or roughened channel type structures, broken up by energy dissipating pools, are required where project slope is greater than 5%.

#### c. Rock Structures

i. Rock structures will be constructed out of a mix of well-graded boulder, cobble, and gravel, including the appropriate level of fines, to allow for compaction and sealing to ensure minimal loss of surface flow through the newly placed material.

ii. Rock sizing depends on the size of the stream, maximum depth of flow, plan form, entrenchment, and ice and debris loading.

iii. The project designer or an inspector experienced in these structures should be present during installation.

iv. To ensure that the structure is adequately sealed, no sub-surface flow will be present before equipment leaves the site.

v. Rock shall be durable and of suitable quality to assure long-term stability in the climate in which it is to be used.

i. Where feasible, channel spanning structures should be coupled with LW to improve habitat complexity of riparian areas.

#### d. Structure Stabilization

- i. When a footing, facing, head wall, or other protection will be constructed with rock to prevent scouring or down-cutting of, or fill slope erosion or failure at, an existing culvert or bridge, the amount of rock used is limited to the minimum necessary to protect the integrity of the structure. Include soil, vegetation, and wood throughout the structure to the level possible.
- e. Road-stream crossing replacement or retrofit
  - i. Projects shall adhere to industry design standards found in the most recent version any of the following:
    1. *Water Crossings Design Guidelines* (Barnard et al. 2013)<sup>28</sup>
    2. *Part XII, Fish Passage Design and Implementation, Salmonid Stream Habitat Restoration Manual* (California Department of Fish and Game 2009)<sup>29</sup>
    3. *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream* (USDA-Forest Service 2008)<sup>30</sup>
    4. Or other design references approved by NMFS.
  - i. General road-stream crossing criteria
    1. Span
      - a. Span is determined by the crossing width at the proposed streambed grade.
      - b. Single span structures will maintain a clear, unobstructed opening above the general scour elevation that is at least as wide as 1.5 times the active channel width.<sup>31</sup>
      - c. Multi-span structures will maintain clear, unobstructed openings above the general scour elevation (except for piers or interior bents) that are at least as wide as 2.2 times the active channel width.
      - d. Entrenched streams: If a stream is entrenched (entrenchment ratio of less than 1.4), the crossing width will accommodate the flood prone width. Flood prone width is the channel width measured at twice the maximum bankfull depth (Rosgen 1996).
      - e. Minimum structure span is 6 feet.
    2. Bed Material
      - a. Install clean alluvium with similar angularity as the natural bed material, no crushed rock.
      - b. Bed material shall be designed based on the native particle size distribution of the adjacent channel or reference reach, as quantified by a pebble count.
      - c. Rock band designs as detailed in *Water Crossings Design Guidelines* (Barnard et al. 2013) are authorized.
      - d. Bed material in systems where stream gradient exceeds 3% may be conservatively sized to resist movement.

<sup>28</sup> <http://wdfw.wa.gov/publications/01501/>

<sup>29</sup> <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=12512>

<sup>30</sup> [http://stream.fs.fed.us/fishxing/aop\\_pdfs.html](http://stream.fs.fed.us/fishxing/aop_pdfs.html)

<sup>31</sup> Active channel width means the stream width measured perpendicular to stream flow between the OHW lines, or at the channel bankfull elevation if the OHW lines are indeterminate. This width includes the cumulative active channel width of all individual side- and off-channel components of channels with braided and meandering forms, and measure outside the area influence of any existing stream crossing, e.g., five to seven channel widths upstream and downstream.



### 3. Scour Prism

a. Designs shall maintain the general scour prism, as a clear, unobstructed opening (*i.e.*, free of any fill, embankment, scour countermeasure, or structural material to include abutments, footings, and culvert inverts). No scour or stream stability countermeasure may be applied above the general scour elevation.<sup>32</sup>

a. The lateral delineation of the scour prism is defined by the criteria span.

b. The vertical delineation of the scour prism is defined by the Lower Vertical Adjustment Potential (LVAP) with an additional offset of 2 times  $D_{90}$ , as calculated in *Stream Simulation: An ecological approach to providing passage for aquatic organisms at road crossings* (USDA-Forest Service 2008).

b. When bridge abutments or culvert footings are set back beyond the applicable criteria span they are outside the scour prism.

### 4. Embedment

a. All abutments, footings, and inverts shall be placed below the thalweg a depth of 3 feet, or the LVAP line with an offset of 2 times  $D_{90}$ , whichever is deeper.

i. AP, and 2 times  $D_{90}$  offset, as calculated in *Stream Simulation: An ecological approach to providing passage for aquatic organisms at road crossings* (USDA-Forest Service 2008).

b. In addition to embedment depth, embedment of closed bottom culverts shall be between 30% and 50% of the culvert rise.

### 5. Bridges

a. Primary bridge structural elements will be concrete, metal, fiberglass, or untreated timber. The use of treated wood for bridge construction or replacement is not part of this proposed action. The use of treated wood for maintenance and repair of existing wooden bridges is part of the proposed action if in conformance with project design criterion 29.

b. All concrete will be poured in the dry, or within confined waters not connected to surface waters, and will be allowed to cure a minimum of 7 days before contact with surface water as recommended by Washington State Department of Transportation (2010).

c. Riprap may only be placed below bankfull height of the stream when necessary for protection of abutments and pilings. The amount and placement of riprap will not constrict the bankfull flow.

d. Temporary work bridges will also meet the latest version of NMFS (2011a) criteria.

<sup>32</sup> For guidance on how to complete bridge scour and stream stability analysis, see Lagasse *et al.* (2012) (HEC-20), Lagasse *et al.* (2001) (HEC-23), Richardson and Davis (2001) (HEC-18), ODOT (2011), and AASHTO (2013).

- iii. The electronic notification for each permanent stream crossing replacement will contain the following:
  - 1. Site sketches, drawings, aerial photographs, or other supporting specifications, calculations, or information that is commensurate with the scope of the action, that show the active channel, the 100-year floodplain, the functional floodplain, any artificial fill within the project area, the existing crossing to be replaced, and the proposed crossing.
  - 2. A completed scour and stream stability analysis for any crossing that includes scour or stream stability countermeasures within the crossing opening that shows the general scour elevation and the local scour elevation for any pier or interior bent.
  - 3. The name, address, and telephone number of a person responsible for designing this part of the action that NMFS may contact if additional information is necessary to complete the effects analysis.
- f. **NMFS fish passage review and approval.** The Corps will not issue a permit to install, replace, or improve a road-stream crossing, step structure, fish ladder, or projects containing grade control, stream stability, or headcut countermeasures, until the action has been reviewed and approved by NMFS for consistency with NMFS's fish passage criteria (NMFS 2011a).

#### 43. Utility Line Stream Crossings

- a. Design utility line stream crossings in the following priority:
  - i. Aerial lines, including lines hung from existing bridges.
  - ii. Directional drilling, boring and jacking that spans the channel migration zone and any associated wetland.
  - iii. Trenching – this method is restricted to intermittent streams and may only be used when the stream is naturally dry, all trenches will be backfilled below the OHW line with native material and capped with clean gravel suitable for fish use in the project area.
- b. Align each crossing as perpendicular to the watercourse as possible. Ensure that the drilled, bored or jacked crossings are below the total scour prism.
- c. Any large wood displaced by trenching or plowing will be returned as nearly as possible to its original position, or otherwise arranged to restore habitat functions.
- d. Any action involving a stormwater outfall will meet the stormwater management criteria.<sup>33</sup>
- e. NMFS will review new or upgraded stormwater outfalls.

<sup>33</sup> The most efficient way for an applicant or the Corps to prepare and submit a stormwater management plan for NMFS' review is to attach a completed *Checklist for Submission of a Stormwater Management Plan* (the *Checklist*, ODEQ updated 2012, or the most recent version) with the electronic notification when it is sent to the SLOPES mailbox. However, stormwater conveyance to a DEQ permitted Municipal Separate Storm Sewer System (MS4) or consistency with any other program acknowledged by DEQ as adequate for stormwater management will not meet the requirements of this opinion unless NMFS determines that the facility accepting the stormwater will provide a level of treatment that is equivalent to that called for in this opinion. The *Checklist* and guidelines for its use are available from NMFS or the ODEQ in Portland Oregon. The latest version of the *Checklist* is also available online in a portable document format (pdf) through the ODEQ Water Quality Section 401 certification webpage (ODEQ 2014) at <http://www.deq.state.or.us/wq/sec401cert/process.htm#add> (see "Post Construction Stormwater Management Plan").

**Action Completion Reporting.** It is the applicant's responsibility to submit this form to the Corps within 60 days of completing all work below ordinary high water (OHW). Upon receipt, the Corps will resubmit this form with the Action Completion Report portion completed to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov). If it is a Corps project, the Corps shall complete and submit this form within 60 days of completing the project.

**Major hazard response reporting.** It is the applicant's responsibility to submit this form to the Corps within 30 days of completing all work below OHW. Upon receipt, the Corps will resubmit this form with the Action Completion Report portion completed to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov). If it is a Corps project, the Corps shall complete and submit this form within 30 days of completing the project.

**Fish Salvage Reporting.** It is the applicant's responsibility to submit this form to the Corps within 60 days of completing a capture and release as part of an action completed under SLOPES V Transportation. Upon receipt, the Corps will resubmit this form with the Fish Salvage Report portion completed with the following information to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov). If it is a Corps project, the Corps shall complete and submit this form within 60 days of completing fish salvage operations.

# 1. ACTION COMPLETION REPORT

The applicant shall submit this form to the Corps within 60 days of completing all work below ordinary high water (OHW). The Corps shall submit this form to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov) upon receipt from the applicant. If it is a Corps project, the Corps shall submit this form within 60 days of completing all work below OHW.

<b>Actual Start and End Dates for the Completion of In-water Work:</b>	<b>Start:</b>	<b>End:</b>
<b>Actual Linear-feet of Riparian and/or Channel Modification within 150 feet of OHW</b>		
<b>Actual Acreage of Herbicide Treatment</b>		
<b>Turbidity Monitoring/Sampling Completed</b>	<input type="checkbox"/> Yes (include details below)	<input type="checkbox"/> No

**Please include the following:**

1. Attach as-built drawings for any action involving a riprap revetment, stormwater management facility, or a bridge rehabilitation or replacement.
2. Attach photos of habitat conditions before, during, and after action completion.
3. Describe compliance with fish screen criteria, as defined below, for any pump used.
4. Summarize results of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
5. Describe number, type and diameter of any pilings removed or broken during removal.
6. Describe any riparian area cleared within 150 feet of OHW.
7. Describe turbidity monitoring (visual or by turbidimeter) including dates, times and location of monitoring and any exceedances and steps taken to reduce turbidity observed.
8. Describe site restoration.

**If the project was a Major Hazard Response, ALSO include the following:**

1. Name of the major hazard event.
2. Type of major hazard.
3. Name of the public transportation district manager that declared the response necessary.
4. NMFS staff contacted, with date and time of contact.
5. Description of the amount and type of riprap or other material used to repair a culvert, road, or bridge.
6. Assess the effects of the initial response to listed species and critical habitats.
7. Summary of the design criteria followed and not followed.
8. Remedial actions necessary to bring the initial response into compliance with design criteria in this opinion.

## 2. FISH SALVAGE REPORT

**If applicable:** The applicant shall submit a completed Fish Salvage Report and Fish Salvage Data Table (see below) to the Corps within 60 days of completing a capture and release as part of an action completed under SLOPES V Transportation. The Corps will submit the report to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov) upon receipt from the applicant. If it is a Corps project, the Corps shall submit this form to NMFS within 60 days of completing a capture and release event.

**Date(s) of Fish Salvage  
Operation(s):**

**Supervisory Fish Biologist:**

**Address**

**Telephone Number**

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Describe methods that were used to isolate the work area and remove fish

**Fish Salvage Data**

Water Temperature:

Air Temperature:

Time of Day:

ESA-Listed Species	Number Handled		Number Injured		Number Killed	
	Juvenile	Adult	Juvenile	Adult	Juvenile	Adult
Lower Columbia River Chinook						
Upper Willamette River Chinook						
Upper Columbia River spring-run Chinook						
Snake River spring/summer run Chinook						
Snake River fall-run Chinook						
Chinook, unspecified						
Columbia River chum						
Lower Columbia River Coho						
Oregon Coast Coho						
Southern Oregon/Northern California Coasts Coho						
Snake River sockeye						
Lower Columbia River steelhead						
Upper Willamette River steelhead						
Middle Columbia River steelhead						
Upper Columbia River steelhead						
Snake River Basin steelhead						
Steelhead, unspecified						
Southern green sturgeon						
Eulachon						

### **3. SITE RESTORATION/ COMPENSATORY MITIGATION**

By December 31 of any year in which the Corps approves that the site restoration or compensatory mitigation is complete, the Corps, will submit a complete a Site Restoration/Compensatory Mitigation Reporting Form, or its equivalent, with the following information to NMFS at [slopes.nwr@noaa.gov](mailto:slopes.nwr@noaa.gov).

Describe location of mitigation or restoration work.

Summarize the results of mitigation or restoration work completed.



# Inadvertent Discovery Plan

May 29, 2018

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## 1. Introduction

The U.S. Army Corps of Engineers (Corps) completes the requirements of Section 106 of the National Historic Preservation Act (NHPA), as applicable, for projects authorized by a Department of the Army permit. However, cultural resources or historic properties may unexpectedly be encountered during project construction based on the project location or type of work. These unforeseen finds are called an inadvertent discovery. This plan describes requirements should an inadvertent discovery occur.

In accordance with Section 106 of the NHPA, Federal agencies, such as the Corps, are required to take into account the effects of any permitted action to historic properties. The Corps completes these requirements in cooperation with States, local governments, Native American Tribes, and private organizations and individuals. There are numerous Federal and State laws and regulations that apply to historic preservation that include, but are not limited to:

National Historic Preservation Act – [54 USC 306108] [36 CFR 60]

Native American Graves Protection and Repatriation Act – [25 USC 3001] [43 CFR 10]

Procedures for the Protection of Historic Properties – [33 CFR 325 – Appendix C]

Consultation and Coordination with Indian Tribal Governments – [Executive Order 13175]

Rights and Duties Relating to Cemeteries, Human Bodies and Anatomical Gifts – [ORS 97.740- 97.760]

Oregon Historical and Heritage Agencies, Programs and Tax Provisions; Museums; Local Symphonies and Bands; Archaeological Objects and Sites – [ORS 358.905 – 358.955]

Permits and Conditions for Excavation or Removal of Archaeological or Historical Material; Rules; Criminal Penalty – [ORS 390.235]

## 2. Background

For thousands of years, Native American Tribes have lived on the lands that now comprise the state of Oregon. Although these lands are under various ownerships, Native Americans still retain a strong connection to their ancestral lands. Tribal archeological and burial sites are not simply artifacts of the Tribe's cultural past, but are considered sacred and represent a continuing connection with their ancestors. Native American cultural resources, ancestral remains, funerary objects, sacred objects, and objects of cultural patrimony are protected under Federal and State laws. Examples of Tribal cultural resources include, but are not limited to: lithic flakes, stone tools, Native American human remains, remnants of structures (e.g. house pits), fish weirs, and/or shell middens.



In addition to potential Tribal-related sites, non-Tribal cultural and historical resources are also protected under Federal and State laws. Examples of material that may be found at a historic-period site include, but are not limited to: glass bottles, cans, structural foundations, machinery or parts, nails and many other items. If material such as this is uncovered during the course of a project, the procedures outlined below are applicable.

**3. Inadvertent Discovery** – The permittee shall implement the following procedures:

**a. Projects that do not require monitoring by a professional archeologist (see permit special conditions):**

1) In the event evidence of human burials, human remains, cultural items, suspected cultural items, or historic properties, as defined by the NHPA, are discovered and/or may be affected during the course of the authorized work, the permittee shall **Immediately Cease All Ground Disturbing Activities** and the permittee or permittee's representative shall immediately notify the Corps and other appropriate agencies as necessary.

2) Notification Procedures:

- Notification to the Corps, Portland District, Regulatory Branch shall be made by fax (503-808-4375), via email to [winston.s.zack@usace.army.mil](mailto:winston.s.zack@usace.army.mil), or 503-808-4337 as soon as possible following discovery but in no case later than 24 hours. The fax or email shall clearly specify the purpose is to report a cultural resource discovery, provide the permittee's name, and Corps Permit Number.
- The permittee shall also notify the Corps representative (by email or telephone) identified in the permit letter.
- If the inadvertent discovery is identified as human remains, the permittee shall notify the Oregon State Police at 503-731-4717.
- In all inadvertent discovery situations, the permittee is also responsible for contacting the State Historic Preservation Office (SHPO) at 503-986-0690.

3) Failure to stop work immediately and continue such stoppage could result in a violation of Federal and State laws. Violators may be subject to civil and criminal penalties. Work shall remain suspended until notified by the Corps that work may proceed.

**b. Projects that require monitoring by a professional archeologist (see permit special conditions):**

1) The Corps-required archeological monitor has the authority to temporarily stop all ground disturbing activities in the event evidence of human burials, human remains, cultural items, suspected cultural items, or historic properties, as defined

by the NHPA, are discovered and/or may be affected during the course of the authorized work. Upon positive identification of human burials, human remains, cultural items, suspected cultural items, or historic properties, as defined by the NHPA, the archeological monitor shall notify the permittee of the inadvertent discovery and the permittee shall **Immediately Cease All Ground Disturbing Activities**. The archeological monitor will take actions necessary to secure the discovery location. The permittee or permittee's representative shall immediately notify the Corps and other appropriate agencies as necessary as described in the Notification Procedures above. Work shall remain suspended until notified by the Corps that work may proceed.

2) Before work can proceed, first, the nature of the discovery must be evaluated. If it is determined the discovery contains human remains, then section 4 below shall be initiated. If the discovery contains less than 10 artifacts, then paragraph 3) below shall be followed. If the discovery contains more than 10 artifacts and does not contain human remains, then the Corps, in consultation with the SHPO and tribes as appropriate, will determine whether the site may be eligible for listing in the National Register of Historic Places (NRHP). If deemed insignificant the Corps will allow work to continue. If deemed significant, the Corps will evaluate whether the continuation of work will constitute an adverse effect. If the Corps determines the effect will not be adverse, or the area can be avoided, then work will be allowed to continue. If the inadvertent discovery location cannot be avoided, and continuing work would have an adverse effect on the site, the Corps, in consultation with the permittee, SHPO, and tribes as appropriate, will need to draft and finalize a Memorandum of Agreement for the treatment of the historic site before work can proceed.

3) If an isolated artifact (defined as fewer than 10 artifacts by the SHPO) is identified, the archeological monitor shall determine: a) whether there is potential for other artifacts to be present in the vicinity of the initial discovery, and b) whether the identified artifacts alone are significant. These two considerations will be used to determine if sufficient evidence is present to define a historic site (i.e. potentially eligible for listing in the NRHP). If upon closer examination the materials discovered are not consistent with human burials, human remains, cultural items, suspected cultural items, or historic properties, as defined by the NHPA, the monitoring archeologist shall notify the Corps (phone or email message), and can then allow work to proceed but with caution and at a slower rate until the monitor is confident no sites are represented. The isolated finds shall be reported in the archeological monitor's post-construction monitoring report.

#### **4. Human Remains**

**a. Plan of Action:** If human burials and/or human remains are discovered, the archeological monitor shall ensure all unauthorized personnel have vacated the site location in a safe manner, make reasonable efforts to secure the location, and stabilize the remains if necessary (e.g. prevent remains from falling out of a trench wall). Every

reasonable effort will be made by the monitor to ensure the remains are not physically handled or examined by unauthorized personnel until the proper notifications have been made. Reference is made to the Tribal Position Paper on Human Remains found on SHPO's website at:

[http://www.oregon.gov/OPRD/HCD/ARCH/docs/Tribal\\_position\\_paper\\_on\\_Human\\_Remains.pdf](http://www.oregon.gov/OPRD/HCD/ARCH/docs/Tribal_position_paper_on_Human_Remains.pdf).

**b. Treatment Plan:** The permittee shall develop a Treatment Plan (TP) in consultation with the Corps, SHPO, and Tribe(s), as needed, to ensure the proper handling and curation of human remains and/or cultural items. The TP will define the items found; develop a strategy for handling/moving human remains and/or cultural items, if applicable; develop a strategy for determining whether additional human remains and/or cultural items are endangered; determine if additional testing is necessary to identify site boundaries; and determine the disposition of the human remains and/or cultural items. The TP will be agreed upon by all parties involved before any future ground disturbance activities resume.



**US Army Corps  
of Engineers** ®  
Portland District

# Compliance Certification

1. **Permit Number:** NWP-2015-502/1
2. **Permittee Name:** Hudson Capital / MBBH Development, LLC
3. **County Location:** Linn

Upon completing the activity authorized by the permit, please complete the sections below, sign and date this certification, and return it to the U.S. Army Corps of Engineers, Portland District, Regulatory Branch. The certification can be submitted by email at [cenwp.notify@usace.army.mil](mailto:cenwp.notify@usace.army.mil) or by regular mail at the following address:

U.S. Army Corps of Engineers  
CENWP-OD-GL  
P.O. Box 2946  
Portland, OR 97208-2946

4. **Corps-required Compensatory Mitigation (see permit special conditions):**
  - a. Mitigation Bank / In-lieu Fee Credit Transaction Documents:  
 Not Applicable       Submitted       Enclosed
  - b. Permittee-responsible mitigation (e.g., construction and plantings) has been constructed (not including future monitoring). As-built report:  
 Not Applicable       Submitted       Enclosed
5. **Endangered Species Act – Standard Local Operating Procedures (SLOPES)**  
(see permit special conditions):
  - a. SLOPES Action Completion Report:  
 Not Applicable       Submitted       Enclosed
  - b. SLOPES Fish Salvage Report:  
 Not Applicable       Submitted       Enclosed
  - c. SLOPES Site Restoration / Compensatory Mitigation Report:  
 Not Applicable       Submitted       Enclosed

I hereby certify the work authorized by the above-referenced permit has been completed in accordance with all of the permit terms and conditions.

**Signature of Permittee**

**Date**